

2013 ADVANCE PROGRAM



A 360° VIEW OF THE MOST INNOVATIVE TECHNOLOGY AND PROCESSES. **FABTECH 2013.**

INSIDE:

- Exhibitor List
- Special Events
- Schedule-at-a-Glance
- Education Programs
- Hotel and Travel
- Planning Tools



North America's Largest Metal Forming,
Fabricating, Welding and Finishing Event

November 18–21, 2013
McCormick Place | Chicago, IL USA

Sponsors:



REGISTER EARLY & SAVE!
fabtechexpo.com



FIND OUT WHAT'S POSSIBLE.

FABTECH 2013 | Booth #N1111



FABTECH IS YOUR COMPLETE RESOURCE

FABTECH represents every step of the metal manufacturing process from start to finish. It's where new ideas, products and technology are highlighted through interactive exhibits, education and networking. Compare solutions from 1,500+ exhibitors, find tools to improve quality and productivity and learn ways to increase profits.

FABTECH shows you the future

It's about taking a few days away from your job or business to think about the big picture, talk to the technical experts and learn not only what's new but what's next.

FABTECH means business

This is where deals are made and serious business gets done quickly. Make side-by-side product comparisons and find the best solutions for your company, all while saving time and money.

FABTECH connects you

Where else can you find all the key players in one place? Meet and collaborate with your colleagues, potential partners and even the competition in this dynamic face-to-face environment.

FABTECH makes you smarter

Gain valuable insights from 100+ best in class education and training programs. Expand your skill set, learn new applications and get the information you need to boost your business.

FABTECH is fun

From Happy Hour and Cocktails and Comedy to after-hours receptions and other networking events, FABTECH is a once-a-year chance to mix and mingle with all your industry peers.

- General Information** 3-4
- Exhibitor List** 5-8
- Special Events** 9-10
 - Keynote Presentations 9
 - State of the Industry 9
 - Workforce Panel Discussion..... 9
 - New Product Presentations..... 10
 - Professional Welders
 - Competition 10
- Networking Events** 10
 - Happy Hour 10
 - Cocktails & Comedy 10
- Education Program** 11-61
 - Schedule-at-a-Glance 13-16
 - Finishing 17
 - Stamping 23
 - Cutting 26
 - Lasers 28
 - Forming & Fabricating 30
 - Job Shop Solutions 33
 - Automation & Robotics 34
 - Lean 35
 - Management 37
 - Tube & Pipe 41
 - Welding 42
 - Seminars 42
 - Conferences 45
 - RWMA Resistance
 - Welding School..... 50
 - Professional Program 51
 - Educational Sessions..... 57
 - Special Programs 59
 - AWS Society Events 60

- Hotel and Travel** 62

- Planning Tools** 63



ADVANCE PROGRAM VOLUME 2, ISSUE 1 | AUGUST 2013

The *Advance Program* is published annually on behalf of FABTECH® by The Fabricators & Manufacturers Association, International® 833 Featherstone Road | Rockford, Illinois 61107-6302 USA 815-399-8700 • www.fmanet.org | www.fabtechexpo.com

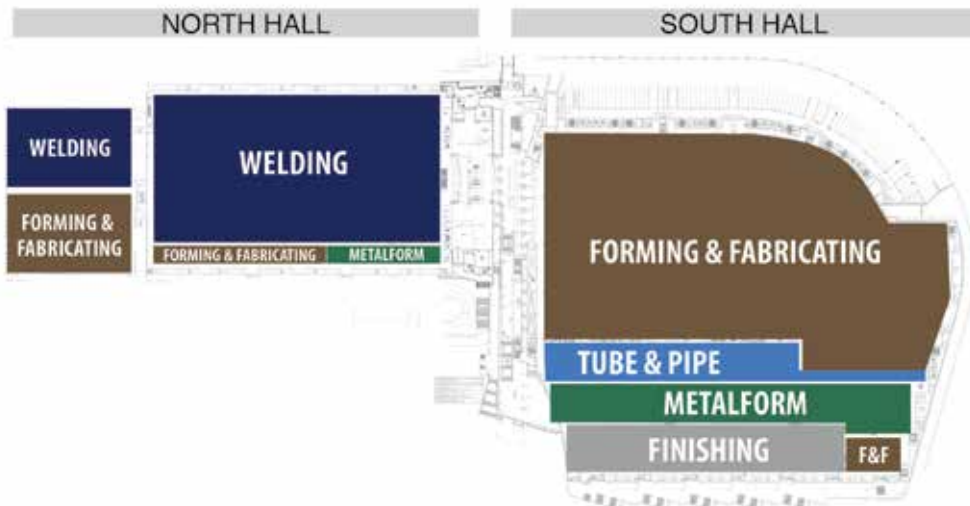
SEE IT ALL UP CLOSE AND IN ACTION!

Arc Welding
 Assembly
 Bending & Forming
 Brazing & Soldering
 Business Services
 Coil Processing
 Cutting
 Fastening & Joining
 Finishing/Paint & Powder Coating
 Finishing/Plating
 Gases & Gas Equipment
 Hydroforming
 Inspection & Testing

Job Shop/Contract Mfg.
 Lasers
 Lubrication
 Maintenance & Repair
 Material Handling
 Metal Suppliers
 Plate & Structural Fabricating
 Press Brakes
 Punching
 Resistance Welding
 Robotics
 Roll Forming
 Safety & Environmental

Saws
 Software/Machine Controls
 Stamping
 Thermal Spraying
 Tool & Die
 Tooling
 Tube & Pipe Fabricating or Welding
 Tube & Pipe Producing
 Waterjet
 Welding Consumables
 Welding Machines

TECHNOLOGY FOCUSED PAVILIONS MAKE FINDING NEW PRODUCTS AND SERVICES EASY



Show Hours

Monday, November 18 10 a.m. – 6 p.m.
 Tuesday, November 19 9 a.m. – 5 p.m.
 Wednesday, November 20 9 a.m. – 5 p.m.
 Thursday, November 21 9 a.m. – 3 p.m.

Show Location

McCormick Place North & South Halls
 2301 S. Lake Shore Drive
 Chicago, Illinois 60616
mccormickplace.com

HOW TO REGISTER

Register today online at fabtechexpo.com. Or, download a printer-friendly registration form from the Web site and fax to (508) 743-9696. See page 12 for pricing information.

Register before November 15, 2013 for complimentary show admission. SAVE \$50

EXHIBITING COMPANIES SHOWCASING HUNDREDS OF PRODUCTS AND SOLUTIONS!

Exhibitor list by pavilion as of 8/2/13. Go to fabtechexpo.com for the most up-to-date list of FABTECH exhibitors.

FINISHING

ABB Inc-Robotics
Acme Finishing Co
ACT Test Panels LLC
Advanced Finishing USA
AFC Finishing Systems
AkzoNobel Powder Coatings
American Finishing Resources
Amberica Inc
Andantex USA Inc
Anest Iwata USA Inc
Argon Masking
Arkema Inc
Assured Testing Services
Atlati Inc
Avalta Coating Systems
B L Downey Company LLC
Baril Coatings USA
BASF - The Chemical Company
Bel Air Finishing Supply
Bex Spray Nozzles
BigC: Dino-Lite Scopes
Bronco Blast Equipment / Industrial Associates
Bulk Chemicals Inc
Caldan Conveyor A/S
Calvary Industries Inc
Cardinal Paint and Powder
Carpenter Chemicals LC
Castrol Industrial North America Inc
Cataforesis SA de CV
Catalytic Industrial Systems
CFCM Canadian Finishing & Coatings Manufacturing
Chemettal US Inc
Chemical Coaters Assoc Int'l
Cianflone Scientific Instruments Corp
Coil World Magazine
Coil-Met Spray Booths Inc
Combustion and Systems Inc
Coral Chemical Co
Custom Fabricating & Supplies
Daitoku Webb
Decoral System USA Corp
DeFelsco Corp
DeVilbiss Ransburg BGK Binks
DuBois Chemicals
Duroair Technologies Inc
Dustcontrol Inc
Dynabrade Inc
Echo Engineering
Eisenmann Corp
Elcometer Inc
Electrocoat Association, The

FINISHING

Electro-Steam Generator Corp
ElektroPhysik USA Inc
Enhancement Technologies / Sublitem-Miroglio
EPSI (Engineered Products & Services Inc)
Ervin Industries
FAMIS Inc - PowderDepot.com
Fischer Technology Inc
Flexovit USA Inc
Forrest Technical Coatings
Fostoria Process Equipment Div of TPI Corp
Gema USA Inc
General Automatic Transfer General Fabrications Corp
George Koch Sons LLC
Global Finishing Solutions
Goff Inc
Graco Inc
Guspro Inc
Hentzen Coatings Inc
Houghton International - Surface Finishing
Hubbard-Hall Inc
IFS Coatings Inc
Intech Services Inc
IntelliFinishing KCI
Keco Engineered Coatings
Keller USA Inc
Keyland Polymer Ltd
KMI Systems Inc
Koch Filter Corp
Kolene Corp
Kremlin Rexson - EXEL
North America Inc
LDPI Inc
Liaoning Longyuan Industry Co Ltd
Madison Chemical Co Inc
Magic Rack/Production Plus Corp
Metal Finishing Magazine
Metcast Blast Cleaning Technologies
Metokote Corp
Midwest Finishing Systems
Mighty Hook Inc
MPC Plating
Munters Corp
NACE International
NikoTrack LLC
Nordson Corp
Northern Coatings & Chemical
Nova Verta USA
Osborn
Oshkosh Finishing Services
Paragon Laser Systems
Parker Ionics
Patriot Metal Finishing Systems
Paul N Gardner Co

FINISHING

Petroferm Inc
Pioneer Powder
Pneu-Mech Systems
Pollution Control Products
Porcelain Enamel Institute Inc
Powder Coating
Powder Coating Consultants
Powder Parts Inc
PPG Industries Inc
Precision Quincy Owens LLC
Pretreatment Equipment Mfg Inc
Prime Coatings
Proceco Ltd
Products Finishing Magazine
Protech Powder Coatings
Quaker Chemical Corp
Rapid Engineering
Red-Ray Manufacturing Co Inc
Richards-Wilcox Inc
Riveer Environmental Rohner
Samuel Strapping Systems
Sata Spray Equipment
Scientific Molecular Technologies
Shercon Inc
Sherwin Williams
Southern Systems Inc
Spray Systems Inc
Spray-Tech/Junair
Steelman Industries Inc
Stoelling LLC
Stripmasters Services Inc
SuperMax Tools
Tanis Inc
TCI Powder Coatings
The Blast Shop Inc
Therma-Tron-X Inc
Trimac Industrial Systems
TWN Industries Inc
Uni-Spray Systems Inc
Valmont Coatings
Vitraccoat America Inc
Vogel Industrial Coatings
Vulcan Catalytic Systems Ltd
VULKAN Blast Shot Technology
Wagner Industrial Solutions
Walther Pilot North America LLC
Webb-Stiles Co
Zero Blast Cabinets

FORMING & FABRICATING

3R Software Solutions
5S Supply
A & A Manufacturing Co Inc
A&V Waterjet Tech Inc
Absolent Inc
Abtex Corp
Accupress America Inc
AccuStream

FORMING & FABRICATING

AceCad Software
Acrotech Inc
ADF Systems Ltd
Advanced Manufacturing Solutions LLC
AKS Cutting Systems Inc
Akyapak Makina San ve Tic Ltd STI
Alabama Economic Development
Ales Pres Kalip Makina San Ve Tic Ltd LTI
Alliance For American Manufacturing
Alma Cam USA LLC
Alternative Parts Inc
AM Machinery Sales Inc
Amada America Inc
Ambrell Precision Induction Heating
American Photonics
American Punch Co
Andritz Soutec AG
Apex Machine Group
ARKU Coil Systems Inc
Armstrong / Kover Kwick Inc
Arro-Mark Co LLC
Arrowhead Manufacturers & Fabricators Assoc
ASKO Inc
ASSA ABLOY Entrance Systems
ATTEXOR Clinch Systems SA
Automec Inc
AZZ Galvanizing Services
BandSawBlades.com
Barton International
Baykal Makina A.S.
Beckhoff Automation
Behringer Saws Inc
Beka-Mak Makina Sanayi Ve Ticaret AS
Betelbender Manufacturing Inc
Big Ass Fans
Bilz Vibration Technology Inc
BIPRESS Srl
Blastec Inc
Bosch Rexroth Corp
Boschert Precision Machinery Inc
Bowlin Manufacturing Inc
Box On Demand by Plymouth Packaging
BP Automation
Bradbury Group, The
Brandt Engineered Products Ltd
Braner USA Inc
Brobo / Ken Bergman & Assoc LLC
Bruker AXS Inc
BTM Saws
Burghardt + Schmidt GmbH
Burr King Manufacturing Co
Bushman Equipment

FORMING & FABRICATING

Butech Bliss
BUWW Coverings Inc
Bystronic Inc
C Marshall Fabrication Machinery
Cagle Industrial Maintenance
Cambridge Lee Industries LLC
Cambridge Technology
Captive Fastener Corp
CardConnect
Carell Corp/Eagle Bending Machines
Cauffiel Corp
CavCom Inc
CB Mills
Cedar Valley Region of Iowa
CH Steel Solutions Inc
Cidan Machinery Inc
Cleveland Punch & Die Co
Cleveland Steel Tool Co
CML USA Inc
CMS
CMS - Italy
CNA Insurance
COE Press Equipment
Coherent Inc
Cold Shot Chillers
COLE-TUVE Inc
CombiLift USA
COMEQ Inc
Control Works Inc
Controlled Automation Inc
CorActive High Tech
Cordstrap USA Inc
Corporate Finance Associates - Chicago
Costa & Grissom Machinery Co
CR Cuscinnetti A Rulli Srl
Creaform
C&D Machines
D&H Machinery Inc
Daito USA Inc
Dake Corporation
Dalgakiran Makina San Tic AS
Dalmec Inc
Darex LLC
DAVI Inc
DCM Tech Inc
Delta Steel Technologies
Design Data
Design Storage & Handling Inc
Design-2-Part
DoALL Sawing Products
Docmagnet Inc
Donaldson Torit
Doringer Cold Saws
Dr Shrink Inc
DSH Storage Systems LLC
Durable Superior Casters
Durma SCA
Eberle America Inc
ECI M1
Econco/CPI

FORMING & FABRICATING

Edwards Manufacturing Co
EHRT/Porth Products Co
Elumatec North America Inc
Emmegi USA Inc
ENCO
Enutron International
Epicor Software Corp
Ergotech Inc
Ermaksan Makina Sanayi ve Ticaret AS
ESCO Tool Co
ESI - Engineering Systems Inc
Exact JobBOSS
Exact Metrology
Exact North America
Expansion Solutions Magazine
Fab Supply Inc
Fabricating & Metalworking Magazine
Fabricator, The
Fabricators & Manufacturers Association
FabSuite
FabTrol Systems Inc
Faccin USA Inc
FANUC FA America
Farley Laserlab USA Inc
FARO Technologies Inc
Faspro Technologies Inc
Fellton Inc
FF Journal/Modern Metals
Fiecp Corporation
FIPA Inc
Fladder-Hansen & Hundebol Inc
Flexarm Inc
Flex International Corp
Flowdrill Inc
FMS Machine Tool Inc
Focus Technology co.,ltd
FormUSA
Formdrill USA Inc
Formtek Metal Forming/Hill Engineering
Friggi N.A. Inc
Garrick USA
Gasparini S.p.A.
GE Mathis Co
Generon IGS
Genius Solutions
GH Binroth Co
Global Shop Solutions
Global Trade Specialists, Inc
GMA Garnet USA Corp
Gorbel Inc
Gostol TST d.d.
Graitec Inc
Guild International
Haberle / Ken Bergman & Assoc LLC
Haco Atlantic Inc
Haeger Inc
Halifax Rack & Screw
Hangzhou Fukang Hardware Plastics Co Ltd

Interested in Exhibiting? Visit fabtechexpo.com/reserve-booth.com to learn how your company can take part in this exciting event!

FORMING & FABRICATING

Han-Kwang USA Inc
Hans Weber Sales
and Service Corp
HE&M Saw Inc
Heck Industries
Herr Voss Stamco
HGG Profiling B.V.
Hilalsan Makina
Endustriyel Ve Tic
LTD STI
Hiwin Corp
Hougen
Manufacturing Inc
Hursan Hidrolik Presi
Ve Takim Tezgahtari
Sanayi Ticaret AS
Hyd-Mech Group Ltd
Hypertherm Inc
igus Inc
II-VI Infrared
Imperial Blades
Imperial Systems Inc
Incoforma Inc
Industrial Laser
Solutions
Industrial Machine
Trader
Industrial
Magnetics Inc
Industrial Maid LLC
Industrial Market Place
Industrial Molded
Rubber Products
Infor
InfoSight Corp
InSite Solutions LLC
International
Knife & Saw Inc
International
Rollforms Inc
International
Technologies Inc
International
Waterjet Parts
ISB Group
Jarvis Cutting Tools Inc
JET
Jet Edge
JETCAM-NestONE
Solutions
JMR Industrial
JMT USA
Jobscope Corp ERP
Johnson Bros Metal
Forming Co
KAAST Machine
Tools Inc
Kalamazoo
Machine Tool
Kar Metal San Ve
Tic LTD STI
Karl Heesemann
Maschinenfabrik
GmbH & Co KG
Kasto Inc
Kendor Steel Rule Die
Kent/Iesgo
Kentucky Gauge
Hymark
Kern Laser Systems
Kern Liebers Texas Inc
Ketec Precision
Tooling Co LTD
KeyedIn Solutions
Kinetic Cutting
Systems Inc
Klingelhofer Corp
KMT Waterjet
Systems Inc
KNUTH Machine
Tools USA Inc
Komatsu America
Industries LLC
Koolant Coolers
Koyo Giken Inc
Lantek Systems Inc
Lapham-Hickey Steel
Laser Experts Inc
Laser Mechanisms Inc

FORMING & FABRICATING

Laser Optics &
Mechanisms
Laser Research Optics
LaserRite
LaserStar
Technologies Corp
Lazer Safe Pty Ltd
LBI La Boschiny Inc
LENOX
Levetek Intl LLC
Linsinger
Maschinenbau GmbH
Lissmac Corp
LS Industries Inc
LT Ultra Precision
Optics
LVD Strippit
Machine Concepts Inc
MachineTools.com
Magestic Systems Inc
Magnetic Products Inc
Manufacturing News
Manufacturing
Solutions
Marvel
Manufacturing Co
Massaging Insoles
by Wavewalkers Ltd
Masteel America Corp
Master Magnetics
Mate Precision Tooling
Mazak Optonics Corp
MB Metal Technologies
MCK Machinery
Systems Inc
Measurement Systems
Intl A Rice Lake
Weighing
Systems Co
MegaFab-Piranha
Whitney-Bertsch
Messer Cutting
Systems
MetalFinish
Metalix CAD/CAM Ltd
MetaMation Inc
Metform
International Ltd
Metslaw Systems Inc
Metreel Inc
Metronor Inc
Midwest Group One
Midwest Tool Inc
MIE Solutions Inc
Modern Manufacturing
Technologies
Mohawk Machinery Inc
MTA-USA LLC
MultiCam Inc
Murata Machinery
USA Inc
Nadella
NAP Gladu
Nebraska Public
Power District
Nitto Denko
America Inc
Nitto Kohki USA Inc
Norlok Technology Inc
Northrop Grumman
Nufern
O'Brien
Installations Ltd
Ocean Machinery Inc
Ohio Laser LLC
Okutani Ltd
OMAX Corp
OmegaCube
Technologies
Oncor
Ophir Optics LLC
Oxford Instruments
Pangborn Corporation
Pannier Corp
Parker Hannifin
Peddinghaus Corp
PEP Polymet
Perfect - Score
Technology

FORMING & FABRICATING

Perfection Global LLC
Phillips Saw & Tool Inc
Phoenix Metals Co
Pinnacle Industrial
Automation Inc
Pinnacle LGS
Polyurethane
Products Corp
Praxair Inc
Preco Inc
Prestige Equipment
Corporation
Prima Power North
America Inc
Prodevco Industries Inc
Punch Press
PythonX-Burlington
Automation
Radan
RAS Systems LLC
Red Bud Industries
Richardson
Electronics Ltd
Right Corner of Texas
Rigidized Metals Corp
Riteway Brake Dies Inc
R-K Press Brake
Dies Inc
RMI Laser LLC
Rocklin
Manufacturing Co
Roll Forming Corp
Rosler Metal
Finishing USA LLC
Rousseau Metal Inc
RUF Briquetting
Systems
Saar Hartmetall
USA LLC
Sage Automation Inc
Salvagline America Inc
Sawblade.com
Scotchman
Industries Inc
Semyx LLC
Service Lamp Corp
Seuthe GmbH
Shajeng
Hardware Co Ltd
Sharpe Products
Shop Data Systems Inc
Shoptech Software
SigmaTEK
Systems LLC
Site Location
Partnership
SKM Industries Inc
SlipCon USA Inc
SME
SPANCO Inc
SPI Lasers
Stanley Vidmar
State of Wyoming
Steel King
Industries Inc
Steel Storage
Systems Inc
SteelOrbis
Stor-Loc Corp
Striker Systems
Studio Eleven/
Vivid Mfg Group
Sugar Steel Corp
Superior Roll Forming
Synetik Design
Taiwan Mold
Tool Co Ltd
Taloc USA
Tapeswitch Corp
Techni Waterjet
Technical Services Inc
Technical Translation
Services
Temple Economic
Development Corp
TeraDiode Inc

FORMING & FABRICATING

The M K Morse
Company
The RDI Group
Thermal Care Inc
TigerStop LLC
TigerStop LLC
Timesavers Inc
Today's Indus
Prds & Solutions
Tool Peaks
Industries Ltd
Toolmen Corp
Transfluid
Maschinenbau GmbH
Travelers
Companies Inc
TRUMPF Inc
Tsune America LLC
Tube Form Solution
Tube Works Inc
Tubex Technology
Machinery
TYKMA Technologies
UltraLube
Unified
Purchasing Group
Unipunch Products Inc
United Industries Inc
Unitool Punch & Die
Universal Drilling &
Cutting Equipment
Ursviken Inc
US Industrial
Machinery Co
UZAY Makina AS
V&S Galvanizing LLC
Valley Craft
Industries Inc
Verisurf Software Inc
Virtek Vision
International
VKS - Visual
Knowledge Share
VMECA
Voith Turbo Inc
Voortman Corporation
VyTek
Walhonde Tools Inc
Walker Magnetics
Waterjet Corporation
WDM Rolls
Well Engineering
North America
West Virginia
Development Office
Wheelerator Group
Whistler & Sons
Inc. SB
Wila USA
Williams Metals and
Welding Alloys Inc
Wilson Tool
International
Wireway Husky Corp
World Machinery &
Saw System CO
Wuxi Toprich Forging
Manufacture Co Ltd
YellowJack /
ITW Muller
Yestool/Aloris USA
Zund America Inc

METALFORM

Accra-Wire Controls Inc
Accurate Die Design
Inc/Logopress3
Acme Refining
Admiral Steel LLC
AIDA-America Corp
Airloc
Alcos Machinery Inc
Alliance
Manufacturing Inc
Allmac Manufacturing
Co Ltd
Alma Machinery Co
Almco Inc
Almetals Co

METALFORM

Alro Steel Corporation
American
Manufacturing Inc
Anchor Danly
Anchor Lamina
AP&T North
America Inc
Art Technologies Inc
Associated Spring
Raymond
Automotive Engineering
Automated
Tapping Systems
Avure Technologies
Bachman Machine Co
Bad Dog Tools
Balluff Inc
Beckwood Press Co
Beijing Mingda
Metals Co Ltd
Beipiao Power Steel
Casting Co Ltd
Bestar LLC
BesTech Tool Corp
Big Steel Rack
and Technique Inc
Bihler of America Inc
Bohler Uddeholm Corp
Brown Boggs
Bruderer Machinery Inc
BTD
Bunting Magnetics Co
Cangzhou Ruier
Stamping &
Manufacturing Co Ltd
Carbinate Metal
Coatings
Carl Zeiss Industrial
Metrology LLC
Chemtool Inc
Christy Metals
CHS Automation/
Pneumatic Feed
Service Inc
CIECO Inc
Cimatron
Technologies Inc
Clips & Clamps
Industries
Closed Loop Recycling
COE Press Equipment
Colt Automation LTD
Cometel S A
CPM Tool & Die
Manufacturer Co Ltd
Dalian Xingli Industrial
Products Co Inc
Dallas Industries Inc
Daubert Cromwell
Dayton Progress Corp
Delta Industrial
DESCO Canada Ltd
Die Tech Services Inc
Diehl Steel Co Inc
Dongguan Kingwo
Tool Co Ltd
Dongguan Meinie Tool
& Die Co Ltd
Dongguan Sincere Tool
Co Ltd
Dongguan Zhijia Tool &
Die Co Ltd
Dongying Changrui
Investment Casting
Co Ltd
Dura-Carb Inc
Durr EcoClean Inc
Dust Shield LLC
Dynamic
Eagle Brass Co
Eas Mold & Die
Change Systems Inc
Ebner Furnaces Inc
Erhardt Tool &
Machine
Elizabeth Carbide
Components
Engineering Technology
Associates Inc

METALFORM

Enprotech Industrial
Technologies LLC
Euromeccanica
Group SPA
EVA-Tool Ltd USA
F & G Tool and Die Co
Fagor Arrasate
Fast Rite International
Feed Lease Corp
Fibro Inc
FluidForming Americas
Fong Kai USA Inc
Forming
Technologies Inc
FORMTEK-ME
Fuchs Lubricants Co
Fuxin Tianyuan Steel
Balls Mfg Co Ltd
Gerb Vibration Control
Systems
Global Metal Spinning
Solutions Inc - Denn
USA Metal Forming
Grand Rapids
Machine Repair
Greenerd Press &
Machine
Company Inc
Gruber Tool & Die Inc
Hangsterfer's
Laboratories Inc
Han's Laser
Hebel Shinyee
Trade Co Ltd
Heim Group, The
Heim Instrument Co Inc
Helmel Engineering
Products Inc
Hexagon Metrology Inc
Heyco Metals Inc
Hidral-Mac Inc
Hiima Division Carr
Lane Roemheld
Houghton
International Inc
Hutchison Tool
Sales Co
Hyson Products
Industrial Assets
Machinery
Industrial
Innovations Inc
Interlaken Technology
International
Chemical Co
International Mold Steel
IonBond
ISGEC Heavy
Engineering Ltd
Iturrospe
Jiangsu Yangli Group
Co Ltd
Jiangsu Zeen Tooling
Co.,Ltd
Jiashan Dier Electro
Mechanical
Technology Co Ltd
Jiaxing NYC Industrial
Co.,Ltd
JIT Automation Inc
Kaeser
Compressors Inc
Koley Engineering Inc
Komatsu America
Industries LLC
Kosmek USA
Kyzen Corporation
Latrobe Specialty Steel
Distribution
Leifeld Metal
Spinning AG
Lenzkes Clamping
Tools Inc
Liaoning Suhang
Special Casting
Materials Co.,Ltd
Linear Transfer
Automation Inc
Link Electric &
Safety Control

METALFORM

LSP Industries Inc
 Lucky Harvest Co Ltd
 Macrodyne
 Technologies Inc
 Manitowoc Tool & Manufacturing LLC
 Mayfran
 International Inc
 Metalloid Corp
 MJC Engineering & Technology Inc
 Moeller Precision Tool Multipress Inc
 Nashville Wire Products Co
 NGK Metals Corp
 Nidec Minster Corp
 Nikon Metrology Inc
 Ningbo Yuhua Industrial (Group) Co., Ltd
 Nordson EFD
 Norwalk Innovation
 Nucap Industries
 Oak Press Solutions Inc
 ODM Tool & Manufacturing Co Inc
 OGS Industries
 Ortech Inc
 Otto Trading Inc
 Otto Trading Inc
 P/A Industries Inc
 Pacesetter Systems
 Panjin Tiangong Precision Casting Co Ltd
 Pax Machine Works Inc
 Pax Products Inc
 Peng Fei Metal & Mold Co LTD
 Penn United
 Technologies Inc
 Peterson Spring
 Philpott Rubber
 Plex Systems
 Pottiez America LP
 Precision Fluids
 Precision Metalforming Association
 Precision Punch Corp
 Precision Stamping Products
 Precision Steel Warehouse Inc
 Premier Tooling & Mfg Inc
 Prestige Consulting Inc
 Protop Lifts Inc
 Process Technologies Group Inc
 Profil System Inc
 Pronic Inc
 Puritan Magnetics
 Raffin Construction Co
 Rafter Equipment Corp
 Rainbow Metal Technologies Co Ltd
 Rapid-Air Corp
 Ready Technology Inc
 Repron Machine and Tool Industry & Trade Inc
 Richard Hough Ltd
 Rock Valley Oil & Chemical Co Inc
 Roll Former Corp
 Rolled Metal Products
 Roller Die + Forming Co
 Ross Controls
 Samco Machinery Ltd
 Samson Roll Formed Products Co
 Schmolz + Bickenbach USA Inc
 Schuler Incorporated
 Seateze A Unit of Jason Inc
 Senator International
 Sentry Insurance

METALFORM

Serapid Inc
 SEYI Presses
 ShengYuan Mechanical Equipment Engineering Co Ltd
 Shenzhen Haiyi Tool & Die Ltd
 Shenzhen Huayanda Technology Co Ltd
 Shenzhen SYH Tooling Co Ltd
 Shijiazhuang Fitex Trading Co Ltd
 Shop Edge Software Inc
 Siemens Industry Inc - Motion Control
 Silverstar Manufacturing Co Ltd
 SKF USA Inc
 Smedberg Machine Corp
 Solar Atmospheres Southern Machinery Repair Inc
 Special Springs LLC
 Specialty Metals LLC
 Spectrum Industries Inc
 SST LLC
 Stainless Sales Corp
 StampingSimulation
 Co Pty Ltd
 Stamtec Inc
 Stripmatic Products Inc
 Superior Die Set Corp
 Sutherland Presses
 SWH Precision / Formtechnik
 TDS Automation, A Doerfer Company
 Techniks Inc
 Technomagnete Inc
 The LS Starratt Co
 Toledo Blank Toledo Integrated Systems
 TOP YES Precision Metal Products Co LTD
 Torque Inc
 Tower Oil & Technology Co
 Trans-Matic Mfg Co Inc
 Turck Inc
 Uelner Precision Tools & Dies
 Ulbrich Stainless Steels & Special Metals Inc
 Ultrathat Tool & Design Inc
 Unisorb Installation Technologies
 Unist Inc
 United Aluminum Corp
 United Performance Metals
 Van-Am Tool & Engineering LLC
 Vaughn Manufacturing Co
 Versatility Tool Works & Mfg Co
 Vibro Dynamics Corp
 Victory Tool
 Vulcan Tool Corp
 Weifang Baolong Precision Casting Co Ltd
 Wendt LLP
 Wieland Metals Inc
 Wilco Inc
 Wilson Tool/Impax Division
 Winner Circle Manufacturing Co
 Wintriss Controls
 Wuhan Jingliren Tool & Die Co Ltd
 Wysong
 Yamada Dobby Co Ltd

METALFORM

YuHuan Hongchu Valve Industry Co Ltd
 Zapp Precision Strip Zerust Corrosion Solutions (Northern Tech Intl Corp)
TUBE/PIPE/WIRE
 2020 Software Solutions Inc
 Accurex Measurement Inc
 Addison Machine Engineering Inc
 AddisonMckea, Canada Advanced Fabricating Machinery
 Advanced Tubular Technologies Inc
 AED Motorsport Products Ltd
 Ajan Elektronik Servis Sanayi Ve Ticaret Ltd Stl.
 Ajax Tocco Magnethermic Corp
 Alpine Bender Machinery
 AltaMAR Inc
 Ampco Metal Inc
 Baileigh Industrial Inc
 Bend Tooling Inc
 BLM GROUP USA Corp
 Changshu Special Shaped Steel Tube Co Ltd
 Chiyoda Kogyo-Maruka USA
 Clark Fixture Technologies
 CMF
 Coform LTD
 Comco USA Inc
 Continental Pipe & Tube Cut-Off Machines
 Cosen Saws
 Crippa SPA
 Current Tech
 Dalian Field Heavy Machinery Manufacturing Co Ltd
 data M Sheet Metal Solutions GmbH
 DELTA Computer Systems Inc
 Dimeco Alipresse
 Dubak Engineering Group LLC
 Eaton Leonard
 Eddytech Systems Inc
 EFD Induction Inc
 Elmaksan Makina
 EnvisionTEC Inc
 ERIEZ
 Eurolls S.p.A.
 FIBA Technologies Inc
 Fives Bronx Inc
 Foerster Instruments Inc
 Fontijne Formitt Inc
 Fontijne Grotnes Inc
 Galaxie Corporation
 Gem Tool Corporation
 GH Induction Atmospheres LLC
 Graebener-Reika Inc
 GRB Innovations LLC
 H & S Tool Inc
 Haeusler AG
 Hafendorfer Machine Inc
 Haven Manufacturing Corp
 Horn Machine Tools Inc
 Huth
 Innovative Tube Equipment Corp
 INNOVO Corp

TUBE/PIPE/WIRE

Inspectech Analygas Group Inc
 J & S Machine Inc
 Kent Corp
 Kinkelder USA
 Kusakabe America Corp
 Laboratory Testing Inc
 Lillbacka USA Inc
 Lomar Machine & Tool Co
 Magnetic Analysis Corp
 Maj Research SpA
 Manchester Tool & Die Inc
 Mecco Marking & Traceability
 MidWest Machinery LLC
 Miic America Inc
 Mill Masters
 NAKATA Mfg Co Ltd
 Nantong Reliant Co Ltd
 NDT Technologies Inc
 New-Form Tools Ltd
 Nikko Sanyo Co Ltd
 Olimpia 80 S R L
 OMNI-X USA
 OTO S.p.A
 Overton Industries
 Packsize LLC
 Passline Performance
 Pat Mooney Inc
 Peter Prinzing GmbH
 PHI
 Pillar Induction Pressroom Electronics Inc
 Proto-1 Manufacturing
 R&B Machining Inc
 Rattunde Corporation
 REA Elektronik Inc
 Roll Machining Technologies & Solutions
 Sanpro Industries Ltd
 Sertom Group North America
 SST Forming Roll Inc
 T&H Lemont
 TaurinGroup USA
 T-DRILL
 Thermatool Corp
 Thermo Scientific Portable XRF Analyzers
 Tools for Bending
 Toskar Machinery
 Trilogy Machinery Inc
 Triple Crown Products
 Tru-Cut Saw Inc
 Tube & Pipe Technology
 Tube 2014 Messe Dusseldorf North America
 Tube Bending Concepts Inc
 Universal Tool & Engineering
 Universal Tube & Rollform Equipment Corp
 VJ Technologies Inc
 WAFIOS Machinery Corp
 Wauseon Machine & Manufacturing Inc
 Winton Machine Co
 Wuxi Dixin Steel Pipe Co Ltd
 ZMac Transportation Solutions

WELDING

3M
 ABB Inc-Robotics
 ABICOR Binzel Corp
 Above Material Technology Co., Ltd
 Ace Industrial Products
 Advanced Cylinder Products
 Air Liquide
 Industrial U.S. LP
 Air Products and Chemicals Inc
 Airflow Systems Inc
 Airgas Inc
 Ajan Elektronik Servis Sanayi Ve Ticaret Ltd Stl.
 Alabama Laser
 Alfra USA LLC
 Alcryo
 ALM Materials Handling
 Alpha Professional Tools
 America Fortune Company
 American Friction Welding
 American Institute Of Steel Construction
 American Society For Nondestructive Testing
 American Technical Publishers
 American Torch Tip Co Inc
 American Welding Society
 AMET Inc
 Anand Arc Ltd
 Antec Electronics Co Ltd
 APEL International
 Aquasol Corp
 ARC Abrasives Inc
 Arc Machines Inc
 Arc Specialties Inc
 ARCON Welding Equipment LLC
 ArcOne
 Ardleigh Minerals Inc
 ATI Industrial Automation
 ATI Stellram
 Atlanta Drive Systems Inc
 Auburn Manufacturing Inc
 Avani Environmental Intl Inc
 AVS Industries LLC
 AWS Foundation
 AWS Publications / World Engineering Xchange
 Axelent Inc
 Axxair-USA
 B&B Steel Products Inc
 Bay State Surface Technologies
 BeamMaster (AGT)
 Beijing Essen Welding & Cutting Fair
 Bellman-Melcor LLC
 BESSEY Tools North America
 Bevel Tools
 BF Entron Ltd
 Bluco Corp
 BMM Welding Material Co
 Bohler Welding Group USA Inc
 Bonal Technologies Inc
 Bore Repair Systems Inc
 Bosch Power Tool Corp
 Bradford Derustit Corp

WELDING

Broco Inc
 Bruker Elemental HXRF
 Buffalo Shrink Wrap
 Bug-O-Systems/
 Weld Tooling Corp
 Buhin Corp
 Built Systems
 Burny & Kaliburn
 C H Symington & Co Inc
 C.M.M. SRL
 Cadi Co Inc
 Capital Weld Cleaners
 Carr Lane Manufacturing Co
 CDS Corp
 CEIA USA
 Centerline (Windsor) Ltd
 Cerbacol Ltd
 CGW-Camel Grinding Wheels USA
 Changzhou City Yunhe Welding Material Co Ltd
 Changzhou Huarui Welding & Cutting Equip Co Ltd
 Changzhou Longren Mechanical & Electrical Co Ltd
 Changzhou Shine Science & Technology Co Ltd
 Changzhou Wujin Golden Globe Welding & Cutting Machinery Co Ltd
 Changzhou Zhengyang Welding Material Co Ltd
 Chart Inc
 Chicago Pneumatic Tool Co
 Chung I Silver Solder Co Ltd
 CK Worldwide
 Clara Vision
 Clean Air Filters Inc
 Climax Portable Machining & Welding Systems
 Cloos Robotic Welding Inc
 CM Industries Inc
 COB Industries Inc
 Compressed Air Computer Engineering Inc
 Computers Unlimited (TIMS Software)
 CONCOA Inc
 Construction Electrical Products
 Coral SPA/Industrial Air Solutions
 Core Temp Inc
 Corewire Ltd
 COR-MET INC
 CS Unitec Inc
 C-spec
 Cyl-Tec Inc
 D/F Machine Specialties Inc
 Dakota Ultrasonics
 Dataweld Inc
 Dengensha America Corp
 DE-STA-CO
 Diagraph MSP an ITW Company
 Diamond Ground Products Inc
 Diamond Saw Works Inc
 Dinse Inc
 Direct Wire & Cable
 Diversi-Tech Inc
 DM3D Technology LLC

Interested in Exhibiting? Visit fabtechexpo.com/reserve-booth.com to learn how your company can take part in this exciting event!

WELDING

Dr Gold & Co
DualDraw LLC
DURUM USA
Dynaflux Quality Products/QWP Division
Dynatorch Inc
E. H. Wachs
Easom Automation Systems Inc
Easy Abrasives LLC
ELCo Enterprises
Elcometer Inc
Electron Beam Technologies Inc
Element Materials Technology
Ensitech PTY Ltd
ENTRON Controls LLC
Environmental Air Solutions
Equipois Inc
ESAB Welding & Cutting Products
ESAB Welding & Cutting Products
Eta/INDUX Sa De Cv
Evolution Power Tools LLC
Factory Cat
FANUC America Corporation
Fastenal Company
Fein Power Tools Inc
Felton Brushes Ltd
Ferris State Univ
Fibre-Metal By Honeywell
Filter 1
Flame Technologies Inc
Freer Tool & Supply
Frommelt Safety Products
Frontius USA LLC
Frontics America Inc
Funabori Co Ltd
Fusion Inc
G&J Hall Tools Inc
Gaozhou City
Longsafety Labor Insurance
Gasflux Co
GE Measurement & Control
Genesis Systems Group
Genstar
Technologies Inc
Goff's Enterprises Inc
Golden Eagle
Minmetals (Beijing)
Widg Materials Co
Goss Inc
Grainger
GSM America Inc
Gullico International
H & M Pipe Beveling Machine Co Inc
H.C. Starck GmbH
Hangzhou Apollo
Import and Export Co Ltd
Harbert's Products Inc / Allied Flux
Reclaiming Ltd
Haynes International
Hermes Abrasives Ltd
Heromin Machinery Canada Ltd
Heron Machine & Electric Industrial Ltd
Hex-Hut Shelter Systems Ltd
Hi TecMetal Group Inc
Hisco
Hobart Institute of Welding Technology
HOT COILS
Hotfoil EHS Inc
Hyundai Welding

WELDING

IBEDA /Superflash Compressed Gas Equipment Inc
Ideal Welding Systems LP
igm Robotic Systems Inc/PTR-Precision Te
IMC Marks, LLC
IMPACT
Engineering Inc
Industrial Solutions & Innovation LLC
Innerspec Technologies
Interactive Safety Product Inc
Intercon Enterprises Inc
International Thermal Spray Assoc (ITSA)
International Welding Equipment LLC
International Welding Technologies Inc
InterTest Inc
IPG Photonics
Iroo Automation Inc
Ironworkers Management Progressive Action Cooperative Trust (IMPACT)
ITW Professional Brands - Dykem Brand
JASIC Technologies America Inc
Javelin Industrial
JAZ USA Inc
Jenoptik Laser Technologies
Jetline Engineering
Jiangsu Meixin Photoelectric Technology Co Ltd
Jinan Huaao Electric Welding Machine Co Ltd
Jingyu Welding & Cutting Co Ltd
JLC Electromet Pvt LLC
John Tillman Co
Joysun Abrasives Co Ltd
JP Nissen Co
Kalas Wire Inc
Kalerda Group Co Ltd
Kaplan Industries Inc/
Midwest Cylinder
Kawasaki Robotics (USA) Inc
Kemper America Inc
Kemper System America (Cantesco)
Kennametal Stellite
Keystone Fastening Technologies
Kimberly-Clark Professional
Kiswel USA Inc
Klimament USA LLC
KLINGSPOOR Abrasives Inc
Kobelco Welding of America Inc
Kodima Co Ltd
Koike Aronson Inc
KUKA Robotics Corporation
Kuka Systems North America
Kullen-Koti GmbH
LA-CO Industries/Markal
Lapco Mfg Inc
Laseraqe Technology Corp
Liburdi Automation Inc
Lin An Da Yang Welding Material Co Ltd

WELDING

Lincoln Electric Co
Linemaster Switch Corp
LONGEVITY Welding & Cutting Products
LORD Corporation
LPR Global Inc
Lucas-Milhaupt Global
Brazing Solutions
Luvata Ohio Inc
Machitech Automation
MAGMAWELD
Magnatech LLC
Manufacturing Solutions Inc
Maryland Brush Co
Matheson
Mathey Dearman
Matuschek Welding Products Inc
MCR Safety
Medi Mail Inc
Meltric Corp
MeltTools LLC
Mercer Abrasives a Division of Mercer Tool Corp
Meta Vision Systems Inc
Metabo Corp
Metal Man Work Gear Co
Metal Science Technologies Ply Ltd
Metalizing Equipment Co PVT Ltd
Mexico Industry
Newspaper
Michigan Pneumatic Tool Inc
Micro Air Products
Midalloy
Miller Electric Mfg Co
Miyachi Unitek Corp
MK Products Inc
Motofit Robotics SA
MTI Power Services
MULLER
OPLADEN GmbH
Moltipip Inc
Nabtesco Motion Control Inc
Nation Wide Products
National Bronze & Metals Inc
National Kwikmetal Service LP
National Standard LLC
Nederman Inc
Nelson Stud Welding
New Anhua (Zhengzhou) Abrasives Co Ltd
New Fire Co Ltd
Newland (Tianjin) Welding Wire and Metal Products Co Ltd
NIMAK NA
Ningbo Feihong United New-Materials Co Ltd
Ningbo Geostar Photoelectric Technology Co Ltd
Ningbo Jinfeng Welding & Cutting Machinery Manufacture Co Ltd
Ningbo Powerway Alloy Material Co Ltd
Nordfab
North (Nanjing) Instrument Technology Industries Group
Norton Abrasives
NSRW
Olympus NDT
Optrel AG
OR Lasertechnology Inc
ORS Nasco
Osborn
OTC DAIHEN Inc

WELDING

Outokumpu VDM USA, LLC
Oxford Alloys Inc
Oxylance Inc
Pace Technologies Corp
Pador Marketing Group
Pan Taiwan Enterprise
Panchmahal Steel Ltd
Pandjiris Inc
Parker Dominick Hunter
PDS Barteck Inc
Pearl Abrasive Co
Permadur Industries Inc
PFERD INC
Phoenix International Inc
Pipe Filters Local Union #597
Plasma Automation Inc
Polymet Corp
Praxair Inc
Praxair Surface Technologies/TAFAC Inc
Precitec Inc
Preston-Eastin Inc
Pro Arc Inc
PROFAX / LENCO
Pro-Fusion Technologies
PT-Mat
PushCorp Inc
Pyro Shield Inc
Quality Equipment Distributors Inc
Rajratna Stainless Wire (USA) Inc
Radyn Corp
Rasco FR Inc
Ratermann Mfg Inc
Reis Robotics USA Inc
Resistance Welding Solutions Inc/Lors Machinery
Revo Industries Inc
REXARC International
Rex-Cut Abrasives
Rhino Cutting Systems
Robotiq
Robotmaster- In-House Solutions
RoboVent Product
Rofin-Sinar Inc
Rolled Alloys
Romar / Red Rock LLC
rose plastic USA LP
Ruko Tool Inc
Ruwac Industrial Vacuums
Safety Supply Illinois
Saf-T-Cart Inc
Sakura of America
Sandvik Materials Technology
Sanpo Publications Inc
Sanrex Corp
Saru Silver Alloy Private Limited
Save Phase Inc
Schaefer Ventilation
Sciaky Inc
Scrape-N-Burr
Selectrode Industries Inc
Sellstrom Manufacturing Co
Senor Metals Pvt Ltd
Servo-Robot Inc
Shandong Huaye
Tungsten & Molybdenum Co Ltd
Shandong Rottie New Material Science and Technology Co Ltd
Shanghai Gonglue Machinery & Elect Tech Co Ltd

WELDING

Shanghai Hutong Enterprise Group
International Trade Co Ltd
Shantou Inst of Ultrasonic Instruments Co Ltd (SIUI)
Shenzhen Stahlwerk Welding Technology Co Ltd
Sherwin Inc
sia Abrasives Inc
Simufact-Americas LLC
SMC Corp Of America
SMK Co Ltd
Soph Inc
Sorex Welding Co Ltd
Southern Copper & Supply
Southern Welding Systems Intl
Special Metals Welding Products Co
St Louis Metallizing Co
Staubli Corp
Steelmax Tools
SteelTailor Ltd
Steiner Industries
Strong Hand Tools
Strong Hold Products
Stud Welding Associates Inc
Suhner Industrial Products Inc
Sulzer Metco US Inc
Sumner Manufacturing Co Inc
Sundisc Abrasives USA
Sunstone Engineering Superior Glove Works Ltd
Superior Products
Swagelok Marketing Services Co
Taylor Winfield Technologies Inc
TDC Filter Inc
TEAM Industrial Services
Team Industries Inc
TEC Torch Co Inc
Techflex Inc
Techniweld
TECMEN Electronics Co Ltd
Teco Corte S.L.
Telwin SPA
Tennessee Rand Inc
Terralux
THE ROUCHE CO LLC
Thermacut Inc
Thermo
Thermion Inc
THR Machinery
Tianjin Jinlong Welding Material Co Ltd
Tianjin Super-Tech Machinery & Equipment Co Ltd
Tianjin Xinsen Welding Materials Co Ltd
Tip Tig USA
Titus Flux Inc/American Welding & Flux
TJ Snow Co
Top Cat Air Tools
Trafimet USA
Trendex Information Systems Inc
Tri Tool Inc
Tri-Mer Corp
Tru-Weld Stud Welding Products
Trystar
Tsubaki KabelSchlepp America
Tulsa Welding School
U-Mark Inc

WELDING

United Abrasives Inc /SAIT
United ProArc Corp
Uniweld Products Inc
Victor Technologies
Victor Technologies
Victory Plasma Systems
Visual Components
VSM Abrasives
Wall Colmonoy Corp
Walter H Jelly Ltd
Walter Surface Technologies
Washington Alloy Co
Watts Specialties Inc
Weiler Corp
Weld Engineering Co
Weld.com
Weld-Aid Products
Weldas Co
Weldcoa
Welder Training & Testing Institute
Welding Alloys USA
Weldlogic Inc
Weldsale LLC
Weldship Corp
Welker Engineered Products
Wendt USA LLC
Wenling Wanshun Electromechanical Manufacturing Co Ltd
Wenzhou Xidin Electronics Technology Co Ltd
West Chester Protective Gear
Western Enterprises WILTON
Winnox Industries Ltd
Wirecrafters
Wisconsin Wire Works Inc
Wise Welding Technology & Equipment Co Ltd
Witt Gas Controls
Wolf Robotics LLC
Wuhan Welhel Photoelectric Co Ltd
Wuxi Hualian Precision Machinery Co Ltd
Wuxi Ronniwell Machinery Equi
Wuxi Volcano Welding & Cutting Equipment Co Ltd
Xinxiang Worldbest Patron Saint Co Ltd
Xiris Automation Inc
Yaskawa America Inc
Yildirim Sogutma Hava Komp Ins Gida San Tic Ltd
York Portable Machine Tools
Yunnan Hengyu Optical Electronics Co (Optech) Co
Zarbeco LLC
Zhejiang Changzheng Project Carbon Electrodes Co Ltd
Zhejiang Xinrui Welding Material Co Ltd
Zhejiang Yuejian Machinery Manufacture Co Ltd
Zhejiang Zhongda Special Steel Co Ltd
Zhengzhou Anxin Abrasives
Zibo Maikie Welding Equipment Co Ltd
ZJ Industries Inc

SPECIAL EVENTS

FREE AND OPEN TO ALL ATTENDEES

MONDAY, NOVEMBER 18

Keynote Presentation

9:00 a.m. – 10:00 a.m.

Location: Grand Ballroom (S100)

Speaker: **Alan Beaulieu**, President, ITR Economics™

NAVIGATING THE FISCAL REALITY



Business leaders are uncertain in the face of conflicting financial reports. What will Washington do? Will Europe pull through? Is China a problem? During this dynamic presentation, Alan Beaulieu, President of ITR Economics™, will take a

look at what's really going on in the US and in markets that impact our industry. He will present the economic outlook for the global economy with the clarity that business leaders have come to expect from ITR. This is a must-attend for decision makers who will gain the confidence to plan and position their company for success and prepare for changes that are coming over the next few years.

State of the Industry Executive Outlook

12:30 p.m. – 1:30 p.m.

Location: FABTECH Theater, Grand Concourse

Is the U.S. manufacturing renaissance fact, or just fiction? Conventional wisdom points to improvement, but many factors such as the fiscal cliff and tax structure, healthcare costs, and labor have impacted expected growth with many of the businesses that attend FABTECH. Hear from leaders representing job shops, manufacturers and other service providers who are dealing with the same issues discuss how they navigate these challenges to remain competitive in today's economy. Join the interactive Q & A led by Economist Alan Beaulieu, to ask questions and offer your perspective on the future of the industry. Return to your company with new insights that will guide your decision-making in 2014.

Moderator: **Alan Beaulieu**, President, ITR Economics™

Panel: **Jeff Oravitz**, President, MetoKote Corporation

Dr. Dennis S. Bray, President & CEO, Contour Precision Group LLC

William J. Adler, Jr., President, Stripmatic Products, Inc.

TUESDAY, NOVEMBER 19

Keynote Presentation

8:30 a.m. – 9:30 a.m.

Location: FABTECH Theater, Grand Concourse

Speaker: **Ron Horton**, Executive VP of Health, Safety and Environmental Services Sector, Afterburner, Inc.

ACCELERATING PERFORMANCE THROUGH FLAWLESS EXECUTION



Flawless Execution is a continuous improvement model that was born and bred in the zero-tolerance-for-error world of military aviation and elite-group combat operations where failure is not an option. Hear former

Fighter Pilot and Nuclear Powered Aircraft Carrier Commanding Officer, Ron Horton, share the model's leadership tools that can be used by organizational leaders and teams to leverage the same execution, leadership, communication, teamwork, and disciplined techniques of Elite Military professionals. Learn how to accelerate your team's performance and begin building a team that executes flawlessly every day.

WEDNESDAY, NOVEMBER 20

Solutions for a Qualified Workforce Pipeline

12:30 p.m. – 1:30 p.m.

Location: FABTECH Theater, Grand Concourse

Workforce development has leaped to the top of the chart as one of the key challenges manufacturers face to remain competitive in today's global economy. Hear a panel of leading professionals discuss how education, industry and government are working together to build and strengthen the future manufacturing workforce pipeline. This panel will enlighten attendees and outline solutions for developing employees of tomorrow to meet the skilled labor needs of today's manufacturer.

Moderator: **Pam McDonough**, President/CEO, Alliance for Illinois Manufacturing/ North Business & Industrial Council

Panel: **Stacey DelVecchio**, Product Development & Global Technology, Caterpillar

Joe Lampinen, Director, Engineering Services APG, Kelly Services

Scott Mazzulla, VP Planning and Development – CWI, Hobart Institute of Welding Technology

Jeannine Kunz, Director of Training and Development, SME

SPECIAL EVENTS



New Product Presentations

Location: FABTECH Theater, Grand Concourse

Sit in on brief exhibitor-led sessions of the best new products and technologies to hit the market at the FABTECH Theater. Dozens of companies will provide presentations on a wide range of topics throughout each day of the event. A daily schedule of presentations will be available by September 1 at fabtechempo.com/specialevents.

Professional Welding Competition

Monday, November 18: 10:00 a.m. – 5:30 p.m.

Tuesday, November 19: 9:00 a.m. – 5:00 p.m.

Wednesday, November 20: 11:00 a.m.

Announcement of winners

Location: North Hall, Booth N2299

Professional welders can sign up onsite to compete for a \$2,500 first prize, a \$1,000 second prize, and a \$500 third prize. Don't miss the chance to cheer on competitors as they demonstrate their skills to earn the title of "Best Welder in America". Contestants will make a single-pass SMAW weld with E7018 on low-carbon steel. Speed and quality will be the criteria.



NETWORKING EVENTS

TUESDAY, NOVEMBER 19

Happy Hour

3:00 p.m. – 5:00 p.m.

Location: North & South Halls

Mix and mingle with other attendees and exhibitors during Happy Hour beginning at 3:00 p.m. on Tuesday, November 19. Held on the exhibit hall floor, Happy Hour is a great way to network with peers in a relaxed, entertaining environment while perusing the technology in exhibitor booths.

Complimentary beverage ticket with event registration.

WEDNESDAY, NOVEMBER 20

Cocktails and Comedy

Doors open: 5:00 p.m.

Show: 5:30 p.m. – 6:30 p.m.

Location: FABTECH Theater,
Grand Concourse

Connect with your peers and enjoy a night of laughs at the annual FABTECH Cocktails and Comedy event. The event features a veteran group of Chicago's elite short-form improvisers known for specializing in quick-witted, hilarious shows as seen at ComedySportz Theater, Second City, the Improvised Shakespeare Company, and more. The lively interaction between performers and the audience will have you falling out of your seat with laughter. You won't want to miss it!

Complimentary admission and beverage ticket with event registration.

ABOUT THE EDUCATION PROGRAM



The Fabricators & Manufacturers Association, Int'l (FMA), SME, Precision Metalforming Association (PMA), and Chemical Coaters Association International (CCAI), co-sponsor the sessions on automation & robotics, cutting, finishing, forming & fabricating, job shop solutions, lasers, lean, management, stamping, and tube & pipe. All sessions offer practical knowledge you can use right away. Sessions with Tech Tours combine classroom instruction followed by expert-led guided tours on the show floor to see technology operating in designated booths.

The American Welding Society (AWS) presents a comprehensive lineup of welding education. Led by the industry's top professionals, programs focus on best practices and new commercial developments in welding and thermal spray. Events include conferences, seminars, RWMA Resistance Welding School, professional program, society events, & more.

CONTINUING EDUCATION CREDITS

Individuals who attend AWS education programs are awarded 1 PDH (Professional Development Hour) for each hour of education program attendance. Individuals seeking FMA Recertification Credits will be awarded 2 credits for each conference session attended (forming & fabricating, cutting, or finishing tracks) plus an additional 2 credits for attending the show. Individuals who attend SME education programs may be eligible to receive one credit per hour attended toward their SME-managed recertification requirements.

EXPERIENCE LEVELS

Use this key to find the education that meets your needs.

- B Basic** – Recommended for the attendee who is new to the industry or needs a refresher on the topic.
- I Intermediate** – Designed for the attendee who already has a basic understanding of the subject matter.
- A Advanced** – For the attendee with several years of experience who is seeking more in-depth information.

MEMBERSHIP INFORMATION

Discounted rates for members are available on educational programs. Interested in becoming a member of FMA, SME, AWS, PMA or CCAI? Find details on each of the cosponsor associations and membership benefits by visiting their Websites today!



aws.org



fmanet.org



sme.org



pma.org



ccaiweb.com

PRICING INFORMATION

Exhibit-only attendance is **FREE** through **November 15, 2013**. Beginning Nov. 16 and on-site, the cost to attend the exhibits is \$50. FMA, SME, AWS, PMA and CCAI members may always attend the exhibits for FREE with a valid membership card.

Finishing, Stamping, Cutting, Lasers, Forming & Fabricating, Job Shop Solutions, Automation & Robotics, Lean, Management, and Tube & Pipe Tracks		
	Member	Non-Member
1/2-Day Workshop	\$299	\$299
Full-Day Workshop	\$399	\$399
	Member	Non-Member
1 Session	\$150	\$175
2 Sessions	\$280	\$325
3 Sessions	\$375	\$445*
4 Sessions	\$475	\$545*
Full Conference (5 or more sessions) Includes (1) \$22 lunch ticket	\$680	\$780*
Rates good through Oct. 4. After this date, please add \$25.		
*Non-member rates for 3 or more sessions include a one-year complimentary membership to one of the co-sponsoring associations (FMA, SME, PMA, CCAI).		

Welding Track		
	Member	Non-Member ^a
1-Day AWS Educational Sessions	\$150	\$235
3-Day AWS Educational Sessions	\$225	\$310
1/2-Day Seminar	\$335	\$420
1-Day Conference or Seminar	\$550	\$635
2-Day Conference or Seminar	\$775	\$860
2-Day RWMA Resistance Welding School	\$775	\$860
1-Day Professional Program	\$150	\$235
4-Day Professional Program	\$225	\$310
Student Professional Program	\$75	\$90 ^b
AWS Awards Luncheon	\$30	\$30
AWS Prayer Breakfast	\$10	\$10
^a Non-member price for AWS Sessions only includes a one-year AWS Individual Membership. ^b Non-member Student Professional Program price includes a one-year AWS Student Membership.		

CONFERENCE CANCELLATION POLICY: Cancellations must be made in writing and faxed to Attn: FABTECH Conference Cancellation at (313) 425-3407 no later than October 28, 2013 to receive a full refund minus a \$50 administrative fee. Cancellations received after this date are non-refundable. Substitutions are allowed.

MONDAY, NOVEMBER 18			
TECHNOLOGY	8:00 a.m. – 10:00 a.m.	10:30 a.m. – 12:30 p.m.	1:30 p.m. – 3:30 p.m.
FINISHING		C20: Running Efficient Paint Systems B	C30: NEW! BEST PRACTICES: Choosing the Right Technology for Your Paint Line I
		C21: NEW! FINISHING ESSENTIALS: System Design Basics B	C31: FINISHING ESSENTIALS: The Importance of Cleaning Prior to Pretreatment & Pretreatment Troubleshooting B
		C22: Trends in Industrial Coatings A	C32: NEW! Emerging Technologies A
STAMPING	S10: NEW! Precision Punching and Cutting Technology B	S20: NEW! In-Die Electronics I	S30: NEW! An Engineering Approach to Design I
CUTTING			F30: NEW! Cutting: Dual Process Integration A
LASERS	F10: NEW! Trends and Advances in Laser Technology B	F20: Fiber/Solid State or CO ₂ Laser Technology I	
FORMING & FABRICATING	F11: Tooling Solutions for Metal Fabrication I	F21: Roll Forming Best Practices B	F31: Roll Form Tooling & Troubleshooting A
JOB SHOP SOLUTIONS	F12: Cost Estimating for the Job Shop B	F22: Designing Parts for Sheet Metal B	F32: NEW! Material Handling Solutions for the Job Shop B
AUTOMATION & ROBOTICS	F13: Using Robotics in Metal Forming and Fabrication I		F33: NEW! Automation Solutions for Press Brakes with Tech Tour I
LEAN	F01: WORKSHOP: NEW! Driving the Lean Transformation...Are You Prepared for Change? I		
	F14: NEW! Lean Principle: Strategic Planning and Organizational Alignment I	F24: NEW! Lean Principle: Visual Workplace I	F34: NEW! Lean Principle: Developing People and Processes B
MANAGEMENT	F15: NEW! How Much Is Your Company Worth? A	F25: NEW! Leading Your Organization to Profitability I	F35: NEW! Sustainable Manufacturing in the 21st Century I
TUBE & PIPE		F27: NEW! Forming Stainless Steel Tubes I	
WELDING			
SEMINARS	W10: API 1104 Code Clinic		1:00 p.m. – 5:00 p.m.
	W11: Metallurgy Applied to Everyday Welding		8:30 a.m. – 4:30 p.m.
CONFERENCES	W23: Welding Dissimilar Metals		8:15 a.m. – 2:30 p.m.
PROFESSIONAL PROGRAM	W28: Session 1: Automation and Sensors		1:00 p.m. – 5:30 p.m.
	Session 2: NSF-CIMJSEA - Welding Metallurgy		1:00 p.m. – 5:00 p.m.
	Session 3: Applied Technology I		1:00 p.m. – 5:30 p.m.
EDUCATIONAL SESSIONS	W34: AWS Educational Sessions		8:00 a.m. – 5:00 p.m.
SPECIAL PROGRAMS	W38: AWS Education Program Q&A FREE		2:00 p.m. – 3:00 p.m.
	W39: Brazing Symposium FREE		1:00 p.m. – 5:00 p.m.
	AWS Professional Welders Competition - Day 1		10:00 a.m. – 5:30 p.m.

TUESDAY, NOVEMBER 19

TECHNOLOGY	8:00 a.m. – 10:00 a.m.	10:30 a.m. – 12:30 p.m.	1:30 p.m. – 3:30 p.m.
FINISHING	C40: Conceptos Básicos de Pintura en Polvo en Español B	C50: Building Blocks of Powder Coating B	C60: Powder Coating Color Change: It's All About the Time A
	C41: Introduction to Electrocoating B	C51: NEW! FINISHING ESSENTIALS: Getting Hooked on Paint Racks I	C61: NEW! FINISHING ESSENTIALS: Achieving an Excellent Powder Coated Finish B
		C52: Advances in Porcelain Enamel I	C62: NEW! Get Ready for OSHA or EPA to Come Calling I
STAMPING	S40: NEW! Engineering Optimum Sheet Metal Stamping Costs: Blank, Tools, Presses I	S50: Advances in Stamping Technology I	S60: In-Die Value-Added Assembly I
	S41: NEW! Material Handling: Requirements and Variations of the Job I		
CUTTING	F40: NEW! Introduction to Laser Cutting Best Practices B	F50: NEW! New Developments in Waterjet Cutting I	
LASERS			F60: NEW! Industrial Applications in Lasers I
FORMING & FABRICATING	F41: Leveling: Making Material Flat I	F51: Coil Processing from Start to Finish B	F61: NEW! Bending and Forming Technology I
JOB SHOP SOLUTIONS	F42: NEW! Press Brake Safety: Changes to ANSI B11.3 – 2012 Explained B	F52: NEW! Lean and Safe: A Winning Combination I	F62: NEW! Maintenance for the Job Shop B
AUTOMATION & ROBOTICS	F43: Automated Deburring with Tech Tour I		
LEAN	F44: NEW! Lean Principle: Standardized Work for Shop Floors and Leaders I	F54: NEW! Lean Principle: Flow and Pull Valve I	F64: NEW! Lean Tools: Value Stream Mapping — Addressing the Differences Between the Office and the Shop Floor B
MANAGEMENT	F45: NEW! Developing Business Process and Strategy I	F55: NEW! Practical Approach to Developing a Strategic Plan I	F65: NEW! Put Your Customer First! Improve Customer Relations to Increase Profitability I
	F02: WORKSHOP: NEW! Building a Competency-Based Training & Development Program B		F66: NEW! Workforce: Recruitment Strategies B
TUBE & PIPE		F57: NEW! Advancements in Welding Tube Production I	F67: NEW! Inspecting and Troubleshooting Welded Tube A
WELDING			
SEMINARS	W12: D1.1 - Code Clinic8:30 a.m. – 4:30 p.m.
	W13: The Why and How of Welding Procedure Specifications B8:30 a.m. – 12:00 p.m.
	W14: The Why and How of Welding Procedure Specifications A1:00 p.m. – 5:00 p.m.
	W15: The Why and How of Welding Procedure Specifications B A8:30 a.m. – 5:00 p.m.
	W16: Welding of Stainless Steel - Basics8:30 a.m. – 4:30 p.m.
	W19: ASME Section IX, B31.1 & B31.3 Code Clinic - Day 18:30 a.m. – 4:30 p.m.
CONFERENCES	W24: So You're the New Welding Engineer - Day 18:00 a.m. – 5:00 p.m.
	W26: Thermal Spray Technology: High-Performance Surfaces9:00 a.m. – 5:00 p.m.
PROFESSIONAL PROGRAM	W29: Session 4: Keynote Speaker 1 and Keynote Speaker 28:00 a.m. – 10:00 a.m.
	Session 5: NSF-CIMJSEA - Modeling10:00 a.m. – 12:00 p.m.
	Session 6: NSF-CIMJSEA - Processing10:00 a.m. – 12:00 p.m.
	Session 7: Welding Metallurgy I2:00 p.m. – 5:30 p.m.
	Session 8: Modeling2:00 p.m. – 5:30 p.m.
EDUCATIONAL SESSIONS	W35: AWS Educational Sessions (including Plummer Lecture) 8:00 a.m. – 5:00 p.m.		
SPECIAL PROGRAMS	W40: AWS Awards Luncheon12:00 p.m. – 2:00 p.m.
	AWS Professional Welders Competition - Day 29:00 a.m. – 5:00 p.m.
	Welding Wars Competition - Day 19:00 a.m. – 5:00 p.m.

WEDNESDAY, NOVEMBER 20			
TECHNOLOGY	8:00 a.m. – 10:00 a.m.	10:30 a.m. – 12:30 p.m.	1:30 p.m. – 3:30 p.m.
FINISHING	C70: NEW! Innovations in Powder Coating Application Equipment A	C80: FINISHING ESSENTIALS: Manual Powder Coating B	C90: Cost Saving Measures for Powder Coating A
	C71: NEW! Innovations in Pretreatment A	C81: Efficient Curing With Infrared for Industrial Finishing B	C91: NEW! FINISHING ESSENTIALS: Impacting Our Environment A
	C72: NEW! Innovations in Mechanical Finishing A	C82: NEW! Improving Transfer Efficiency in Liquid Finishing Operations I	C92: NEW! Is Powder Over E-Coat Right for You? I
STAMPING	S70: NEW! Regulatory Compliance I	S80: NEW! Traceability and Production Efficiency B	S90: NEW! Game Changing Technology to Increase Productivity I
CUTTING	F70: NEW! Innovations in Plasma Cutting I	F80: Comparative Cutting with Tech Tour B	
LASERS			F90: NEW! Laser Joining Considerations with Tech Tour I
FORMING & FABRICATING	F71: NEW! Press Brakes for Operators I	F81: NEW! Press Brakes for Engineers A	F91: NEW! Punch Press Technology with Tech Tour B
JOB SHOP SOLUTIONS	F72: NEW! Business Solutions to Streamline Your Job Shop I	F82: Plate Fabrication B	
AUTOMATION & ROBOTICS	F73: Automation: Robotic Material Handling for Lean High Mix/Low Volume Shop B		
LEAN	F74: NEW! Lean Tools: Quick Changeover and TPM I	F84: NEW! Lean Tools: 5S Workplace Organization and Standardization B	F94: NEW! Lean Facility: Operating for Increased Profitability I
MANAGEMENT	F75: Marketing for Fabricators I	F85: NEW! Achieve Your Sales Goals B	F95: NEW! Grow Your Business Using the Web and Social Media I
	F76: NEW! Workforce: Preparing Next Gen Leaders I	F86: NEW! Workforce: Boost Performance Through Employee Engagement I	
TUBE & PIPE			F97: NEW! Principles of Tube Bending B
WELDING			
SEMINARS	W17: Welding of Stainless Steel - Avoiding Weld Defects 8:30 a.m. – 4:30 p.m. W20: Advanced Visual Inspection Workshop 8:30 a.m. – 4:30 p.m. W19: ASME Section IX, B31.1 & B31.3 Code Clinic – Day 2 8:30 a.m. – 4:30 p.m. W21: Build it Better – Day 1 8:30 a.m. – 4:30 p.m.		
CONFERENCES	W24: So You're the New Welding Engineer – Day 2 8:00 a.m. – 5:00 p.m. W25: Thermal Spray Basics FREE 1:00 p.m. – 4:00 p.m.		
RWMA SCHOOL	W27: RWMA Resistance Welding School – Day 1 7:45 a.m. – 5:30 p.m.		
PROFESSIONAL PROGRAM	W30: Session 9: High Energy Density Welding Processes 8:00 a.m. – 11:00 a.m. Session 10: Applied Technology II 8:00 a.m. – 11:30 a.m. Session 11: Welding Metallurgy II 1:30 p.m. – 5:30 p.m. Session 12: Arc Welding Processes 1:30 p.m. – 6:00 p.m. Session 13: Solid-State Welding Processes 1:30 p.m. – 6:00 p.m.		
EDUCATIONAL SESSIONS	W36: AWS Educational Sessions 8:00 a.m. – 5:00 p.m.		
SPECIAL PROGRAMS	W41: AWS Prayer Breakfast 7:00 a.m. – 8:30 a.m. AWS Professional Welders Competition – Award Announcement 11:00 a.m. – 11:30 a.m. Welding Wars Competition – Day 2 9:00 a.m. – 5:00 p.m.		

THURSDAY, NOVEMBER 21

TECHNOLOGY	8:00 a.m. – 10:00 a.m.	10:30 a.m. – 12:30 p.m.
STAMPING	S100: NEW! Deep Draw Technologies B	
LASERS	F100: NEW! Laser Scanning I	
FORMING & FABRICATING	F03: WORKSHOP: NEW! Precision Sheet Metal Operation Prep Course and Certification Exam	
JOB SHOP SOLUTIONS	F102: Low Volume High Variety I	
LEAN	F104: NEW! Lean Tools: 3 Proven Paths to Major Profit Improvement A	
MANAGEMENT	F105: NEW! Strategically Growing Business in North America I	
WELDING		
SEMINARS	W21: Build it Better – Day 2	8:30 a.m. – 4:30 p.m.
	W22: Corrosion of Welds: Causes and Cures	8:30 a.m. – 3:00 p.m.
RWMA SCHOOL	W27: RWMA Resistance Welding School – Day 2	8:00 a.m. – 3:45 p.m.
PROFESSIONAL PROGRAM	W31: Session 14: NSF-CIMJSEA Mechanical & Corrosion Properties	8:00 a.m. – 11:30 a.m.
	Session 15: Weldability Topics	8:00 a.m. – 11:30 a.m.
SPECIAL PROGRAMS	AWS Certification Exam (advance application required)	
		7:00 a.m. – 6:00 p.m.

Questions regarding the educational programs at FABTECH can be directed to the following representatives:

WELDING
 Contact AWS,
 Martica Ventura
 mventura@aws.org
 800-443-9353

STAMPING
 Contact PMA,
 Marianne Sichi
 msichi@pma.org
 216-901-8800

FINISHING, COATING
 Contact CCAI,
 Kelly LeCount
 Kelly@govermgt.com
 859-356-1030

FORMING & FABRICATING, JOB SHOP, MANAGEMENT, TUBE & PIPE
 Contact FMA,
 Julie Maddock
 juliem@fmanet.org
 888-394-4362

CUTTING, FORMING & FABRICATING, LASERS, LEAN, MANAGEMENT
 Contact SME,
 Ila Lee
 ilee@sme.org
 800-733-4763

SCAN THIS QR CODE WITH YOUR MOBILE DEVICE TO REGISTER TODAY!



CANCELLATION POLICY: Cancellations must be made in writing and faxed to Attn: FABTECH Conference Cancellation at (313) 425-3407 no later than October 28, 2013 to receive a full refund minus a \$50 administrative fee. Cancellations received after this date are non-refundable. Substitutions allowed.



FINISHING TRACK

MONDAY, NOVEMBER 18

10:30 a.m. – 12:30 p.m.

C20: RUNNING EFFICIENT LIQUID COATING SYSTEMS **B**

Technology Advances that Helped Raytheon Design a Finishing System for the 21st Century

Raytheon's production of military products requires a special process known as CARC paint system (Chemical Agent Resistant Coating). Recently, the IADC (Integrated Air Defense Center), Raytheon's manufacturing facility, upgraded their manual finishing system and had some special requirements: a safer work environment for their employees, reduced energy costs, a small footprint, and traceability as parts moved through the system. Learn how they met their requirements and increased production.

Doug Oliphant and Josh Peterson, IntelliFinishing

Maximize Energy Savings in Finishing

With ever-increasing cost pressures, manufacturers are required to do more with fewer resources. In today's competitive manufacturing environment, efficiency is essential to both survival and growth. Learn how to find the best energy efficient finishing solutions, determine if you qualify for Energy Rebates and how saving energy can directly impact your bottom line.

Bill Heuer and Nick Strauss, Graco Inc.

NEW! C21: FINISHING ESSENTIALS: SYSTEM DESIGN BASICS **B**

Designing a New Finishing System: Where Do I Begin?

The amount of information at your fingertips can be overwhelming when starting a project like designing a new finishing system. This presentation will provide an outline of steps you can take to get the process started without feeling like you have information overload.

Kevin Coursin, KMI Systems Inc.

Paint Booth Selection

A key decision in specifying a new paint system is the selection of the type of paint booth. Historically, the two options for the booth design were a dry filter or water wash scrubber. Recently, two new solutions have been introduced to the market. Both are dry separation technologies, one utilizes a limestone media and the second utilizes a new type of high capacity dry filters. This presentation will highlight advantages and disadvantages for each technology.

Rich Goelz, Eisenmann Corp.

The Truth About Production Line Gaps and How Current Conveyor Technologies Address Them

Line gaps result in overall reduced line speed and associated production throughput; quality issues; increased labor costs and inventory problems. New advancements in conveyor technology address these issues by enabling each higher density, racked load-bars to move at variable speeds throughout the system. In this way individual and varying processes can be allocated sufficient time for successful completion without detriments to productivity.

David Underhill, IntelliFinishing

C22: TRENDS IN INDUSTRIAL COATINGS **A**

Sublimated Coatings – Reproducing Natural Grain Finishes

This presentation will describe an innovative decoration system that is permanently sublimated in powder coating to produce decorative finishes to metal profiles, sheets, MDF, high temp plastics and 3D accessories. The process reproduces the natural grain of various types of wood, marble, granite, custom design and corporate branding, enabling the simultaneous combination of a strong protective coating and an innovative decoration. The process is certified AAMA 2603 and AAMA 2604.

Eric Koslow, Decoral System USA Corp.

What's Trending in Architectural Coatings

Architectural powder coatings offer an alternative to more conventional liquid coatings used in building envelopes. Powder coatings meet or exceed all of the performance requirements of AAMA, GSB and Qualicoat specifications. Architectural powder coatings can provide a greener and more environmentally-friendly alternative. Premium weathering non-TGIC HAA polyesters will bring new application advantages and challenges that will be addressed in this discussion. Applications from extruded aluminum building components, fencing and building accessories will be reviewed.

Mike Withers, Axalta Coating Systems

Preventing Corrosion with Powder Coatings

The rusting of iron is an electrochemical process that begins with the transfer of electrons from iron to oxygen. In this session, you will learn about the elements of adhesion and cohesion, cathodic protection, the use of primers and what testing is available.

Mike Wittenhagen, Axalta Coating Systems

1:30 p.m. – 3:30 p.m.

NEW! C30: BEST PRACTICES: CHOOSING THE RIGHT TECHNOLOGY FOR YOUR PAINT LINE & PAINT LINE ENERGY SAVINGS **B**

Conventional – HVLP – LVMP - Air Assist - Airless, which one is right for your coatings? This session will explore the different types of atomization technologies and provide a thorough understanding of each. Examples of typical industrial applications and coatings will be provided and attendees will learn how to choose a spray applicator and achieve a superior finish.

Elizabeth Lisiecki, DeVilbiss Ransburg BGK Binks

C31: FINISHING ESSENTIALS: THE IMPORTANCE OF CLEANING PRIOR TO PRETREATMENT & PRETREATMENT TROUBLESHOOTING **B**

The Importance of Cleaning and Rinsing in the Pretreatment Processes

This presentation will focus on different cleaning technologies (mechanical & chemical) and issues specific to the parts cleaning industry. It will provide a foundation of critical terminology used to enable intelligent decisions in the selection, design, installation, and upgrade of a cleaning system and highlight topics including soils, substrates, cleaners, rinsing and drying.

Suresh Patel, Chemetall US, Inc.

Pretreatment Troubleshooting

In this presentation, learn tips that can help you troubleshoot your pretreatment processes and ultimately run a more efficient cleaning and pretreatment system for your finishing line.

Kirk Beaster, Chemetall US, Inc.

NEW! C32: EMERGING TECHNOLOGIES **A**

** This session is FREE to anyone who registers for another FINISHING session.*

Infrared 3D Finishing

Decoral System, USA has pioneered a patented sublimation process of decorating powder coated profiles and

sheets and parts in hundreds of wood grain, granite, marble, carbon fiber, brushed and many other finishes that can be applied to a range of substrates, resulting in many different textures, glosses and overall finishes. Decoral has introduced infrared (IR) 3D decorating, designed specifically for the industrial automated decoration of 3D powder coated parts in high volume. The IR machine also can apply custom logos and artwork as well. This presentation will explain how the process works as well as show sample parts.

Eric Koslow, Decoral System USA Corp.

Advances in Pretreatment Technologies for the Aluminum Industry

BCI has developed and patented innovative technologies for various aluminum alloys. These products and processes are based on chrome-free chemistries or a new generation of trivalent chromium chemistries. These alternative technologies offer operational savings while conforming to the new environmental directives. This presentation will discuss some of these pretreatments, including application, performance and impact to operations.

Sergio Mancini, Bulk Chemicals, Inc.

Advanced Technology Corona Charging System

The GX8500M automated powder coating equipment that features the Second Generation Pulse Power® II Advanced Technology Corona Charging System will be introduced.

John Cole, Parker Ionics

THERMA-TRON-X, INC.

WORLD LEADING INDUSTRIAL FINISHING SYSTEM MANUFACTURER

COATING TECHNOLOGIES

Electrocoating
Powder Coating
Liquid Coating
Auto Deposition

FINISHING SYSTEMS

Programed Hoist Systems
SST Systems
Monorail Systems
Power and Free Systems
Conveyor Systems
Custom Combinations
Custom E-coat Systems
Pretreatment Systems
Industrial Ovens
Environmental Rooms
Liquid Spray Booths

WATER & WASTEWATER TREATMENT

Reverse Osmosis
Water Reclamation
Ion Exchange
Wastewater Treatment
Acid Recovery



www.ttxinc.com

920.743.6568



TTX

FINISHING SYSTEMS

NEW! C32: EMERGING TECHNOLOGIES (CONT'D) **A**

Oxsilan 9810/2 Approved to TT-C-490

Extensive testing of Oxsilan 9810/2 by the US Army Research Laboratory has resulted in its approval to Federal Specification TT-C-490, Type IV, for abrasive blasted steel. Oxsilan 9810/2, based on organofunctional silanes, is phosphorous and heavy metal-free, produces no sludge, is simple to operate and waste treat, and saves money. Finally there's a pretreatment completely free of zinc, nickel, phosphorous or any other regulated ingredient that can be used with the military's Chemical Agent Resistant Coating (CARC) paint.

Gary Nelson, Chemetall US, Inc.

HAA Polyester (TGIC-free) Powder Coatings

This session will present the trends toward HAA polyester powder coatings, compare them to standard TGIC polyesters, and examine Axalta's HAA RAL product line.

Joseph Friesl, Axalta Coating Systems

New Nozzle Design Changes Air Steam Direction and Speed

This presentation will showcase a new patented "LV Technology" nozzle design that allows the air stream to change direction and speed thus colliding with the fluid stream earlier and at an oblique angle. This allows you to create a tulip shaped spray pattern with even particle distribution resulting in a softer spray and reduction of overspray and waste.

Mark Hebbeler, Anest Iwata USA, Inc.

New Electric Circulating Pump for Small to Medium Sized Paint Circulation Systems

Electric circulation pumps are an emerging technology in a space that has been dominated by pneumatic pumps for decades. The primary drive towards electric pumps is the energy savings, but the E-Flo DC also has many other valuable features which allow it to be networked into a plant's PLC network for added control.

Bill Heuer, Graco

Transitional Metal/Organic Hybrid Conversion Coatings

Introducing Advantech, a new, robust line of transition metal / organic hybrid conversion coatings. These products offer extreme stability, ease of use, increased performance, and no flash rust, even when air-dried. They can be used in 5-stage systems, 3-stage cleaner/coater systems, and even manual spray wand applications.

Tom Boland, Calvary Industries

TUESDAY, NOVEMBER 19

8:00 a.m. – 10:00 a.m.

C40: CONCEPTOS BÁSICOS DE PINTURA EN POLVO EN ESPAÑOL **B**

En esta sesión, la cual será completamente en español, los participantes aprenderán lo que es la aplicación en polvo; los varios tipos de recubrimientos de polvo y sus apropiadas aplicaciones; los tipos de equipo requeridos

para aplicar el recubrimiento de polvo; limpieza y pretratamiento de las piezas antes de la aplicación de pintura; y como los recubrimientos de polvo se curan. Los participantes obtendrán un buen entendimiento de la terminología básica de la aplicación en polvo y recibirán una copia del manual de entrenamiento "Cubierta Revestimiento de Polvo" publicado por el CCAI's.

In this session, conducted entirely in Spanish, participants will learn about the various types of powder coatings for appropriate applications, the types of equipment required to apply the powder coating, cleaning and pre-treatment of parts before the application of powder, and how powder coatings are cured. Participants will gain a good understanding of the basic terminology of powder coating and will receive a copy of the Spanish training manual "Powder Coating" published by the (CCAI)'s.

Hugo Cambron, Spraylat Corp., Antonio Gallegos, George Koch Sons de Mexico, Sal Garcia, Nordson Corp., Pablo Soto, Axalta Coating Systems, Antonio Tapia, Coral Chemical Company

C41: INTRODUCTION TO ELECTROCOAT **B**

This session will review the two types of electrocoating processes, anodic and cathodic, and both epoxy and acrylic based paints and their usage. Variations of pigments and resins used every day to coat many different items, improving their performance and durability, will be discussed.

Kelly Moore, PPG Industries, Inc.

10:30 a.m. – 12:30 p.m.

C50: BUILDING BLOCKS OF POWDER COATING **B**

This presentation will discuss the building blocks of a high-performing powder coating system, from pretreatment to powder application and recovery, to curing. Learn how to select a system to best meet your needs.

Greg Dawson, Nordson Corp., Bill Owens, Axalta Coating Systems, and John Sudges, Midwest Finishing Systems, Inc.

NEW! C51: FINISHING ESSENTIALS: GETTING HOOKED ON PAINT RACKS **I**

Proper part hanging (hooks and/or racks) can significantly improve the efficiency of your finishing operation. This session will provide information for selecting the best part hanging solutions, including an overview of standard, modified and custom products. Improvements in lines density, the addition of load bars and the overall process will be discussed. Finally, proper maintenance and storage of hooks and racks will complete this session.

Bruce Bryan, Mighty Hook Inc. and Bill Oney, American Finishing Resources, LLC

C52: ADVANCES IN PORCELAIN ENAMEL **I**

This presentation reviews the recent developments in porcelain enamel materials and processing. The unique chemical bond of the glass coating to the metal leads to the excellent durability of porcelain enamel in severe environments. Several keys to successful design and

manufacture of porcelain enameled parts/products is discussed; costs and features are compared with alternative coating materials

Cullen Hackler, Porcelain Enamel Institute

1:30 p.m. – 3:30 p.m.

C60: POWDER COATING COLOR CHANGE: IT'S ALL ABOUT THE TIME **A**

Systematic Approach to Fastest Color Change

This presentation will break down the four key areas of a color change: application equipment; recovery equipment; recycle equipment; and the powder booth. Learn how optimizing the sequence and procedures in each of these areas ensures the fastest possible color change time.

Frank Mohar, Nordson Corp.

How One Company Chose to Spray-To-Waste and Added Value to Their Operation

Most powder coating operations are looking for ways to add flexibility and still get throughput. For many, there is a need to speed up the color changeover process. This presentation will focus on operational costs associated with this type of coating process. Information will be shared from a real-world situation that generated a cost justification for a spray-to-waste powder coating operation in a production line environment.

Jeff Hale, Gema

NEW! C61: FINISHING ESSENTIALS: ACHIEVING AN EXCELLENT POWDER COATED FINISH **B**

Superior Application Techniques — Best Practices for Automatic Powder Coating

Maximizing performance of the powder coating line is a challenge and learning correct coating techniques for use with automatic powder guns is critical. This presentation will cover best practices for automated powder coating lines, including information on gun placement, orientation, and other techniques for improved optimization for all brands of equipment.

Stefano DiMarco, Gema

Powder Spray Equipment — There's A Lot Out There, So Choose Wisely

This presentation will discuss the variety of different powder spray equipment available, and how the choice of equipment can make a difference in how easy, or difficult, it can be to get the results you want. Different powder charging technologies and gun types, powder pumps and delivery methods, controls, from the basic to the sophisticated, will be discussed. Learn how to coat easier, faster, more efficiently, and with the highest finish quality.

John Carlson, Nordson Corp.

Why Racking Matters

There is more to achieving an excellent powder coated finish than meets the eye. Racking parts often increases production by 500% or more, dramatically increasing profit, providing immediate ROI and a high quality finish. Learn how proper racking and fixtures can impact the final finished product and what you can do to improve your powder coating process.

Dan Davitz, Magic Rack

NEW! C62: GET READY FOR OSHA OR EPA TO COME CALLING **I**

An OSHA or EPA inspection is never fun and can be time consuming and financially costly. Developing a game plan should an inspector show up can pay huge dividends. This presentation will cover many of the things one company learned through a recent OSHA inspection and a legal point of view from an attorney specializing in this area. You'll be entertained and educated on ways to be compliant and protect your company.

Beth Gotthelf, Butzel Long and John Heyer, Kettle Moraine Coatings

WEDNESDAY, NOVEMBER 20

8:00 a.m. – 10:00 a.m.

NEW! C70: INNOVATIONS IN POWDER COATING APPLICATION EQUIPMENT **A**

Advancements in Painting Robot and Dense-Phase Powder Application Technologies Take Powder Coating to New Levels of Speed and Productivity

Continued advancements in the design and utilization of painting robots and dense-phase powder application equipment have enabled the powder application piece to finally match the speed of the robot, making their combined capabilities an exceptionally productive and unbeatable combination. This presentation will detail the process, equipment configurations and typical applications in which these technologies have taken painting speed and overall coating capability to entirely new levels.

Michael Dilday, FANUC Robotics America Inc. and Loren Smeester, Nordson Corp.

True Closed Loop Powder Feed System

This presentation will discuss a novel system that solves the inherent drawbacks of using conventional powder feed systems and how this technology provides a constant-volume powder feed system and features a feedback controller combined with the capacitance type sensors to detect fluctuation in capacitance proportional to the powder flow rate. This data is then processed by the controller to adopt the closed loop control (feedback control) system and the effect of disturbances, blockages in the injector or hoses, and position of the spray gun can be corrected in real-time.

John Cole, Parker Ionics

Advancements in Spray & Recovery Technology and the Impact on Powder Particles

Powder coating systems need to be flexible and efficient to process a variety of chemistry and powder formulations. Regardless of materials, ensuring sprayability, transfer efficiency, and reclaim handling is vital to having a successful operation. This presentation will highlight the advancements in manual and automatic coating systems and the impact the equipment may have on the material and application process.

Jeff Hale, Gema

NEW! C71: INNOVATIONS IN PRETREATMENT **A**

Processing Aluminum through a Zinc Phosphate Pretreatment System

Aluminum is being introduced more today to reduce the overall weight of a vehicle thus increasing gas mileage efficiencies. Aluminum can be treated through a zinc phosphate process with a few modifications to the control parameters. As the aluminum exceeds the traditional levels, the parameters become increasingly more difficult to control. This presentation will discuss an alternative "flex" method to treating high amounts of aluminum through the traditional zinc phosphate pretreatment system.

Terry Giles, Henkel Corp.

Running Easy

Despite the many advantages of zirconium oxide coatings, such as reduced energy, phosphate-free, low sludge, and high salt-spray performance, the majority of finishing operations continue to use iron phosphate. This session will focus on new technology and best practices that address the weakness of zirconium oxide pretreatment. Several examples of how our innovation has enabled end users, with prior negative zirconium oxide experiences, to successfully improve their coating pretreatment process will be presented.

Bruce Dunham, DuBois Chemicals

Modern Transition Metal Pretreatments – Cutting Your Pretreatment Costs

A brief review and definition of what a Modern Transition Metal Pretreatment is will be followed by a rich series of case histories. Potential for cost savings and actual savings will be highlighted. The presentation is designed to increase the comfort level of those new to non-phosphate pretreatments and to reinforce the decision of those who have already made the switch.

David Chalk, DuBois Chemicals

Innovations in Pretreatment: Advanced Non-Phosphate Pretreatments

Phosphorous and heavy metal discharge restrictions are becoming more widespread. Non-phosphorous pretreatments produce no sludge, are simple to operate and waste treat, and save money. The latest generation has performance approaching or matching zinc phosphate. Practical aspects of transitioning to advanced pretreatments will be discussed.

Gary Nelson, Chemetall US, Inc.

NEW! C72: INNOVATIONS IN MECHANICAL FINISHING **A**

Towards a More Effective Shot Blasting Operation

Shot blasting as a mechanical surface preparation process is widely used in finishing metallic parts prior to coating. Sophistication in the use of this technique could range from simple manual systems to computer controlled equipment for preparing aerospace and automotive components. This session will review critical process parameters that have tangible impact on the final result including media size, velocity, shape and flow rate. Monitoring and adjusting process parameters such as the impact energy, media size can result in a more controlled cleaning operation resulting in operating cost savings. The discussion will conclude with information on what to expect from this industry going forward.

Ron Wright, Wheelabrator Group

Scratching the Surface: How Innovative Surface Finishing Technology Can Help Streamline Metal Fabrication Applications

Advances in surface finishing materials now provide fabricators with products that can last up to eight times longer and perform up to three times better than conventional discs. Made of non-woven nylon impregnated abrasive grain and a proprietary smear-free resin, these surface conditioning solutions are ideal for numerous fabrication and maintenance and repair operations applications, including blending, deburring and weld blending, surface prep prior to painting, and rust and paint removal.

Paul Krupa, Saint-Gobain Abrasives

Examining New Abrasives Developments and Their Impact on Performance and Cost

This session will address the latest developments in high performance abrasives and how new grain and bond combinations can reduce the total cost in grinding and finishing applications. Review how each of the abrasives components have been developed and the significance of how they translate into cost-effective solutions. Learn how manufacturers can measure their cost, total labor and product investment within their abrasives operations.

Luis Belmont, Saint-Gobain Abrasives

10:30 a.m. – 12:30 p.m.

C80: FINISHING ESSENTIALS: MANUAL POWDER COATING **B**

Part Cleaning & Pretreatment in a Manual Operation

Cleaning and pretreating parts in a manual finishing operation is critical to achieving a high quality finish. This presentation will help you understand how to properly clean and pretreat parts prior to powder coating in a manual operation.

Ken Kaluzny, Coral Chemical Company

Superior Application Techniques: Best Practices for Manual Powder Coating

Deciding how to maximize powder coating coverage and transfer efficiency is a challenge. Learning correct manual spraying techniques is critical to successful powder coating applications. This presentation will cover performance techniques suitable for all brands of manual spray powder guns and review tip selection, coating techniques and how to address recoats and metallic powders.

Stefano DiMarco, Gema

Curing for Manual Powder Coating Operations

This last step in the powder coating process is critical to achieve a high quality finish. This presentation will provide information to properly cure powder coated parts in a manual finishing operation.

Ron Cudzilo, George Koch Sons LLC

C81: EFFICIENT CURING WITH INFRARED FOR INDUSTRIAL FINISHING **B**

This session will review the basics of IR including what it is, how it is produced and its characteristics. It will also review all equipment sources of infrared followed by a discussion of the wide variety of IR applications, which showcase the many ways in which IR can be utilized in today's industrial environment.

Mike Chapman, Vulcan Catalytic Systems, Wayne Pettyjohn, Georgia Power Company and John Podach, Fostoria Process Equipment

NEW! C82: IMPROVING TRANSFER EFFICIENCY IN LIQUID FINISHING OPERATIONS **I**

Transfer Efficiency Measurement for Liquid Coating Applications

It is said that you pay for a coating four times; once to buy it, once to apply it, once to clean it up and once to dispose of it. Any improvement in transfer efficiency will result in significant savings in these four areas. The objective of this presentation is to discuss the two methods used to measure transfer efficiency and explore how they can be used outside of a lab environment. The transfer efficiency of various spray equipment technology including HVLP, air spray, hydraulic, rotary atomization and the impact of electrostatics will be discussed and reviewed.

John Owed, DeBilbiss Randburg, BKG Binks

Efficient Finishing Technologies

This presentation will demonstrate how to achieve higher transfer efficiencies compared to traditional spray applicators and show techniques to drive optimal efficiency within the electrostatic spray process.

Blake Erickson and Wendy Hartley, Graco Inc.

1:30 p.m. – 3:30 p.m.

C90: COST SAVING MEASURES FOR POWDER COATING **A**

System Design Parameters that Save Money

This session will review system design considerations that lead to saving money while producing a great finished product.

John Sudges, Midwest Finishing Systems, Inc.

The "Green Washer"

The industry has focused pretreatment improvement efforts on temperature and phosphate reduction. This isn't enough. Surfactants in use today can be formulated to emulate phosphates and reduce our dependence on highly alkaline base materials. Zirconium technology performs at near ambient temperatures without phosphates or regulated heavy metals. New sealer technologies enhance system performance, but without heavy metals of the past. This session will define the reality of today's "Green Washer".

David Schimpff, DuBois Chemicals

Cost Saving Measures for Powder Coaters

Now more than ever, minimizing coating cost is critical to remain profitable and competitive. Whether you have a small batch system or a large conveyor line, there are opportunities to run more efficiently and cut costs. This session will take a look at some of the most commonly overlooked cost saving measures on your powder coating line.

Matthew Rush, Axalta Coating Systems

Reducing Energy Costs on your Powder Coating Line

Energy usage can be one of the biggest expenses in running a finishing line. You can reduce your costs with the energy reducing tips you will learn from this presentation.

Sherrill Stoenner, Stoenner Finishing Consultants, LLC

NEW! C91: FINISHING ESSENTIALS: IMPACTING OUR ENVIRONMENT **A**

Trends in Water Conservation and Reuse in Paint Finishing

Pretreatment systems are often the largest user of water in manufacturing operations, and water is becoming more scarce in many industrialized areas of the world. Learn how to become a better steward of this valuable natural resource and improve your company's bottom line at the same time.

Tom Neeley and Sam Woehler, George Koch Sons, LLC

Sustainability Suggestions: Environmental Compliance for Job Shop Finishers

One of the toughest things a finishing job shop faces on a regular basis is environmental regulations. This presentation will provide you with a variety of sustainability suggestions for environmental compliance. If you are a finishing job shop, you won't want to miss this presentation.

Greg Yahn, Advanced Finishing USA/
A-Tex Finishing LLC

NEW! C92: IS POWDER OVER E-COAT RIGHT FOR YOU? **B**

Which parts are better suited for direct to metal powder coating vs. powder over E-coat? If you don't understand the benefits of each, this is the session for you. This session will discuss the application pitfalls along with application successes on both of these processes and highlight quality strengths and concerns as well.

David Wasz, B.L. Downey Company LLC



STAMPING TRACK

MONDAY, NOVEMBER 18

8:00 a.m. – 10:00 a.m.

NEW! S10: PRECISION PUNCHING AND CUTTING TECHNOLOGY **B**

Tooling Solutions for Stamping

Hear case studies illustrating the use of optimum clearance, tooling geometry and coatings to improve performance in stamping applications. Topics include punch coating alternatives, punch tip/shear configurations, slug control and optimum punch to die clearance selection.

Shrinidhi Chandrasekharan and Bruce Konopinski,
Dayton Progress Corp.

New Technology for Increased Tool Life and Improved Shear Edge Quality in Precision Punching

A new punching technology has been developed to achieve > 80% shear with a single punch while extending the performance and life of the punch tool. This presentation examines the science of material flow during the hole making process and presents an engineered punch point that takes full advantage of this material flow.

Anthony Lockhart, M.O.M. Tools, LLC and Peter Ulintz, Anchor Manufacturing Group, Inc.

10:30 a.m. – 12:30 p.m.

NEW! S20: IN-DIE ELECTRONICS **I**

Error-Proofing Metalforming & Assembly

Covering the full spectrum of electronic sensors for basic tooling protection through self-adjusting tooling for material change compensation, this presentation will review the latest in the uses of electronic sensors for metal stamping, fabricating and assembly operations — including welding cells. Visual slides detailing uses of sensors from multiple vendors in actual tooling and the uses of electronic sensors as tooling setup aids will be presented.

George Keremedjiev, Tecknow Education Services, Inc.

Automatic In-Die Part Quality Monitoring & Tool Adjustments

Implementation of part measurement, die-adjustment and part tracking can result not only in 100% verification of critical part features, but also in significantly increased machine utilization, accurate production and scrap rates, and more reliable die protection. Learn the practical methods to select, apply, and integrate sensors and control systems in order to fulfill accuracy and quality requirements.

James Barrett, Link Electric & Safety Control

1:30 p.m. – 3:30 p.m.

NEW! S30: AN ENGINEERING APPROACH TO DIE DESIGN **I**

A Performance-Based Die Engineering Approach for Processing High Strength Steel Stampings

Modern die design standards and design practices are based on fulfilling the requirements of metal stamping dies based entirely on the die's function. This approach to die design has two significant flaws: (1) it produces inconsistent and undesirable results because the manufacturing process is being "designed" rather than engineered and, (2) dies are designed and constructed utilizing materials, specifications and methods based solely on the operational function of the die without regard to desired performance. This presentation proposes a "Performance-Based Die Engineering Strategy" that will result in properly engineered economical stamping processes, especially when stamping higher strength steels.

Peter Ulintz, Anchor Manufacturing Group, Inc.

Systematic Process Improvement: Formability Design and Production

This session will define many of the potential variants between the engineering/simulation environment and the physical reality of the tools we bring to production. Simulation software will be used to illustrate fundamentals of sheet metal formability analysis. The challenges to successfully implementing metal forming simulation into the engineering and design process will be identified, along with possible innovations in technology to address those challenges. Learn how to recognize and interpret the outputs of sheet metal forming analysis and to correct failures (such as splits, wrinkles, and excess springback).

Eric Kam, AutoForm Engineering USA

TUESDAY, NOVEMBER 19

8:00 a.m. – 10:00 a.m.

NEW! S40: ENGINEERING OPTIMUM SHEET METAL STAMPING COSTS: BLANK, TOOLS, PRESSES II

This session will cover the various methods used to predict material (blank) costs, tooling costs, production costs and the risks inherent to each. Participants will identify the limitations of the methods and technology used at various times in the sheet metal forming process chain, from design through production.

Eric Kam, AutoForm Engineering USA

NEW! S41: MATERIAL HANDLING: REQUIREMENTS AND VARIATIONS OF THE JOB II**Coil Processing Enhancement Features**

This presentation will provide an understanding of available product enhancement features for different coil processing applications. Identify and explain when multi-function/automation of a coil processing system is warranted. Provide understanding of cost justification of specific product enhancement features. Describes in general terms the latest technologies available to improve efficiency, flexibility and quality. Will discuss variations in equipment such as types of shears, stackers, feeders, straighteners etc.

Kevin Enos, Formtek Inc.

Big to Small, Scrap to Parts, Moving Metals in Your Plant

Whether in the form of scrap or parts, mountains of metals need to be moved around your facility daily. Conveyors can efficiently and economically keep those metals moving. This presentation will help you discuss your application with your supplier and specify the requirements of the job. Learn how to determine the correct conveyor for your application, ancillary components and options, machinery operation and maintenance, techniques to compare similar machinery and what to look for in equipment.

Del Butler, Magnetic Products, Inc.

10:30 a.m. – 12:30 p.m.

S50: ADVANCES IN STAMPING TECHNOLOGY II**Comparative Analysis of Hydraulic, Mechanical and Servo Press Drive Systems**

With each type of stamping press drive system comes an attempt to solve manufacturing concerns such as continual tightening of part tolerances, the introduction of new materials including high strength steels and advanced high strength steels, as well as, the ever-present push towards increasing production efficiency. This presentation will cover hydraulic, eccentric, link and servo presses, their general characteristics, features and benefits, and how integrating these types of

presses into a production system affects users' ability to address the above concerns.

Shrini Patil, AIDA-America

New Blanking Technologies on the Horizon

For operations that process a wide variety of blanks, new laser blanking technology offers extreme flexibility that helps minimize setup times and maximize material utilization. Laser cutting eliminates the need for blanking dies and their maintenance, resulting in lower capital investment and operating costs. A new equipment design allows multiple lasers to independently move along a continuous flow of sheet metal while cutting the blanks, delivering the most dynamic ability of laser blanking to date.

Manuel Hunger, Schuler Automation GmbH & Co. KG

1:30 p.m. – 3:30 p.m.

S60: IN-DIE VALUE-ADDED ASSEMBLY II**Gaining a Competitive Advantage through In-Die Fastener Installation**

This presentation focuses on the advantages of installing fasteners within the stamping process. Attendees will learn how to determine when an In-Die system is appropriate. A full description of the individual elements of an In-Die system and how they function together to form a complete system will be reviewed. Working animations of the internals of the die tooling and photographs of typical and unique projects will also be discussed.

Roger Patton, PennEngineering

In-Die/In-Tool Welding of Hardware & Assemblies

In-Die/In-Tool resistance welding of hardware and assemblies at maximum stamping speeds has been successfully implemented for over 30 years. This presentation will showcase the very latest technologies that maximize this cost saving process. The presentation is aimed at designers, engineers and those responsible for quoting jobs that require secondary resistance welding operations and stamping/tooling experts (resistance welding novices or experts alike) - who are interested in embedding a resistance welding process within their tooling.

George Keremedjiev, Tecknow Education Services, Inc.

WEDNESDAY, NOVEMBER 20

8:00 a.m. – 10:00 a.m.

NEW! S70: REGULATORY COMPLIANCE II**OSHA Compliant Stamping Press Inspections**

Attendees will learn how and what to inspect during a OSHA compliant press inspection, determine when a machine is in need of specialized maintenance procedures and discuss proper correction procedures. Each participant will receive copies of the (2) basic machine inspection formats with instructions. Finally, you will learn how to evaluate the collected data, organize all data and then finally establish a plan of action relating to each machine.

Jeff Fredline, Columbia Machine Works

Green Fluid Technology for Metal Stamping

Learn how to turn your stamping operations lean and green. Cost saving techniques and evaluations will be demonstrated. Technology advancements in the field of green lubricant can make a substantial difference in your bottom line. VOC-Free technology will allow metal formers to continue to use vanishing fluids and lessen their environmental impact. Learn how to select your lubricants and evaluate their performance. The pros and cons of green lubricants will be compared to standard chemistries for metalforming lubricants.

Steve Lowery, Tower Oil & Technology Company

10:30 a.m. – 12:30 p.m.

NEW! S80: TRACEABILITY AND PRODUCTION EFFICIENCY **B**

Traceability in Metal Forming Using RFID Technologies

Gain a tighter control of work in progress by using industrially robust RFID Systems comprised of data carriers, a.k.a. "code tags", read heads and processors (serial, parallel and bus networked systems), we will examine the following target areas in the world of metal forming: 1. Asset Tracking: Plant based assets 2. Material Flow (Kanban): right sized containers 3. Production Control of work in progress: assembly processes 4. Intra Logistic: material flow between plants.

David Bird and Wolfgang Kratzenberg, Balluff, Inc.

Increasing Production Efficiency Using Machine Mount & Distributed I/O

This presentation focuses on the use of IP67 rated I/O products communicating over industrial networks like EtherNet/IP, DeviceNet PROFIBUS, etc. We will cover how Ethernet I/O can improve the production visibility throughout the plant down to the individual sensor. In addition, the pains felt when setting up the press for a run or when a die is changed out; specifically focusing on technologies that can improve data tracking and identification of the tooling as well as I/O products that allow for easy connection of in-die sensing will be discussed.

Will HealyIII, Balluff, Inc.

1:30 p.m. – 3:30 p.m.

NEW! S90: GAME CHANGING TECHNOLOGY TO INCREASE PRODUCTIVITY **I**

Frictionless Metalforming with Water

This session will cover FluidForming technology, a high-pressure deformation process that precisely shapes metal sheets into a predefined geometry by using fluid under high pressure resulting in heretofore unprecedented capabilities. The deformation process utilizes water at pressures up to 60,000 psi as the direct force-to-form while maintaining absolute control of die surfaces and thus eliminating die deflection.

Paul Benny, FluidForming Americas, LLC and Reinhold Wesselmann, FF Fluidforming GmbH

Expanded Markets for Stamped Parts by Adoption of Advanced Technologies

Many stamping companies have limited growth potential against their competition due to the age of their equipment and the limitation of their products. By looking at pairing the large volumes possible with high speed welding technologies such as lasers, it is possible to enter new markets not possible with simply stamped parts. This presentation will review efforts by two companies to develop techniques for "fabricated" parts which have opened up a number of new opportunities.

Bill Adler, Stripmatic and Paul Denney, Lincoln Electric

THURSDAY, NOVEMBER 21

8:00 a.m. – 10:00 a.m.

NEW! S100: DEEP DRAW TECHNOLOGIES **B**

Proportional Pressure Controls

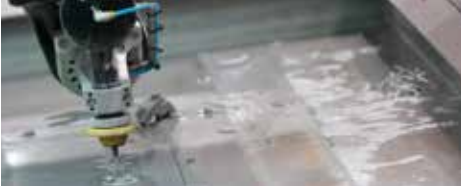
Hydraulic servo controls have been around for many years. Recent advances in chipsets have made it possible for the electronics to catch-up to this powerful tool and integrate it to real time benefits. A review would not be complete without a primer on fixes for various problems in metal drawing. Intention is to review these basic problems and then relate it to the benefits of pressure pad and pressure sleeve control.

Rick Meyerhoefer, Peter Nachtwey, Bill Savela, Delta Computer Systems and Barney Raye and Lee Schilling, MULTIPRESS Inc.

Case Study: Baldwin Filters/Neff Press Inc. Deep Draw Filter Can Line

A key focus of this presentation is the collaborative partnership between customer and vendor when one company partnered with another to purchase a new deep draw filter can-making line to replace aging equipment. The resulting press line exceeded expectations regarding productivity and while meeting targets for uptime, quick die change time and ease of use.

John Macrander, Baldwin Filters and Jon Schmidt, Neff Press, Inc.



CUTTING TRACK

MONDAY, NOVEMBER 18

1:30 p.m. – 3:30 p.m.

NEW! F30: CUTTING: DUAL PROCESS INTEGRATION **A**

Integration of Dual Processes to Expand Operating Capabilities

Laser cutting is an excellent choice for thinner (<3/8") materials, oxide free stainless, and applications where tight feature tolerances are required. Plasma affords high productivity, greater thickness capacity, material quality insensitivity, and lower capital costs. A detailed process comparison across a range of material types and thicknesses will be reviewed and the potential benefits of a system utilizing the strengths of the two processes will be discussed.

Ken Woods, Hypertherm Corp.

The Increasing Value of Punch/Laser Combination Technology

High mix with low volume has become the standard, placing a stronger emphasis on throughput and value added processes. Punch/laser technology has seen a resurgence due to its unique ability to address many of the challenges of today's manufacturing companies. This presentation will highlight some of the latest features on combination machines, as well as revisit many of the old features that were probably ahead of their time yet are so valuable today.

Jason Hillenbrand, Amada America, Inc.

TUESDAY, NOVEMBER 19

8:00 a.m. – 10:00 a.m.

NEW! F40: LASER CUTTING: INTRODUCTION TO LASER CUTTING BEST PRACTICES **B**

Introduction To Laser Cutting Technology

This session will provide an overview to laser cutting technology, including: how a resonator works and what different types of resonators are available, Fiber vs CO₂, RF vs. DC, laser cuts, and what gasses are used with a laser. The components used in building a laser cutting system: beam delivery, cutting head, drive system, pallets, controls (HMI), laser material handling and laser CAD/CAM software will be reviewed.

Rick Neff, Cincinnati Inc.

Efficiency, Performance and Improvements in Laser Cutting

This session will cover a complete overview on the best practices for systems and methods for improving the cutting efficiency, performance and improvements in laser cutting.

Larry Cherne, Praxair and John McCauley, Ophir-Spiricon LLC

10:30 a.m. – 12:30 p.m.

F50: NEW DEVELOPMENTS IN WATERJET CUTTING **I**

New Developments in Waterjet Cutting Systems Mean Expanded Applications and Profitability

New innovations in abrasive waterjet (AWJ) cutting systems are being used to expand applications and increase manufacturing profitability over a wide range of industries. Learn how it works and assess the technology's basic capabilities and limitations. Recent innovations, including 5-and 6-axis motion control systems, special-purpose nozzles, advanced piercing systems and maintenance monitoring systems will be presented. Specific examples will be used to show how manufacturers can use these expanded AWJ applications to improve their own capability, flexibility and profitability.

Laird Parry, OMAX Corp.

Innovation in Action: Waterjet Advancements

Recent technological advancements in the waterjet industry have lead to faster, more efficient cutting. In turn, waterjet is an ideal solution to growing your business. Learn how the newest innovations in waterjet can help you become more productive and profitable. Whether you're a small job shop or a large high-volume business, cutting everything from foam to thick Inconel and titanium, there is a waterjet solution well suited for your application.

Ryan Grams, Flow International Corp.

WEDNESDAY, NOVEMBER 20

8:00 a.m. – 10:00 a.m.

NEW! F70: INNOVATIONS IN PLASMA CUTTING **I**

How to Succeed with Plasma Bevel Cutting

This presentation will cover the steps involved in setting up and running a predictable manufacturing process that includes plasma bevel cutting, tools that help enhance the stability of a plasma bevel cutting operation, and advancements that help to make the plasma bevel cutting process a predictable process. The goal is to provide guidance that can be practically applied to solve the biggest challenges manufacturers face. Key focus areas include job setup, part programming, and process management for reliable results.

Bob Boyes and Dan McLenithan, Hypertherm, Inc.

Making Big Money with Heavy Plate

This session will cover the traditional challenges in plasma processing of heavy plate, material handling to reduce costs, reducing wasted shop floor space, safety and saving labor costs to reduce your bottom line.

Lyle Menke, Peddinghaus Corp.

CNC Plasma: the Gateway into Robotics

The speaker will explain how the entry level Torchmate Growth Series CNC plasma machine is the gateway into robotic controls. Using a standard two-axis operating system that can be expanded to three-axis allows a basic understanding of how robotics work in an industrial application. Learn how nearly anyone can begin their journey into robotics using a mouse and a PC-based computer.

Josh Schohn, Lincoln Electric Cutting Systems

Technology Advancements In CAD/CAM Nesting Software

Learn why data communication between nesting software and other business systems is important to creating a lean manufacturing operation. Understand how nesting software with built-in process knowledge operating as a component of an integrated cutting solution can improve productivity and profits. Finally, hear about the latest cut process combinations supported by nesting software that deliver innovative and flexible systems.

Derek Weston, Hypertherm, Inc.

10:30 a.m. – 12:30 p.m.

F80: COMPARATIVE CUTTING WITH TECH TOUR B

Waterjet Cutting

Learn about the very latest in waterjet technology and applying waterjet technology to new applications, as well as how to get the most out of your waterjet and the future of waterjet technology.

Tim Fabian, Flow International

Plasma Cutting

Discover how new advancements in plasma plate cutting technology have increased pierce thickness, allowing plasma to replace oxy-fuel in materials to 2" with faster speeds, lower costs, and often better cut quality. Recent improvements that make it possible to "plasma" drill holes in plate to 1" thick with no secondary operations required will also be reviewed.

Jim Colt, Hypertherm, Inc.

Laser Cutting

Develop an understanding of the basic capabilities and limitations of a laser and how it compares to other options on the market. Learn how a laser works, the different types of laser systems so you can pick the system that is right for you.

Mike Pellicchia, Mitsubishi/MC Machinery Systems, Inc.

Your Parts Cleaning Technology Specialist

PROCECO[®]
Integrated Cleaning Solutions



Slurry Blasting
Cleaning



Aqueous
Parts Washers



Surface Treatment
Tank Lines



Wastewater
Treatment Systems



Before



After

New Slurry Blasting Cleaning Technology

The ultimate cleaning process combining aqueous cleaning and blasting in one system resulting in parts surfaces free of scale, oil, grease, rust and without any of the residue normally left by conventional blasting processes.

Toll free North America: (800) 978-6677

Tel. International: +1 514 254-8494

Booth #S5567

www.proceco.com/fabtech



LASERS TRACK

MONDAY, NOVEMBER 18

8:00 a.m. – 10:00 a.m.

NEW! F10: TRENDS AND ADVANCEMENTS IN LASER TECHNOLOGY **B**

The Trending Laser Market

This presentation will cover fiber and CO₂ and the issues all manufacturers face getting the part finished quickly without compromising quality. Today's punch/laser combination machines have the ability to complete more operations on one machine versus multiple part handlings on four or more machines. This means more value added time and less overall cost. The latest in fiber, CO₂, tube work, forming and tapping will be discussed.

Jason Hillenbrand, Amada America, Inc.

The History of Industrial Lasers: The People, Equipment, and the Applications that Started it All

An in depth look at the history, people and applications that influenced the birth and growth of the of the industrial laser will be discussed, including a review of the first industrial laser applications which were first started in the automotive and aerospace industries. This presentation will look at the present day technology and how far it has evolved from early flashlamp pumped laser to today's fiber, disk and ultrafast lasers.

Neil Ball, Directed Light, Inc.

10:30 a.m. – 12:30 p.m.

F20: FIBER/SOLID STATE OR CO₂ LASER TECHNOLOGY **I**

CO₂ vs. Solid State Lasers – How to Make the Right Choice

The characteristics and advantages of both CO₂ and solid state laser cutting machines will be reviewed including specific materials and thicknesses, cut quality and cut speed. Specific part examples featuring cost per part will be presented. The presentation will provide participants with a solid background on both technologies in order to help them choose which machine type is best for their application.

Stefan Fickenscher, TRUMPF Inc.

Application and ROI Analysis for Fiber Laser Technology

Fiber laser technology has grown due to improved cutting speed, especially when cutting thinner material, as compared to CO₂ lasers. It also offers more stable cutting performance for stainless, copper, brass, bronze, aluminum, hastelloy, Inconel, titanium and other exotic metals.

This session will compare CO₂ to fiber for a variety of applications and will look at cut speed, finish and ultimately cost of part. The economic advantages and challenges of implementing a fiber laser system will be discussed.

Garrett Peterson, Mazak Optonics Corp.

Advancements in Fiber Lasers

A new generation of fiber lasers have been introduced which increases the efficiency and reliability to an even greater level. New output wavelengths are now offered in 1.5 and 2 micron IR ranges and down into the UV. Learn how the continuous improvement of the fiber lasers has opened the door to new laser processes in manufacturing and is responsible for expanding into new markets.

Mike Klos, IPG Photonics

TUESDAY, NOVEMBER 19

1:30 p.m. – 3:30 p.m.

NEW! F60: INDUSTRIAL APPLICATIONS IN LASERS **I**

One Micron Lasers: Identifying the System for the Application

Disk, fiber, direct diode: which laser technology is best suited for your application? Variables include the types of materials you process, cutting speeds, processing efficiency and operating and maintenance costs. This presentation focuses on the concepts behind the technologies and the questions to ask when considering your next laser system.

Stefan Colle, LVD Strippit

Concepts and Recent Developments in Laser Beam Delivery

Laser beam delivery is the key part of turning a laser into a useful tool. This presentation will review basics and formulas — how these apply to applications, latest and newest developments — and how to optimize or troubleshoot applications.

Mike DelBusso, Laser Mechanisms, Inc.

High Power Disk Lasers – Advances & Applications

The disk laser continues to increase in power per disk and provide higher beam quality and efficiency. This presentation will explain recent advances in disk laser technology and will provide an overview of the advances in the thick sheet area, as well as the very cost efficient, high productivity applications like remote welding, remote cutting and cutting of sheet metal.

David Havrilla and Tracey Ryba, TRUMPF Inc.

1:30 p.m. – 3:30 p.m.

F90: LASER JOINING CONSIDERATIONS WITH TECH TOUR I**Laser Joining in Sheet Metal Fabrication**

Common joining/welding methods typically require secondary processes like grinding or straightening of the welded part before it can be further used. If you use the laser for welding, its low heat input and high accuracy allows for much more efficient fabrication. The entire process chain, from laser welding specific part to fixture design and process parameters, has to be considered and addressed to fully utilize its advantages. This presentation will cover the process of laser joining/welding sheet metals, helping customers understand its abilities and requirements.

Frank Geyer, TRUMPF Inc.

Robotic Laser Braze/ Welding Multi-Channel Control Enhancement

Laser welding and brazing benefits from marked improvements in multi-channel control for the process parameters related to the robot position and velocity along the weld seam. Unique control technology for laser welding and brazing offers higher quality and throughput than previous designs. Program creation through robotic software control provides various functions to enhance the laser path teaching process while promoting ease of use and less scrap.

Michael Sharpe, FANUC Robotics

Tactile vs. Laser Based Seam Tracking for Arc and Laser Processes

This presentation will describe the varying technologies associated with seam tracking in arc and laser based processes. Automated processes can be used to combat the inherent variations that come from parts on a day-to-day basis. When tactile seam tracking can be used, mechanical force is applied to the joint to provide a guided path for the process. When the process is not best suited for tactile tracking, lasers can be used to create a seam image which can drive robot motion. These technologies enable an operation to provide more consistent, higher quality product with less scrap and rework.

Tom Graham, Abicor Binzel

THURSDAY, NOVEMBER 21

8:00 a.m. – 10:00 a.m.

NEW! F100: LASER SCANNING I**Robotics Laser Scanner Process Control – The Key to Quality and Productivity**

This presentation will provide an overview into the latest advances in robotic laser joining/welding scanner controls. The Robotic Laser Scanner System design provides a single point control for the creation and coordination of the robot scanner path improving ease of use. Quality is improved by monitoring the robot path and changes to the scanner path are handled automatically. Integrated vision sensor technology augments program creation and has useful benefit for quality management and robot guidance when parts are not in the taught location.

Michael Sharpe, FANUC Robotics

Laser-Scanning of Profile Cross Sections – New One Sensor System Lowers Cost

COPRA ProfileScanDesktop measures profile sections or short samples contactless by means of a sensor and a turntable, thus the whole visible cross section is pictured. The idea behind this new device is to use only one sensor where up to now 4 or even more sensors have been required (sensor rings). This lowers the cost for such devices drastically while still improving scanning accuracy. A new software technology opens this new way to measure profile cross section in this easy way.

Albert Sedlmaier, data M Sheet Metal Solutions

Über Versatile Multi-Kilowatt Laser System Marks, Welds, and Cleans

Nearly identical multi-kilowatt laser scanning systems consisting of “off the shelf” components are deployed in uniquely different production applications. Each system consists of a multi-kilowatt fiber laser, a 6 axis robot and a 3-axis intelliWELD scanner to position the beam. The synchronized motion of the 9 axes makes it possible for the system to complete multiple tasks at once. While one system performs a series weld on a car door, the other system is removing layers of paint from the skin of an aircraft. The large area laser beam scanning is made possible by the synchronized motion of all 9 axes.

Dale Sabo, SCANLAB-America

FABTECH Bistro

Reserve a seat at the **FABTECH Bistro** and you will always have a convenient place to eat, meet and network. With two locations on the show floor, the Bistro offers assorted menu options including fresh and healthy lunch options, international cuisine and regional favorites – all at a reasonable price. Pre-purchase your individual lunch tickets to avoid the lines. Find the daily menu, pricing and order tickets at fabtechbistro.com.





FORMING & FABRICATING

MONDAY, NOVEMBER 18

8:00 a.m. – 10:00 a.m.

F11: TOOLING SOLUTIONS FOR METAL FABRICATION I

Eliminating Secondary Operations in Sheet Metal Fabrication

By using specific forming tools, fabricators can eliminate secondary operations such as bending or welding, better stage jobs for downstream processes, and eliminate or significantly reduce the cost of parts. As a result, you will become more profitable, gain more business from price sensitive customers, and have the potential to expand product lines.

Dennis Lowry, Mate Precision Tooling

Emerging Press Brake Tooling Technologies

As press brakes become more advanced, it is imperative that fabricators be equipped with tooling systems that take full advantage of the available technology. Learn about the latest advancements and how they can be utilized to minimize tooling costs and maximize press brake productivity.

David Bishop, Wila USA

Metallurgy of Tooling Materials

Learn to recognize the various factors that can affect the performance of tooling materials used in metal fabrication processes. You will understand the basics of grade selection, failure mechanisms and the methods and treatments that can enhance tooling performance.

Gary Maddock, Zapp Tooling Alloys

10:30 a.m. – 12:30 p.m.

F21: ROLL FORMING BEST PRACTICES B

Benefits of Roll Forming

With new advancements in technology, roll forming is no longer a “black art”, but a process that can be measured and improved to create successful in-line operations that combine stamping, welding and other operations into a continuous operation. Learn how roll forming can help reduce the labor and manufacturing costs of products.

Brian Rodgers, Roll Forming Corp.

Modern Lubricants For Roll Form Process

This presentation will review the different lubricant products that are available, and provide a seven step process to select the best lubricant. Learn how to monitor and control the conditions that determine how effective the lubricant and coolants are.

Joe Hough, Tower Oil & Technology Co.

F31: ROLL FORM TOOLING & TROUBLESHOOTING A

Add Value to New or Existing Roll Forming Lines with “In-Line Punching and Cut-off Solutions”

This presentation will explain and show examples of completely integrated roll forming lines, showing the cutoff and punching operations that are performed to produce finished parts from the line. This starts from simple cutoff methods to applications with holes, slots, notches and cutting the part to length using different methods of dies, presses and measuring system.

Paul Williams, Hill Engineering/Formtek, Inc.

Roll Form Tooling Setup and Troubleshooting

Learn the proper way to install roll form tooling and make the necessary adjustments to the setups to insure your operation runs smoothly and effectively by understanding roll tooling designs, setup documentation, and roll form tooling standards. Develop the necessary techniques to help troubleshoot problems.

Steve Ebel, Roll Form Solutions, Inc.

TUESDAY, NOVEMBER 19

8:00 a.m. – 10:00 a.m.

F41: LEVELING: MAKING MATERIAL FLAT II

Changing the Shape of Flat Rolled Metals

The secret to upgrading the flatness of flat rolled metals is to understand shape defects and basic metallurgy determining material behavior. Learn how to select the right equipment based on its capabilities and abilities.

Thomas Hazen, T. F. Hazen, Consulting

Precision Parts: Advanced Leveling Solutions for Fabricators

This presentation compares the different methods for leveling, flattening or straightening parts by providing insight into the unique characteristics of parts leveling (vs. coil leveling) and summarizing the competitive advantages. Learn how flat parts can reduce manufacturing time and product costs, so you can remain competitive.

Jurgen Jost, ARKU Coil Systems, Inc.

Ultimate Laser Quality Metals

The use of lasers is growing exponentially around the globe due to their speed, productivity, accuracy, flexibility, cut-quality, low-energy consumption and very low scrap-ratio attributes. Learn what it takes to process perfect laser-quality metals to be prepared to serve this growing market.

Bob Sipp, Leveltek International LLC

New Innovations in Leveling

With the increased use of lasers, it is more important than ever that material is flat. Understand the latest technology available for measuring flatness and how to equalize internal stresses by utilizing the new e-drive technology.

Brownie Cox, Bradbury Company, Inc.

10:30 a.m. – 12:30 p.m.

F51: COIL PROCESSING FROM START TO FINISH B**Coil Slitting Technology & Practices**

How do you improve the efficiency and productivity of your slitting operation and process quality product? What effect do the newer high strength and heavier gauge materials have on your slitting operation? These questions will be discussed in detail as well as the advantages of a shape correction leveler in a slitting line and getting the most out of your existing equipment.

Ray Kuch, Braner USA, Inc.

Slitting to Achieve the Best Result

Learn how to produce quality slit edges while maximizing the life of your tooling no matter what the material is by avoiding costly mistakes, identifying problems and taking corrective measures.

Al Zelt, ASKO, Inc.

Advances In Blanking

While there is growing emphasis on the use of close tolerance blanks, there remains a great deal of confusion regarding the definition of a blank. This presentation will answer questions like what is the proper way to measure them and what types of CTL/Blanking Lines are best suited to produce the most accurate parts, and why?

Dean Linders, Red Bud Industries

1:30 p.m. – 3:30 p.m.

NEW! F61: BENDING AND FORMING TECHNOLOGY I**High Speed Bending Cells**

With optimized material flow, easy tool setup and changeover, and convenient ways of programming without interrupting production, automated bending cells are designed for producing small parts faster than ever. This presentation will cover the basic components of bending cells and how they help produce small bending parts at high speeds while reducing costs.

Jamie Crandall, TRUMPF Inc.

Best Practices in Hydroforming

Learn the latest solutions now available that offer significant advantages, making sheet hydroforming a viable alternative for forming various metals and thicknesses over traditional forming methods.

Ryan Pendleton, Beckwood Press Company, Scott Pryer and Dave Smith, Triform Sheet Hydroforming

WEDNESDAY, NOVEMBER 20

8:00 a.m. – 10:00 a.m.

NEW! F71: PRESS BRAKES FOR OPERATORS II

Learn the skills necessary to operate a press brake and form consistent, quality parts every time. Press brake mastery begins with an understanding of the forming operations, the press brake, tonnage, tooling selection, bend radius, and bend deductions. This session will review everything you need to know to operate a press brake.

Steve Benson, ASMA

10:30 a.m. – 12:30 p.m.

NEW! F81: PRESS BRAKES FOR ENGINEERS A

The success and failure of a press brake forming operation is determined in the design stage. This session will look at how the forming method, bend deductions, and tooling selection can make or break the part. Engineers will learn how to account for springback/springforward and to ensure quality, consistent parts regardless if the bend is sharp or profound.

Steve Benson, ASMA

1:30 p.m. – 3:30 p.m.

NEW! F91: PUNCH PRESS TECHNOLOGY WITH TECH TOUR B**Reduce Setup Time to Improve Green Light Time On Your Turret Punch Press**

Turret punch presses can improve your production capabilities by adding value to parts at a fraction of the cost of a laser and reduce or eliminate the need for additional processes. Specialized software can help the operator be more efficient by streamlining setup operations. This will assist in generating high, consistent green light times on the machine where parts are being produced, with or without automation.

Donald Angel, Murata Machinery USA, Inc.

Punching Technology – It's All About the Process

The right punching process can save you time and money. Learn how new machine and forming capabilities can help reduce the cost of parts, shorten production time, lower raw material costs by performing costly secondary operations on the turret press and by forming thinner materials.

Mike Kroll, TRUMPF Inc.

Value Adding Fabricating with Punch Presses

This presentation will challenge the 'stereotypical' view of punch presses for just punching holes. Now some punch presses can do so much more! You can now punch, form, tap, scribe and bend all on one machine. Learn how the latest punch presses can add more value to your shop.

Matthew Fowles, LVD Strippit

THURSDAY, NOVEMBER 21

8:00 a.m. – 12:30 p.m.

1/2-DAY WORKSHOP

NEW! F03: PRECISION SHEET METAL OPERATOR PREP COURSE & CERTIFICATION EXAM

Validate your metal fabrication knowledge and skills by earning your Precision Sheet Metal Operator (PSMO) Certification. Obtaining your PSMO credential demonstrates your experience and proves your competence in working with a range of fabrication equipment including press brakes, shears, turret punch, and other machines. The four-hour Prep Course is a comprehensive review of the 13 topic areas addressed on the PSMO exam. Attend the session to refresh your understanding of basic metal fabrication concepts and learn tips to help you successfully pass the exam. Follow up by taking the exam. An additional application is required for the exam.

Steve Benson, ASMA

**JOB SHOP SOLUTIONS**

MONDAY, NOVEMBER 18

8:00 a.m. – 10:00 a.m.

F12: COST ESTIMATING FOR THE JOB SHOP B**Job Costing and Estimating**

This session will discuss various estimating techniques for job shop and custom fabricators. The next level is job costing techniques using different costing methods and data collection devices to get accurate job costing data.

David Ferguson, MIE Solutions

How to Produce Accurate Estimates in Minutes

This session will provide the tips you need to develop accurate estimates that are consistent and drive sales. Learn how to reflect the true cost of your processes and components by using custom templates and other techniques that will enable you to convert estimates into sales with a single click.

Sanjay Ejantkar, Keyed-In Solutions

10:30 a.m. – 12:30 p.m.

F22: DESIGNING PARTS FOR SHEET METAL B

Sheet metal part design incorporates the effective use of all available manufacturing equipment. Personnel that design, program and manufacture parts must understand their equipment capabilities and machine limitations. This presentation will change the way a designer thinks about the part design process from start to finish. New designs must be innovated from the start and keep the end goal to reduce costs in mind.

Grant Hagedorn, TRUMPF Inc.

1:30 p.m. – 3:30 p.m.

NEW! F32: MATERIAL HANDLING SOLUTIONS FOR THE JOB SHOP B**Pallet Decoilers When & Why**

The advantages of pallet decoilers in regards to floor space, downtime, safety and reduced scrap material will be discussed. While there are limitations with line speed, material thickness and width, the short payback period makes the change to a pallet decoiler an easy justification.

Mike Roy, Formtek

Lifter Magnets – Choosing, Using, & Benefiting

Understand the basics of magnetic handling, everything from the basic principles of how magnets work and the differences between the various types of magnets to the potential applications for lifting magnets. Special emphasis will be placed on plate-handling and loading and clearing cutting tables efficiently.

Dave Wilber, Walker Magnetics

Steel Sheet Handling with Magnetic Variable Field Technology

Learn how the latest technological advancements in magnetic sheet handling has improved safety in the workplace while providing the necessary flexibility for fabricators and steel service centers to be able to lift varying thicknesses of material.

Simon Barton and Michael Gaunce, DocMagnet Inc.

TUESDAY, NOVEMBER 19

8:00 a.m. – 10:00 a.m.

NEW! F42: PRESS BRAKE SAFETY: CHANGES TO ANSI B11.3 - 2012 EXPLAINED

The presentation will cover the new ANSI B11.3-2012 Press Brake Safety Standard and its dynamic changes. Real world examples will be presented outlining an application appropriate approach to defining which type of safety device — light curtain, laser or camera system — maximizes part flow through a particular machine.

Douglas Raff, Paragon Industrial Controls, Inc.

10:30 a.m. – 12:30 p.m.

NEW! F52: LEAN AND SAFE: A WINNING COMBINATION I**Overview: Lean and Safe**

Learn how you can achieve a safe and lean business environment. Are the two related?

Kelly Langdon, Buhler Aeroglide Corp.

Global Harmonization

How do globally harmonized safety standards benefit the lean organization?

Steve Aamodt, SICK, Inc.

Ergonomics Lean and the Aging Workforce

Can you achieve 'lean' and 'safe' with an aging workforce?

Brian Roberts, CNA Risk Control

1:30 p.m. – 3:30 p.m.

NEW! F62: MAINTENANCE FOR THE JOB SHOP I

The far-reaching impact of maintenance operations is oftentimes not fully recognized until something happens. Learn how Midland Metal Products was able to revamp and modernize its maintenance operations to reach ISO 9000 certification standards and attain high customer satisfaction.

Paul Lachance, Smartware Group, Inc.

WEDNESDAY, NOVEMBER 20

8:00 a.m. – 10:00 a.m.

NEW! F72: BUSINESS SOLUTIONS TO STREAMLINE YOUR JOB SHOP I**Is it Time for Stampers and Fabricators to Move to the Cloud?**

Learn how a cloud ERP delivery model can help businesses streamline operations and increase productivity. As concerns about the security and reliability of cloud-based systems are discovered to be urban legend, today's manufacturers are experiencing cloud benefits that improve day-to-day operations and provide competitive advantages.

David Klotz, Plex Systems

How 3D Simulations Improve Manufacturing Processes and Reduce Costs

Technology exists today to discover revenue that is lost in most manufacturing processes. 3-D simulation technology is now affordable and easy to use. This session will demonstrate how 3-D simulation can be applied to the spectrum of manufacturing and applications.

Robert Axtman, Visual Components

Scheduling Jobs Across the Shop

Learn how using a single software solution from the quoting to the production processes can help streamline operations, reduce setup time, and isolate quality problems with just a single click of the mouse. You'll improve the the breadth and depth of functionality while ensuring accurate part cutting, optimizing material usage, and reducing cutting time.

Dan Barr and Jim Lindsey, SigmaTEK Systems LLC

1:30 p.m. – 3:30 p.m.

F82: PLATE FABRICATION B**The Value Proposition of 2D Fiber Laser**

This presentation will cover the value proposition of fiber laser ownership which will include cost of operating verses a CO2 laser. The cutting characteristics in sheet metal and plate materials plus the versatility of fiber laser applications for copper, brass and other hard to cut materials will be covered.

Matt Moore, JMT USA

THURSDAY, NOVEMBER 21

8:00 a.m. – 10:00 a.m.

F102: LOW VOLUME HIGH VARIETY I

Learn which lean initiatives make sense for a small and mid-sized shop, and how a typical fabricator should be able to achieve 30% cost reduction by implementing the right lean techniques and use their ERP system to support lean across the entire organization from the shop floor to the front office.

Dave Lechleitner, Exact JobBOSS



AUTOMATION & ROBOTICS TRACK

MONDAY, NOVEMBER 18

8:00 a.m. – 10:00 a.m.

F13: USING ROBOTICS IN METAL FORMING AND FABRICATION **I**

Gain the knowledge you need to evaluate robotic equipment and suppliers and efficiently budget for robot applications, so you can select the right automation system for your organization.

Bob Rochelle, Staubli Corp.

1:30 p.m. – 3:30 p.m.

NEW! F33: AUTOMATION SOLUTIONS FOR PRESS BRAKES WITH TECH TOUR **I**

Reducing Press Brake Setups with Tool Changing Technology

An automated press brake tool changing system can reduce tool set-up time and improve manufacturing efficiency. Learn how an integrated press brake tool changing system will automatically control the storage, insertion and removal of upper and lower press brake tools.

Paul LeTang, LVD Strippit Inc.

Forming Success in Robotic Press Brake Tending

Robotic press brake tending can improve productivity, safety and quality and ensure success of a project. Learn how to increase flexibility for handling a wide variety of parts, improve ergonomics, reduce the amount of robot programming, and improve the flexibility for current and future parts.

Allen Guernsey, AccurPress America and Tom Sipple, Yaskawa Motoman

Keeping the Pace in Sheet Metal Fabrication

The introduction of fiber lasers have dramatically increased cut speeds and part throughput. However, careful considerations must be made to downstream processes. This presentation will address the challenges and the solutions to introducing high speed equipment into the sheet metal fabrication process.

Frank Arteaga, Bystronic Inc.

TUESDAY, NOVEMBER 19

8:00 a.m. – 10:00 a.m.

F43: AUTOMATED DEBURRING WITH TECH TOUR **I**

Each deburring machine has its advantages. Learn what type of machine will work best for your operation so you can achieve the optimal performance and obtain the best finish possible while reducing costs.

Gregory Larson, Timesavers, Inc. and Erik Vanstrum, 3M Company

WEDNESDAY, NOVEMBER 20

8:00 a.m. – 10:00 a.m.

F73: AUTOMATION: ROBOTIC MATERIAL HANDLING FOR LEAN HIGH MIX/LOW VOLUME SHOP **B**

This presentation will address how robotics enhances lean activities and brings value to your company, how to justify these projects and overcome objections with the implementation of robotics in your facility, system design concepts that build in flexibility for current and future parts, and products that will take these projects from concept to reality.

Tom Sipple, Yaskawa Motoman

RUN4 MFG5K

Charity Run • Chicago • Nov. 17, 2013

Show your support for the future of manufacturing and join AWS, FMA, SME, PMA and CCAI in Chicago at the 2nd Annual **RUN4MFG 5K**. Whether you decide to run, jog, or walk you will be doing more than just making a healthy start to your FABTECH week.

Learn more at fabtechexpo.com/Run4Mfg.





LEAN TRACK

MONDAY, NOVEMBER 18

8:00 a.m. – 3:30 p.m.

FULL DAY WORKSHOP

F01: DRIVING THE LEAN TRANSFORMATION ...ARE YOU PREPARED FOR CHANGE? **I**

Limited to 24 participants

This one-day workshop demonstrates how a company journeys through a Lean Enterprise Transformation by using the tools and concepts of Lean and World Class Manufacturing basics to deliver top results. See how a company can go from a traditional business approach where customer satisfaction and company performance is far below desired levels to Lean transformation concepts where customer satisfaction is exceeded. Participants will focus on the entire Enterprise and Value Chain from Suppliers to Customers from Sales through Shipping. This Lean Transformation Simulation is an interactive workshop where participants learn the reason for change, the methods of change and the tools and techniques of change. Attendees will learn how to assess a current situation, plan an execution and install controls for sustainability.

Larry Baumann and Patrick Lucansky, Value Innovation Partners, Ltd.

8:00 a.m. – 10:00 a.m.

NEW! F14: LEAN PRINCIPLE: STRATEGIC PLANNING AND ORGANIZATIONAL ALIGNMENT **I**

OpEx . . . Operational Excellence for a Sustainable Competitive Advantage

This session will cover the application of principles, systems, tools and techniques to provide sustainable improvement of your business operations and provide measurable key performance metrics.

Alan Lund, UHY Advisors, Inc.

Great Leadership Is The Key To Sustaining A Lean Environment

Learn what your role as a leader should be in setting direction and establishing clear expectations for your team members by putting the focus on the customer. Leaders must accurately define customer needs (internal and external) and then train team members to meet those needs through clear communication and appropriate leadership styles.

Kim Dixon, Prestige Consulting, Inc.

10:30 a.m. – 12:30 p.m.

NEW! F24: LEAN PRINCIPLE: VISUAL WORKPLACE **I**

This session provides a comprehensive process for launching, training, implementing and sustaining powerful visual concepts, principles, tools and solutions in your company. The focus is on Visual Order—the indispensable first step on every company's journey to a fully-functioning Visual Workplace. Understand actual visual solutions and mini-systems.

Anthony Manos, Profero, Inc.

1:30 p.m. – 3:30 p.m.

NEW! F34: LEAN PRINCIPLE: DEVELOPING PEOPLE & PROCESSES **I**

Lean as a Growth Strategy

This session will describe how thinking lean can help your organization not just survive, but thrive. In this current economic environment you must distinguish yourself from the competition by performing as close to world class as possible. This makes it difficult for the customer to justify seeking out other suppliers. If you provide the best "cost, quality, delivery" option, your customer has no choice but to buy from you.

Gary Conner, Lean Enterprise Training

The Fearless Front Line: Liberating Leaders to Improve and Grow Their Business

Learn how to create a fearless front line by implementing visions of excellence and the Run Improve Grow (RIG) model, which provides a proven system, processes, and tools that will result in responsive, innovative, and nimble organizations filled with inspired, accountable, and confident teams. The RIG model is designed for perpetual and transformational improvement and has been successfully implemented by leaders in small and large organizations.

Ray Attiyah, Definity Partners

Leading Your Business Forward: Aligning Goals, People, and Systems for Sustainable Success

Discover everything from how to define corporate direction and design for leadership parameters, to the smartest ways to create and maintain workplace behavioral expectations. Additionally, gain critical insight on hot topics like cultural and generational diversity, communication styles, and listening processes among employees. This is an essential presentation for executives who want to gain market share and achieve dynamic success in today's marketplace.

Shane Yount, Competitive Solutions, Inc.

TUESDAY, NOVEMBER 19

8:00 a.m. – 10:00 a.m.

NEW! F44: LEAN PRINCIPLE: STANDARDIZED WORK FOR SHOP FLOORS AND LEADERS B**5 Common and Costly Mistakes to Avoid When Owning or Managing a Fabrication Shop**

Today, shop owners have to be savvy business people and run their business as such. Learn the five common and costly manufacturing mistakes to avoid and how to leverage the latest in shop floor and management technology to isolate problems before they get out of hand. What benchmarks are available to evaluate your shop? In addition, explore what the shop of 2020 may look like.

Dave Lechleitner, Exact JobBOSS

Implementing Standard Work Instructions and Going Paperless on the Shopfloor

With the advent of ruggedized mobile options available for the shop floor, your employees can be more connected than ever before. Review ways that you can reduce the waste of scrap and rework or overproduction by implementing standardized work instructions for each operation. Look at ways that shops have gone mobile and implemented the latest technology to keep all employees connected and on task.

Dave Lechleitner, Exact JobBOSS

10:30 a.m. – 12:30 p.m.

NEW! F54: LEAN PRINCIPLE: FLOW & PULL VALUE B

Learn how to design a value stream that utilizes flow to achieve Operational Excellence. Through the use of a current state map, which illustrates 'a day in the life of a part,' you'll learn how to see the flow of value to the customer. From there, you will have the knowledge to construct a future state map to build a lean flow, which is the first step toward Operational Excellence. These guidelines include takt, finished goods strategy, continuous flow, FIFO, pull, scheduling one point, interval scheduling, and pitch. The presentation concludes with the beginning steps of an implementation plan.

Glynn Miller, Institute for Operational Excellence

1:30 p.m. – 3:30 p.m.

NEW! F64: LEAN TOOLS: VALUE STREAM MAPPING - ADDRESSING THE DIFFERENCES BETWEEN THE OFFICE & THE SHOP FLOOR B

"Value Stream Mapping" is a practical guide that helps decision-makers improve value stream efficiency in virtually any setting, including construction, energy, financial service, government, healthcare, R&D, retail, and technology. It gives you the tools to address a wider range of important VSM issues, including the psychology of change, leadership, creating teams, building consensus, and charter development.

Mike Osterling, Osterling Consulting, Inc.

WEDNESDAY, NOVEMBER 20

8:00 a.m. – 10:00 a.m.

NEW! F74: LEAN TOOLS: QUICK CHANGEOVER AND TPM B

Machine uptime is a critical metric of performance in high mix operations. But most shops overestimate their uptime, resulting in costly problems in everything from scheduling difficulties to chronic overdues, to longer than necessary lead times. This presentation addresses the issue of uptime directly and shows, through instruction and case studies, how to maximize uptime (and reduce investment) through practical techniques to reduce changeover times in fabrication processes and keep the equipment ready to run through productive, economical maintenance.

Richard Kallage, KDC & Associates, Ltd.

10:30 a.m. – 12:30 p.m.

NEW! F84: LEAN TOOLS: 5S WORKPLACE ORGANIZATION & STANDARDIZATION B

This presentation will outline in great detail how to properly implement 5S in your factory. Multiple examples and pictures will be shown to illustrate the power of this lean tool. Topics covered: red tagging, shadow board creation, right sizing, tool check cards, supply kanban systems, floor markings, labeling, standardization, end of day clean up procedures, production control boards, 5S auditing, and incentive programs, 8 wastes and lean metrics. This will be a very in depth presentation for those interested in the implementation of the visual workplace.

Tony Manos, Profero, Inc.

1:30 p.m. – 3:30 p.m.

NEW! F94: LEAN FACILITY: OPERATING FOR INCREASED PROFITABILITY B**Facility Design for Lean Manufacturing**

This presentation will give you the step by step approach to creating the optimal facility design by minimizing transportation and lost motion so that productivity is greatly improved. By involving and training employees, you facilitate the lean culture at the same time. Creating flexibility in the layout will allow for future growth and expansion. Learn how to use monuments and constraints to your advantage is possible and necessary.

Kim Dixon, Technical Change Associates, Inc.

Lean Ergonomics

It is well known that lean concepts can provide significant gains in productivity and quality. Ergonomics can provide an additional boost to these gains. Innovative use of material handling equipment is the key to leverage the synergy between lean and ergonomics. Lean ergonomics can decrease lead time and add to throughput by removing the waste of non-productive manual material handling movements and activities.

James Galante, Southworth International Group, Inc.

B = Basic **I** = Intermediate **A** = Advanced

Moving Assembly Line Design Puzzles

This case study will explore how a plant manager of a major appliance manufacturing company addresses the challenge of introducing a new assembly line to absorb a product from a closing sister-plant. Evaluation of an existing line's condition revealed that while recent productivity improvement efforts resulted in considerable financial impact, it was not enough to achieve the targets of the new line, where efficiency must be improved by at least 25%. By grasping the current condition of his "best line" and identifying improvement opportunities, he decides to create a learning area for experimentation that ultimately creates a workable solution through trial and error.

Oleg Gorodnitskiy and Hilary Zak, FOR(X) Operations Managing Consulting, LLC

THURSDAY, NOVEMBER 21

8:00 a.m. – 10:00 a.m.

NEW! F104: LEAN TOOLS: 3 PROVEN PATHS TO MAJOR PROFIT IMPROVEMENT **A**

Continuous Improvement Tools for Quality/Lean Initiatives

Step-by-step processes will be reviewed during this presentation to describe the A3 benefits of frontline decision making, establish vital points with story board one-page summaries and explain how this can be aligned with the "Six Sigma DMAIC" approach and project management report out.

Subramaniam Manivannan, Frank Electric

Go Lean and Achieve Substantial Savings

Lean is one way to reduce day to day operation costs while preparing the company for future growth. This session describes the different areas of improvement and how software can help. Starting with the quoting process, you can build lean into your estimates which will then flow to the shop floor. This will automate your procurement process and provide view of your margins, allowing you to maximize profit.

Sanjay Ejantkar, Keyed-In Solutions

Profit Destroyers: Find Them. Fix Them

Learn how common financial and operational metrics can often mask the root causes of underperformance. This session will show attendees how this can happen and how to identify the real profit destroyers. Finally, it will identify the big 4 common destroyers in low volume, high mix operations and prescribe necessary steps to eliminate them.

Richard Kallage, KDC & Associates, Ltd.



MANAGEMENT TRACK

MONDAY, NOVEMBER 18

8:00 a.m. – 10:00 a.m.

NEW! F15: HOW MUCH IS YOUR COMPANY WORTH? **A**

Valuation Parameters and Strategies for Fabricators

Whether or not ownership is looking to sell in the next five years, managing for valuation is a best practice tool used by the world's best manufacturing companies — public and private. Owners and senior managers will learn the best practices for enhancing company valuation in a session intended to be both instructional and highly interactive.

Richard Kallage, KDC & Associates, Ltd.

Understanding Margins — Keys to Business Value

This presentation will explore the definitions and uses of different margins so that participants may properly assess product, plant, and company profitability. Data analytics will be introduced as a means to gain a clear view of economic performance, and economic modeling will be presented as a key input to assessment and improvement efforts.

Tony Giordano, John Kmetz, and Christopher Schumann, BKD, LLP

10:30 a.m. – 12:30 p.m.

NEW! F25: LEADING YOUR ORGANIZATION TO PROFITABILITY **I**

Leadership: Creating Growth and Profitability

This presentation will focus on the leadership challenges companies face to create synergies between team members, support needed to make initiatives like "lean manufacturing" a sustainable success and how Emotional Intelligence can be used to hire for best fit and to develop the talent you have.

Joe (Joachim) Mayer, Mayer Business Group, LLC

Leading Your Organization To Profitability

You can lead your organization towards greatness and profitability while also continuing to grow. You just need to incorporate the fundamental principles of excellence in execution, performance culture, build leaders and not followers and provide freedom and responsibility into the corporate culture.

Mark Hamade, Manufacturing Business Consultant

1:30 p.m. – 3:30 p.m.

NEW! F35: SUSTAINABLE MANUFACTURING IN THE 21ST CENTURY I

Selling to the “Green” Market; Sustainable Manufacturing Leadership

A strong business case can be made for implementing sustainable practices in manufacturing operations to reduce costs, increase sales, retain and attract employees, and improve investment opportunities. This session will explain the business case and identify a path to developing a business strategy to help compete in a global market challenged in the coming years by environmental and social pressures that have never been faced by small and mid-sized manufacturers.

William Stough, Sustainable Research Group

Countdown to Conflict Minerals Compliance

As of May 2014, public companies are required to disclose the use of Conflict Minerals originating from the Democratic Republic of the Congo or an adjoining country. Conflict Minerals are the ores: columbite-tantalite (coltan) – metal ore for tantalum, cassiterite – metal ore for tin, wolframite – metal ore for tungsten, and gold. Disclosure involves mapping of the supply chain for these metals to the smelter or perhaps all the way to the mine. The trade of conflict minerals originating in the DRC is believed to be helping to finance human rights violations. The Dodd-Frank Act and Securities and Exchange Commission Final Rule was created to address these concerns.

Mary Ellen Mika, Steelcase Inc.

Responding to Green Customer Surveys

More and more buyers are requesting information on the environmental performance of their suppliers. Questionnaires are becoming a standard approach, and over time they are increasing the range of information and data being requested. Be prepared to effectively handle green data requests from your customers by planning ahead and developing an approach to provide verifiable information quickly and efficiently. This presentation will help you understand where this trend is heading, what is required to stay competitive and how to approach building effective systems internally to meet the challenge.

Charles Gerhardt, Underwriters Laboratories and William Stough, Sustainable Research Group

TUESDAY, NOVEMBER 19

8:00 a.m. – 10:00 a.m.

NEW! F45: DEVELOPING BUSINESS PROCESS AND STRATEGY I

Manufacturing Metrics: Training to Drive Sustainable Business Process

This lively and interactive session addresses the basic foundations for leadership training that can actually improve the bottom line by discussing why leaders fail, personal leadership implementation experiences, and successes and failures companies have experienced during the transition of management. Gain the

knowledge and understanding to begin implementing practical, auditable leadership techniques into your work environment that promote employee involvement and empowerment.

Shane Yount, Competitive Solutions, Inc.

It's Time for an Operations Strategy

The key to manufacturing success is to have a cohesive operations strategy that encourages continuous growth and improvement. Lead Time Reduction is the optimal way to lower cost while increasing market share, and Quick Response Manufacturing provides the guide for effective Lead Time Reduction.

Glenn Binder, LASPAR and Bill Richie, Tempus Institute

8:00 a.m. – 12:30 p.m.

1/2-DAY WORKSHOP

NEW! F02: BUILDING A COMPETENCY-BASED TRAINING & DEVELOPMENT PROGRAM B

This workshop will walk participants through the process of building a competency-based training program, based on critical manufacturing business needs. The process will show the leveraging of the standard machining competency and how to customize the standard to specific customer needs.

The workshop will cover the following topics:

- Why do we need a competency model?
- Comply to Quality Standard Requirements
- Provide worker job competence records
- Identify critical business needs
- Leverage the standard — competency framework
- Perform the proper steps in defining job roles
- Job and task analysis
- Adopting tools to monitor ongoing job competence

John Hindman, Tooling U-SME

10:30 a.m. – 12:30 p.m.

NEW! F55: PRACTICAL APPROACH TO DEVELOPING A STRATEGIC PLAN I

The Importance of Strategic Planning for the Job Shop

Unless you plan for the future and take the necessary steps to make sure your people, technology, and processes are at the forefront, you will be a follower and lose your competitive advantage. Learn how to develop a strategic plan for your operation. Koester Metals will share their experiences around the development and implementation of their strategic plan, and what they learned from the process.

Mark Ernst, Ernst Enterprises, LLC and Matt Koester, Koester Metals, Inc.

Transformative Strategic Planning for the Small to Mid-sized Fabrication Company

Having a good strategic process is essential for the effectiveness of an organization. This presentation provides managers and executives with the latest ideas,

B = Basic **I** = Intermediate **A** = Advanced

tools, and techniques to analyze the current business environment, industry structure, and major competitors so that they understand how to compete in today's business environment and formulate effective strategies.

Luis Flores, SEI Consulting

1:30 p.m. – 3:30 p.m.

**NEW! F65: PUT YOUR CUSTOMER FIRST!
IMPROVE CUSTOMER RELATIONS TO
INCREASE PROFITABILITY I**

How to Win with an External Sales Force

This session will highlight different approaches to using manufacturing reps and direct sales people. The success of your chosen sales model depends on an accurate evaluation of the fundamental strengths and weaknesses of the different approach, basic understanding of the economics, building relationships based on trust, knowing each other's value proposition, and adapting the organization to support the new sales model.

Richard Kallage, KDC & Associates, Ltd. and Joe (Joachim) Mayer, Mayer Business Group, LLC

**Getting Close to Your Customers —
CRM 101 for the Fabricator**

Learn the basics of effective customer relationship management and how you can provide exceptional customer experiences supported through the use of the latest CRM technology to move beyond just satisfied customers to extremely loyal customers. The importance of implementing a mobile CRM strategy especially when managing an external sales force or manufacturing reps as the face of your company will also be discussed.

Dave Lechleitner, Exact JobBOSS

**F66: WORKFORCE: RECRUITMENT
STRATEGIES B**

Recruiting the Best Employees

Selecting the best candidates is among the most important role you have in your business. A bad hire can cost thousand of dollars, demoralize the work force, and can hurt your business brand. Learn about sourcing strategies successful companies use like behavior based interviewing and how it helps you learn about candidate skills and attitudes. Lastly, you will learn how to use the structured interview guide in order to be much more effective at interviewing candidates.

Mark Ernst, Ernst Enterprises, LLC

**Building Your Next Generation Leaders:
Competitive Talent Recruitment &
Retention Strategies**

Baby boomers are retiring from our workforce and it's creating critical gaps in our management teams. College graduates perceive careers in industrial manufacturing as unstable and not "sexy". However, the largest US export from now through 2030 will be industrial manufacturing. Learn how you can find high potential talent you can groom into future strategic leaders.

Chelsea Garrett, Garrett Search Partners

Closing the Manufacturing Talent Gap

Today's talent gap is hitting manufacturers especially hard as the demand for skilled production workers increases and the overall supply of this talent diminishes. Internships and co-op programs offer needed solutions to the dilemma, yet creating these programs and attracting talent continues to be a struggle. Learn how brand, engagement, and the Millennial/Boomer dichotomy can positively impact your ability to create internships and co-op programs that will attract and retain the talent your company needs.

Gabrielle Caputo, Kelly Services

WEDNESDAY, NOVEMBER 20

8:00 a.m. – 10:00 a.m.

F75: MARKETING FOR FABRICATORS I

In this challenging environment, traditional sales-and-marketing techniques are Dead On Arrival. The new reality is Relationship Marketing — building real connections with your customers and prospects that last for the long term. Discover how to stop competing on price and how to start competing on relationships — the one competitive advantage that you can sustain while still making a healthy profit.

Jon Goldman, Brand Launcher

**NEW! F76: WORKFORCE: PREPARING
NEXT GEN LEADERS I**

**What a Difference a Generation Makes...
Integrating New Hires Into Your
Company's Culture**

This case study will share how the challenge of integrating new hires became an unexpected hurdle at a large CPC, when they saw enthusiastic new employees quickly become disenchanted after only six months. Find practical and creative ideas on how this hurdle was overcome, and some "take-away" tools for your company.

Nancy Cobb, Partners in Possibilities

Developing the Next Generation Leader

Without a solid development plan the preparation of the next generation leader can be left to chance. You have worked too hard to let this risk affect your business. A 3rd generation leader will share what worked, what didn't, and what he would do differently knowing what he knows today.

Mark Ernst, Ernst Enterprises, LLC and Matt Koester, Koester Metals, Inc.

10:30 a.m. – 12:30 p.m.

NEW! F85: ACHIEVE YOUR SALES GOALS B

**Increase Website Traffic Today:
SEO Tricks & Tools**

You can attract more traffic to your website using Search Engine Optimization. This session will show you how to test your efforts and measure results, and you'll walk away with a list of immediate next steps to implement on your own website, resulting in more new customers and more engaged existing customers.

Oliver Feakins, Web Talent Marketing

Thriving With Manufacturers' Reps

In this session you will learn about low-cost and no-cost practices and programs that will earn you more of your reps' mind share so they will bring you more orders.

Charles Cohon, Manufacturers' Agents National Association

F86: WORKFORCE: BOOST PERFORMANCE THROUGH EMPLOYEE ENGAGEMENT II

Managing a Multi-Generational Workforce

Chances are your business will soon include Baby Boomers (born 1946-1964), Generation X (1960s and 1970s), and Generation Y (1982-2000). These groups don't just think, talk, and work differently — they have vastly different expectations for each other, your company, and you. This refreshingly practical session reveals simple strategies for owners or managers to get everyone "on the same page" and shows you how to "bridge the gap" between employees — even employees who are 40 years apart.

Jon Goldman, Brand Launcher

Engaging and Mentoring the Next Gen Leaders

Managers today must understand their leadership style and how it facilitates or limits their success and also recognize their individual strengths and the strengths of their team members. They must also identify personal gaps that get in the way of goal attainment. By identifying and understanding the above variables a willing manager can change the way in which he/she currently thinks about his/her role and how he/she approaches work.

Shane Yount, Competitive Solutions, Inc.

1:30 p.m. – 3:30 p.m.

NEW! F95: GROW YOUR BUSINESS USING THE WEB AND SOCIAL MEDIA II

Google, Blogs, YouTube and You – How Industrial Companies Can Use Social Media to Improve Their SEO

Google is the No. 1 referrer of website traffic to industrial websites. Companies that appear on the first-page for keywords important to their business secure 90% of the traffic and leads generated from the search engine. Recently, Google has implemented more than 500 changes to its search algorithm, making it much more challenging for websites to earn a first-page position.

Learn how to successfully optimize your websites and incorporate social media to earn first- page positions on Google.

Angela Charles, Pilot Fish

Web, Mobile and Emerging Technologies — Opportunities in Manufacturing?

Web, mobile and a variety of emerging technology tools have the potential to dramatically impact your bottom line. Learn how new and emerging technology can be used to grow your business and streamline nearly every aspect of your business operations.

Alan Lund, UHY Advisors, Inc.

Roll Up Your Sleeves! Develop an Internet and Social Media Strategy to Achieve Your Goals

Learn from the successes of others who are honing their Internet and social media strategies to reach buyers from every generation. This presentation focuses on three critical areas for any Internet strategy—social media, exposure on search engines, and website content—all geared to the way manufacturers and their customers connect and do business. It features best practices of custom manufacturers whose strategies are improving their sales opportunities.

Dayna Latham and Joseph Nieckarz, ThomasNet

THURSDAY, NOVEMBER 21

8:00 a.m. – 10:00 a.m.

NEW! F105: STRATEGICALLY GROWING BUSINESS IN NORTH AMERICA II

Sourcing in America: How Will Buyers Find You?

To build or augment their supply chain, buyers are using on-demand sourcing to help them manage the supplier discovery process. Contract manufacturers must have a powerful presence where buyers are looking. Learn how online sourcing systems provide a central point for all sourcing intelligence making it easier to manage and standardize the RFQ process, facilitate buyer-supplier interactions, and access archived historical data.

Frank Russo, Fabricating.com

How to Expand Your Operations to Mexico

This presentation will provide an overview of the locations of industrial developments in Mexico, 5 steps to do cost-effective site selection in those regions, 5 different business models of follow to start doing business in Mexico and how to get a cost model that will show you the total cost of operating in that country including labor, logistics, real estate, utilities, and other direct and indirect cost. You will discover how to take advantage of the growing trend of manufacturing in Mexico and evaluate if it makes sense for your company to be in Mexico or not.

Xavier Hurtado, American Industries Group



TUBE & PIPE TRACK

MONDAY, NOVEMBER 18

10:30 a.m. – 12:30 p.m.

NEW! F27: FORMING STAINLESS STEEL TUBES **I**

Learn how to form quality stainless steel tubes by understanding the different types of stainless steel, common forming designs, methods to improve cosmetic quality, yield and tensile strength, elongation, final tolerance, lubrication, mill configuration and setup, and finally welding methods for stainless steel.

Bret Molnar and Robert Sladky, Roll-Kraft

TUESDAY, NOVEMBER 19

10:30 a.m. – 12:30 p.m.

NEW! F57: ADVANCEMENTS IN WELDED TUBE PRODUCTIONS **I**

When and How to Upgrade a Mill

Tubes are being produced from more exotic materials, tolerances are tighter, and production is becoming faster. Older mills can have difficulty keeping up, presenting many production limitations. Learn how you can implement a new welder into an existing mill to help improve production and quality. Learn what compact welders are available and what their niche applications are.

Pete Meglin, Thermatool Corp.

Metallurgy of High Frequency Welding

Learn how the metallurgy of steel and select non-ferrous alloys influences high frequency welding. Develop an understanding of the basics of metallurgy, special considerations that must be made with HF welding (non-equilibrium phases), and the various heat treatment requirements.

Dr. Lesley Frame, Thermatool Corp.

Post Weld Heat Treatments and Seam Annealing

Learn about the different types of systems available for post weld treatments and seam annealing for different applications. This session will address the typical Lin layouts, API and other requirements, and the benefits of soak time for micro-alloyed steels.

Kris Livermore, Thermatool Corp.

1:30 p.m. – 3:30 p.m.

NEW! F67: INSPECTING AND TROUBLESHOOTING WELDED TUBE **A**

High-Temperature Weld Inspection for ERW Mills

The manufacturing of tubes and pipes require high-

speed nondestructive testing techniques that can be adapted to automated production environments. Learn the differences between Ultrasonic Testing and other non-contact ultrasonic testing methods so you can select the best option for your operation to ensure you continue to meet standard quality codes and exceed the your customers' requirements.

Borja Lopez, Innerspec Technologies

How to Drop Your High Frequency Weld Scrap by 50%

Reducing weld scrap produced on your tube and pipe mill can save you thousands of dollars each year. Learn how to reduce your scrap by selecting the correct weld box, inpeders, and weld roll, monitoring the temperature at the weld, selecting the correct tooling, and eliminating unnecessary overlap.

Joe Olson and Ricky Olson, RMTS

Using Cameras to Monitor Tube & Pipe Cladding

New developments in electronics and sensor technology offer fabricators the ability to use specially designed Weld View Cameras to monitor the Pipe or Pressure Vessel Cladding process with better clarity than ever before. Learn how a better quality image of the cladding process can provide numerous productivity, quality, and health and safety benefits.

Cameron Serles, Xiris Automation Inc. and Rob Stewart, LJ Welding Automation

1:30 p.m. – 3:30 p.m.

NEW! F97: PRINCIPLES OF TUBE BENDING **B**

Tube Bendng 101

This session will help you understand the bending process and what happens to the material in the tube or pipe as it is bent, how the machine operates and utilizes electricity, and basic solutions that can be integrated into the system to help monitor and control the machine to help save power of more than 50%.

Danie Jacobs, Knuth Machine Tools USA

Tube Design for Optimal Functionality and Cost

Advances in materials and equipment used to produce bent tubular components has changed the industry. This session will address design considerations that allow the manufacturer room to fabricate the product within their individual capabilities using standard stock components, yet meeting all of the customers end requirements for the finished product.

Jon Felch and Tom Felch, J&D Tube Benders, Inc.

Practices for Lubrication in Tube Bending Processes

Learn how to select the right lubricant based on data and how to apply that lubricant effectively in today's market. You will be updated on the current best practices on all the tube bending variables, including the various lubricant chemistries for tube substrates and sizes, mandrel and tube substrate combinations, and application technologies for the mandrel and wiper locations.

Christopher Fletcher, Tower Oil & Technology



SEMINARS

MONDAY, NOVEMBER 18

1:00 p.m. – 5:00 p.m.

W10: API 1104 CODE CLINIC

This four-hour course covers general code provisions, including qualification of welding procedures for welds containing filler metal additions, design and preparation of the joint for production welding, nondestructive testing and acceptance standards, and automatic welding with and without filler metal additions. Attendees will practice open codebook testing under time constraints. NOTE: Clinic fee does not include a copy of API 1104, Welding Pipelines and Related Facilities (20th Edition). API 1104 may be purchased from WEX at (888) 935-3464. Attendees will receive our study guide, AWS API Code Clinic Reference Manual.

MONDAY, NOVEMBER 18

8:30 a.m. – 4:30 p.m.

W11: METALLURGY APPLIED TO EVERYDAY WELDING

Metallurgy of welds in carbon and low-alloy steels shouldn't be complicated. This short course will help you understand how welding affects the properties of base materials, and how weld defects occur.

Who Should Attend: Owners, inspectors, engineers, and supervisors who specify welding and need to understand the interactions of base, filler, and welding processes should attend.

TUESDAY, NOVEMBER 19

8:30 a.m. – 4:30 p.m.

W12: D1.1 - CODE CLINIC

The one day seminar will provide a "road map" through the Code, emphasizing the ability to locate important paragraphs, charts and tables quickly, which is crucial to understanding the code when working under stressful deadlines. In addition to practice questions, a practice exam will be administered, and the instructor will illustrate the use of the Code under time constraints, creating deadline pressure similar to the test environment. If

you're taking the CWI exam, this clinic has proven to be valuable test preparation. As a leading construction code, D1.1 is the ideal tool to teach effective code use.

TUESDAY, NOVEMBER 19 –
WEDNESDAY, NOVEMBER 20

8:30 a.m. – 4:30 p.m.

W19: ASME SECTION IX, B31.1 & B31.3
CODE CLINIC

This 16-hour seminar will help you prepare for the ASME Section IX, B31.1, and B31.3 examination for endorsement or Part C of the CWI. Note that endorsements are supplemental inspection credentials available to AWS Certified Welding Inspectors (CWIs) and Senior Certified Welding Inspectors (SCWIs), but non-CWI/SCWIs can also participate in the seminar and examination to enhance their educational background. Participants are expected to provide their own codebooks. Please note that there is a separate application and fee required to take the Certification Exam.

TUESDAY, NOVEMBER 19

THE WHY AND HOW OF WELDING
PROCEDURE SPECIFICATIONS

W13: Beginner

8:30 a.m. – 12:00 p.m.

W14: Advanced

1:00 p.m. – 5:00 p.m.

W15: Beginner and Advanced

8:30 a.m. – 5:00 p.m.

Welding Procedure Specifications —
Ensuring Consistent, Predictable Welding
Processes Performance

As a welding professional, if you are constantly responding to customer demands for increasing the performance and quality of weldments while controlling costs, optimizing your WELDING PROCEDURE SPECIFICATIONS (WPSs) for performance and profitability may be the key. A well written WPS Defines, Measures, Analyzes, Improves, & Controls (DMAIC) quality in the welding process. This

2-part workshop revisits the fundamentals of WPSs for both the seasoned professional and those individuals seeking to become more proficient in the authoring and application of a WPS in fabrication as well as hands on approach to advanced instruction in the formulation and writing of WPSs in the afternoon.

Who Should Attend:

This session will benefit owners, managers, engineers, and CWIs who must qualify, write, or revise welding procedure specifications to satisfy codes and contract documents.

What Will Be Addressed?

This workshop is divided into two half-day sessions. The morning session addresses the fundamentals of WPSs. Topics include:

- Standard terminology
- Welding processes
- Filler metal
- Shielding gases
- Current and voltage range, travel speed and heat input
- Joint design tolerances
- Joint and surface preparation
- Preheat / interpass temperature
- Welding positions
- Standard WPSs

The afternoon session focuses on the mechanics of WPSs by different codes and standards. Topics include:

- Proper preparation and qualification of welding procedure specifications
- Documenting standard procedure qualification testing for commonly used processes for joining ferrous plate and pipe
- Selecting and documenting welding variables
- Specifying essential and nonessential variables commonly used in sample AWS, ASME, and API code formats
- Different techniques to author WPSs

VALVE PROTECTION

To assure protection from dust and contaminants, apply cellulose bands to your gas tanks. The unbroken seal validates a filled tank, as well as prevents leakage. Easy to use and no equipment is needed for application. Samples available. Immediate delivery.

VISIT US IN BOOTH **N2867** AT FABTECH

Walter H. Jelly

608.831.1405

www.walterjelly.com



TUESDAY, NOVEMBER 19 – WEDNESDAY, NOVEMBER 20

WELDING OF STAINLESS STEEL

W16: Part 1 – The Basics

8:30 a.m. – 4:30 p.m.

W17: Part 2 — Avoiding Weld Defects

8:30 a.m. – 4:30 p.m.

This seminar has two independent parts: Part 1 – The Basics and Part 2 – Avoiding Weld Defects. You may register for either day or for both days. The program focuses on the basic weldability of all types of stainless steels. If you need a comprehensive look at the weldability of stainless steels, particularly the 300 series, this course is for you.

Topics Covered:

- Why alloys are "stainless"
- Stainless steel differences
- Selecting a stainless for use
- Mechanical properties
- Properties after welding
- Heat treatment factors
- Selecting filler metals
- Gas vs. flux shielding
- Code requirements

You Can Learn:

- Five stainless steel types
- The effects of welding on all types of stainless steels
- Why some stainless steels require preheat and others prohibit it
- Answers to your questions about selecting and welding stainless steels

WEDNESDAY, NOVEMBER 20

8:30 a.m. – 4:30 p.m.

W20: ADVANCED VISUAL INSPECTION WORKSHOP

An 8-hour course for CWI exam candidates to review the basic concepts and applications of visual inspection. After a discussion of the limitations and advantages of visual inspection, types of weld data that may be obtained by visual inspection are presented and discussed. Includes the many types of discontinuities encountered during the visual inspection of welds. Common tools used for visual inspection are presented and discussed (a machinist's scale, dial calipers, micrometers, fillet weld gages, the Palmgren gage, and the V-WAC). Participants will use these gages to make measurements on weld replicas. This will prepare candidates for Part "B" of the exam.

A sample weld specification containing acceptance criteria is presented and discussed, after which students

use the specification and visual inspection tools to evaluate the weld replicas using a series of specific questions and scenarios.

By attending, you can learn:

- How to use weld-measuring instruments
- Compliance to a specific code
- Do's and don'ts of documentation
- When a discontinuity is OK
- When a defect is rejectable
- Why visual inspection can be the most effective NDE technique

WEDNESDAY, NOVEMBER 20 – THURSDAY, NOVEMBER 21

8:30 a.m. – 4:30 p.m.

W21: BUILD IT BETTER

Concerned about welding productivity levels and quality issues? This two-day seminar will delve into the idea that welding is an engineering science that can be controlled and measured. Codes and standards that will be discussed include the AWS D1 structural codes, AWS D9.1 sheet metal code, AWS D17.1 fusion welding for aerospace application and many others. Designers, inspectors, and QC specialists will gain new insights and career-enhancing knowledge.

THURSDAY, NOVEMBER 21

8:30 a.m. – 3:00 p.m.

W22: CORROSION OF WELDS: CAUSES AND CURES

Corrosion in Welded Metallic Systems

Corrosion, resulting in the severe degradation of materials, is one of the most expensive engineering problems in our industrial society; estimates have been made that the annual cost of corrosion in the U.S. exceeds 100 billion dollars.

Welded structures are often subjected to corroding environments; in some cases, the weld and base metal corrode uniformly at the same rate. In other cases, the results are accelerated corrosion of the weld compared to the base metal, or the base metal may corrode at a much faster rate leaving the weld metal relatively intact.

A logical starting point for dealing with corrosion of welds is to define corrosion and then list the various types of corrosion that can occur, with examples. There are many different forms of corrosion recognized and various corrosion mechanisms. The most common of these will be covered in the course. Following corrosion types methods for avoidance of will be covered.

Who Should Attend:

This session will benefit owners, managers, engineers, and inspectors who must monitor, inspect, prevent, and repair weldments in corrosive environments.

What Will Be Addressed?

This course will begin by addressing the fundamentals of corrosion. Other topics to be examined include:

- Pitting corrosion

- Inter-granular corrosion
- Stress corrosion cracking
- Erosion/corrosion
- Crevice corrosion
- Galvanic corrosion
- Alloying for corrosion resistance
- Corrosion protection mechanisms

CONFERENCES

MONDAY, NOVEMBER 18

8:15 a.m. – 2:30 p.m.

W23: WELDING DISSIMILAR METALS

Conference Chair: Ben Pletcher

8:20 a.m. – 8:30 a.m. Welcome Remarks

Ben Pletcher

8:30 a.m. – 9:05 a.m. Keynote Address

Dissimilar joints involving stainless steel can include a stainless steel of one microstructural family to a stainless steel of another microstructural family (e.g., austenitic stainless steel to martensitic stainless steel), stainless steel to carbon steel or low alloy steel, and stainless steel to nickel base alloys. Cladding of carbon steel or low alloy steel is also a dissimilar metal joint. Since many of these joints are more easily produced without cracking when filler metal which deposits weld metal that is austenitic with a small amount of ferrite under the dilution conditions of the particular joint is used, the WRC-1992 Diagram is a very useful tool for selecting filler metal for all such joints. This presentation will highlight the use of the Diagram for such joints and also examine transition zones along the fusion boundary of such joints, where cracking sometimes occurs.

Damian Kotecki, Damian Kotecki Welding Consultants

9:05 a.m. – 9:40 a.m.

Welding of Dissimilar Chromium-Molybdenum Alloys, Critical Considerations for Assured Success

In fossil fuel fired power plants, different heat and creep resistant steels are used depending upon the different temperatures and oxidation behaviors found in the boiler and superheater area. This requires not only the welding of these materials to themselves, but also to each other. The right choice of filler metal depends upon which combination of base materials will be used, as well as the desired properties. Carbon diffusion is one phenomenon that is well known when welding steels with different carbon and chromium contents. This paper discusses the welding of dissimilar Chromium-Molybdenum steels, welded with matching consumables to both materials — one matching to the lower Chromium steel and one to the higher Chromium steel. Also included in

the investigation are Cr-Mo filler metals with additions of carbide forming elements. The results show that there is a different behavior depending upon which filler metal is used, and how proper filler metal selection can eliminate or greatly reduce the problem of carbon diffusion.

Russel Fuchs, Bohler Welding Group North America

9:40 a.m. – 10:15 a.m.

NDE Techniques for Dissimilar Weld Metal Structures

In today's modern welding and fabrication industry, joining dissimilar metals together is required in order to maximize the beneficial properties of both metals. This discussion will focus on the requirements of NDE procedure qualifications using Computed Radiography (CR) & Ultrasonic Testing (UT). Also discussed will be some specific application of each technique.

Brian D. Laite, CB&I

10:15 a.m. – 10:30 a.m. Coffee Break

10:30 a.m. – 11:05 a.m.

The Welding of Nickel Alloys to Stainless Steels

Brian D. Gaal, Special Metals - Wire Products Division

11:05 a.m. – 11:40 a.m.

Codes and Standards: Do they address Dissimilar Metal Welding?

Codes and Standards provide a baseline for engineering design, fabrication, and final service life. They serve as a guiding metric for industries to follow. But do they adequately address the complicated nature of dissimilar metal welds? A survey of the ASME Codes, specifically: Section VIII, Section IX, and B31.3 will provide a basis for the discussion, while incorporating industry feedback.

Ben A. Pletcher, Select-Arc Inc.

11:40 a.m. – 12:45 p.m. Lunch

12:45 p.m. – 1:20 p.m.

Challenges Encountered with Post Weld Heat Treatment of Dissimilar Weldments

Each base metal and weld metal has an optimum post weld heat treatment (PWHT) regime. PWHT is generally determined by experimental results or specified from code rules. Code rules are normally straightforward for base metal (s) and weld metal(s) of similar composition and mechanical and physical properties. Challenges are introduced when dissimilar materials or transition joints are involved. The strength, coefficient of expansion, microstructure behavior and lower critical transformation temperatures of each individual material become important. Oftentimes a compromise, multiple PWHT's or transition material(s) must be utilized. This presentation will focus on the major challenges and solutions for PWHT of dissimilar weldments and transitions when low carbons, austenitic stainless, chrome-moly or nickel base materials are involved.

William F. Newell, Jr., Euroweld Ltd.,

1:20 p.m. – 1:55 p.m.

Explosive Welding Dissimilar Metals

Explosive welding is an interesting, viable and vetted technique for welding dissimilar metals. This presentation will show how the explosive welding process works, its advantages and limitations. Pictures and illustrations of specific applications will be shown and discussed.

Don Butler, High Energy Metals, Inc.

1:55 p.m. – 2:30 p.m.

Crack-Free Welding of Nickel-Base Alloys

This talk primarily examines the austenitic-to-ferritic weld joint – by far the most commonly encountered dissimilar combination and one that is present in hundreds of pipe and tubing joints in power plants, refineries, and chemical plants. Techniques for determining dilution and the resulting composition of a dissimilar weld are explained. Constitutional (ferrite) diagrams are used to analyze typical dissimilar welds. Both nickel-based and stainless alloys are covered.

Donald J. Tillack, Tillack Metallurgical Consulting, Inc.

2:30 p.m. Adjournment

TUESDAY, NOVEMBER 19 – WEDNESDAY, NOVEMBER 20

8:00 a.m. – 5:00 p.m.

W24: SO YOU'RE THE NEW WELDING ENGINEER

DAY 1 — TUESDAY

8:00 a.m. – 8:30 a.m.

Welcome and Introduction

8:30 a.m. – 10:00 a.m.

The Application Analysis

Fritz Saenger, Consultant

10:00 a.m. – 11:00 a.m.

Key Background Information

Walter Sperko, Sperko Engineering Services, Inc.

11:00 a.m. – 12:00 p.m.

“Matching” the Base Materials and the Weld

Tom Myers, The Lincoln Electric Company

12:00 p.m. – 1:00 p.m. Lunch

1:00 p.m. – 2:00 p.m.

Pre and Post Weld Operations

Team

2:00 p.m. – 3:30 p.m.

Arc Welding Process Modes – What are You Using?

Bob Bitzky, ESAB Welding & Cutting Products

3:30 p.m. – 4:30 p.m.

The Welding Procedure

Lee Kvidahl, Ingalls Shipbuilding

4:30 p.m. – 5:00 p.m.

Making Your PROCEDURE Robust: Controlling the Critical Parameters

Dennis Harwig, American Welding Society

DAY 2 — WEDNESDAY

8:00 a.m. – 9:00 a.m.

Weld Quality – Requirements of Different Types of Applications: Commercial, Military, Industry

Dick Holdren, Arc Specialties

9:00 a.m. – 10:00 a.m.

Welding Costs

Pete Ullman, Techniweld

10:00 a.m. – 11:00 a.m.

What is “Productivity”?

Fritz Saenger, Consultant

11:00 a.m. – 12:00 p.m.

The Automation Decision

Jeff Noruk, Sevo Robot Corp

12:00 p.m. – 1:00 p.m. Lunch

1:00 p.m. – 2:00 p.m.

Welding Safety

Kevin Lyttle, Praxair

2:00 p.m. – 3:00 p.m.

Aluminum

Tony Anderson, Miller Electric Mfg. Co.

3:00 p.m. – 4:00 p.m.

Stainless and Heat Resisting Steels

William Newell, W.F. Newell & Associates, Inc.

4:00 p.m. – 5:00 p.m.

Review of the Applications Analysis – and a “To Do” List

Team

5:00 p.m. Adjourn and Individual Discussions

TUESDAY, NOVEMBER 19

9:00 a.m. – 5:00 p.m.

W26: THERMAL SPRAY TECHNOLOGY: HIGH-PERFORMANCE SURFACES

9:00 a.m. – 9:30 a.m. **Keynote**

Thermal Spray: Science, Engineering, Art, Myths, and Tribal Knowledge

Science, engineering, art, mythology, and tribal knowledge blend together to make thermal spray an intriguing and often amorphous technology. The speaker will attempt to enlighten, inform, and entertain us, and sometimes challenge our tightly held beliefs about thermal spray as a technology. Among the points discussed will be coating bonding, powder particle sizes, rules-of-thumb for materials properties, powder carrier gas, and Six Sigma.

Daryl E. Crawmer, FASM, TS-HoF, Thermal Spray Technologies, Inc.

9:30 a.m. – 9:50 a.m.

Advanced Uses of Robotics in Thermal Spray

In the past few decades, robots have done much to improve the consistency and repeatability of thermal spray applications. However, much of the programming done for thermal spray applications is relatively simple when compared to other industrial uses for six-axis robots. With some exploration, it is possible to leverage substantially more of today's sophisticated robots' on-board computing capacity to make thermal spray applications more efficient, more user friendly, and more accurate. This discussion will look at a few topics, within the context of advanced programming language, that can help coating engineers improve their processes, and help managers improve their bottom lines.

Daniel C. Hayden, Hayden Corp.

9:50 a.m. – 10:10 a.m.

Capabilities of the Delta Triple Anode DC Plasma Spraying Torch in Industrial Production Applications

Since the development of the DC plasma spraying process and its introduction in industrial production in the early 1960's there has been ongoing development with the aim to improve process stability and efficiency. One major goal was arc stabilization that could be achieved

either by special electrode / nozzle designs. Triple anode technology marketed under the trade name GTV Delta is an anode stabilized torch design and has proven unsurpassed productivity and process stability in industrial applications while demonstrating significant advantages where large surface areas and / or thick coatings are required. Technical and economic capabilities of the GTV Delta are presented in detail. A unique option for the Delta is a quick change powder injector for spraying of metallic bond and ceramic top coats further increasing productivity. Applications include: cylindrical sputter targets with coating thickness exceeding 10 mm, IGT turbine blades and Y2O3 coatings for protection of aluminum components in semiconductor industries. The GTV Shark Process is a new high velocity twin wire arc system capable of producing low cost dense wire arc coatings. Industrial applications and capabilities will be discussed.

Alan Burgess, SprayWerx Technologies Inc., and Thomas Schlaefer, Andreas Wank, GTV Verschleiss-Schutz GmbH

10:10 a.m. – 10:30 a.m.

Improved Coating Yield Through Powder Feed Optimization

Cost of thermal spray coatings depends mostly on the cost of feed stock and how effectively and consistently they are deposited as seen both in the coating quality and deposition efficiency. High speed CCD cameras as well as other particle sensing equipment have been shown to be effective at optimizing spray parameters. To those ends these devices are relatively expensive and require a degree of talent and experience to operate making them less desirable as a daily production tool. The advent of a new, small, simple, low cost system that can be dedicated to a spray cell now makes monitoring production effective and feasible on a daily basis especially where, radial feed of powder in plasma processes is the norm. Simple indicators can detect slight changes in powder particle size distribution, and carrier gas flows that have been seen to affect powder trajectory changing particle temperature and velocity distributions. These changes affect coating quality, coating cost or both. This work will look at the cost effectiveness of utilizing the SprayWatch G system in maintaining the optimal plume characteristics.

Mo VandenBergh, Oseir

10:30 a.m. – 10:50 a.m. **Morning Break**

10:50 a.m. – 11:10: a.m.

Fabrication of an Erosion Resistant Coating for Be-Cu Alloys in Harsh Environments by HVOF Thermal Spray Process

Drilling components in oil and gas industry are exposed to extreme conditions of surface degradation by severe fluid erosion and abrasive wear. In order to inhibit premature failure and enhance their service life, deposition of tungsten carbide-based thermal spray coatings have been associated with many improvements. In this investigation, spray parameters were optimized for deposition of WC-Co-Cr coatings on Be-Cu substrates using high velocity oxy-fuel (HVOF) process to minimize any adverse effects on substrate's magnetic and mechanical properties especially by overheating. The topography and phase configuration of the coated surfaces were analyzed by scanning electron microscopy (SEM), optical profilometry and X-ray diffraction (XRD). The erosion performance of the coated samples was evaluated using an in-house fabricated slurry erosion tester against drilling mud to replicate field conditions. Slurry erosion rates were found to be dependent on the flame temperature and extent of transformations during the deposition process.

Khorameh Farokhzadeh, A. Demiri, A. Edrisy, K. Farokhzadeh, R. Fillion, University of Windsor, and A. Granger, J. Vitek, Sharkskin Coatings Ltd.

11:10 a.m. – 11:30 a.m.

A Method of Preparing, Tracking, and Achieving an Industry Quality Standard

We propose to show the various metal spray processes and general uses, along with strong points and weaknesses for each of the Thermal Spray processes. Specifically; Plasma Flame Spray, Twin Wire Arc Spray, HVOF (High Velocity Oxygen Fuel) Spray, Combustion Powder/Wire Spray, and Cold Gas-Dynamic Spray. We will show specific examples how each process is unique and how to select the best process for various practical applications.

Jory Wright, Accuwright Industries

11:30 a.m. – 11:50 a.m.

Thermal Spray Starts with Training

The April issue of the American Welding Society Journal contains an article encouraging adding "Introduction to Thermal Spray" to any "Introduction to Welding" class. This presentation takes that to the next level by laying out an education program leading to certification for a Thermal Spray Operator. The program outlines a suggested format, video training sources, literature recommendations, basic laboratory needs and internet contacts. It also summarizes what a student should be looking for in selecting an educational institution for Thermal Spray training.

Dale Moody, Plasma Powders and Systems Inc.

11:50 a.m. – 12:10 p.m.

Wire Arc Spray Advances in Equipment, Coatings and Applications

Wire arc spray has grown to be the predominant thermal

spray process for producing metallic coatings. Advances in equipment technology and the development of numerous new innovative coating materials have led to a wide expansion of successful applications. The process has moved from its roots of dimensional restoration to being a true design tool to combat wear and corrosion in a wide variety of applications and industries throughout the world. This presentation discusses these advances and resulting successful applications.

Bob Unger, Polymet Corp.

12:10 p.m. – 1:10 p.m. Lunch

1:10 p.m. – 1:30 p.m.

Hard Chrome Alternatives Using Thermal Spray

This talk will focus on the reasons for changing from the typical industrial hard chrome plating for various industrial applications as well as aerospace applications. A focus on the use of High Velocity Oxygen Fuel (HVOF) process, testing and verification of tungsten carbide and chrome carbide materials to enhance part performance without the environmental risks associated with hard chrome plating.

Joseph P. Stricker, St. Louis Metallizing Company

1:30 p.m. – 1:50 p.m.

NIOSH Recommendations on Hexavalent Chromium — 2013 Update

NIOSH has recently recommended to OSHA lower hexavalent chromium exposure levels than what were previously OSHA-endorsed. This recommendation has renewed the discussion on acceptable emission levels in the thermal spray and welding communities. As a result, companies are advised to review their manufacturing processes and equipment and consider implementing proactive changes. This paper addresses some of the questions the new NIOSH recommendations have generated including: 1.) What are the new NIOSH recommendations? 2.) What has the inspection activity been for the standard as it exists today? 3.) How can a worker be exposed to hexavalent chromium and how might it affect the body? 4.) What types of engineering controls are recommended? 5.) What steps are recommended to help prove requirements are being met?

Jeffrey Abelson, Donaldson Company, Inc.

1:50 p.m. – 2:10 p.m.

Metal Spray: an Overview of Thermal Spray Processes

A demonstration will be shown on how to effectively prepare, track, and achieve an industry quality standard such as Nadcap, ISO9000, AS9100 etc. We propose to share simple steps of how to breakdown industry regulations and set goals to attack the industry quality standards. We will share some insight on how to effectively track a company's progress on the goals and tasks set to acquire that standard. And finally, we will share pointers on sticking to your plan, maintaining accountability and in the end achieving your goal of acquiring the industry quality standard.

Jaren Wright, Accuwright Industries

CONFERENCES

2:10 p.m. – 2:30 p.m.

Life without Thermal Spray: The Cost to Industry – Two Case Studies

The thermal spray industry is estimated to be \$7B annually including equipment, systems, spare parts, services and consumables. This relatively small industry however has provided numerous cost-saving and life extending solutions to critical industries such as aerospace, oil & gas, primary metal, printing, automotive and others. What would the cost be to industry if thermal spray solutions did not exist? In this presentation the cost impact on critical applications in the aerospace and automotive industries will be explored and how thermal spray keeps our air and land fleets moving.

Jean Mozolic, The Mozolic Group

2:30 p.m. – 2:50 p.m.

Beyond the Repair

This paper compares post coating treatments used to enhance coating properties for thermal sprayed repair applications. Focus will be on Economical, technical, and time driven issues associated with Iron and Nickel base coatings.

Bruce Dulin, Hausner Hard Chrome

2:50 p.m. – 3:10 p.m. **Afternoon Break**

3:10 p.m. – 3:30 p.m.

Tubular Constructed Wire, the Latest Advancement in Thermal Spray Consumable Technology

Advancements in thermal spray consumables have declined over the past decade! The Thermal Spray industry has put tremendous emphasis on powder feedstock consumables, governing their use in combustion and atmospheric plasma spray applications. Combinations of elements and inorganic compounds, along with a studious use of metal oxides, have produced many new and exciting feedstock possibilities. Multi-nodal NANO and Metal Matrix Composites (MMC's) as examples have been investigated heavily in recent years, but have yet to bring about any significant change in feedstock manufacturing or production. The equipment used to deposit these materials has also become the industry standard. H.V.O.F. and APS are but two of these high energy processes, which have proven effective in depositing the bulk of all coatings associated with the thermal spray industry. Recently however, the TWAS process, a lesser used and understood process, has come to the forefront. This presentation will detail eight years of development that lead to the production of TCW's, and the benefits of there use. Results will show, that not only does the TCW technology enhance the TWAS process, but it will also produce coatings that rival there high energy cousins.

David J. Urevich, ArcMelt Company L.C.

3:30 p.m. – 3:50 p.m.

Novel Molten Metal Corrosion Resistance Thermal Sprayed Coatings

There is currently a great interest in developing materials to protect tools and parts from molten-metal corrosion including zinc pot rolls, metal forming tools, including extrusion dies, zinc and aluminum metal die, casting dies, and stamping and forging tools. Thermal spray coatings are often deposited on such parts to improve their durability under hostile working conditions such as corrosive environment, abrasion, and high temperatures. However, none of the current techniques including thermal spray technology provide sufficient life for the desired productivity in the corresponding processes. In this presentation, novel coatings generated by thermal spraying technology will be presented. These coatings have potential to offer chemical stability, high hardness and strength at required high temperatures and extraordinary high molten-metal corrosion resistance.

Curt Glasgow, MesoCoat, Inc.

3:50 p.m. – 4:10 p.m.

Recycling Thermal Spray Overspray Dust and More - How to Maximize the Value of Overspray Materials and Do Right by the Earth

Want to keep your thermal spray waste and by-products out of landfills and generate some extra cash at the same time? Your overspray dust has value and there are recyclers willing to pay you for it. This presentation will discuss simple ways to get the most out of your overspray dust, spent dust cartridges and all other materials for which you no longer have a use. Furthermore, sending your overspray materials to landfills as hazardous waste is extremely expensive and unnecessary. You can recycle them and in many cases be paid for your materials, converting the overspray dust from an expensive cost center to a cash-generating profit center. Subjects will include: the need to have the different materials segregated; over spray dust; maximize return; settlement of overspray dust; most high value materials; spent cartridges; and spent grit blast material. All in all, recycling is good for your business and good for the Earth!

Scott McLaughlin, McLaughlin & Associates Thermal Spray, Inc.

4:10 p.m. – 4:30 p.m.

Robotic Control in Thermal Spray Coating Using Tool Center Points and Work Objects

The 6-axis robots used in many industrial applications offer great versatility. To take the greatest advantage of this versatility in thermal spray coating deposition, understanding and using the Tool Center Point (TCP) and the Work Object (WO) is key. Using these tools has several benefits including accurate and repeatable coating deposition with respect to thickness control and quality control. In addition, using the TCP and WO allows the programmer to write more efficient programs and reduce the time it takes to write them. The TCP and WO will be defined and examples of how the benefits will be shown.

Frank Accornero, Robotic Synergy LLC

CONFERENCES

4:30 p.m. – 4:50 p.m.

Applying Thermal Spray Anodic Coatings (Zn, Al, and their Alloys) to Less Than “Ideally” Prepared Surfaces

Any well written thermal spray specification (AWS, NACE, SSPC for example) will clearly state the surface preparation and environmental conditions needed when applying thermal spray zinc, aluminum, and their alloys. Most often the following requirements are stated;

- Near-white metal (SSPC-SP10, SA-2.5) or better
- Sharp angular blast profile of 3-5 mils (75-125 microns)
- Relative Humidity <85%
- Surface dew point >5°F (3°C) above the dew point of the surrounding air
- Surface dust levels not to exceed quantity rating 1 in accordance with ISO 8502-3.
- Soluble salts on the surface shall not exceed 20 mg/m²

How important is it to follow all these rules? What if it is impractical or impossible to achieve these conditions? Should thermal spray still be attempted?

Unknowingly these rules are quite often broken and these coatings still perform well. What happens when we purposely break these rules? We will discuss applying these coatings to hand-tool prepped surfaces (no abrasive blasting), red-hot welds, wet surfaces, icy surfaces, dusty surfaces and what about soluble salts?

James Weber, Sulzer Chemtech USA

4:50 p.m. – 5:00 p.m. Q&A & Adjourn

WEDNESDAY, NOVEMBER 20

1:00 p.m. – 4:00 p.m.

W25: THERMAL SPRAY BASICS: PUTTING COATINGS TO WORK

This basic introduction to thermal spray benefits will cover four major areas: processes, equipment, applications, and industry usage.

- Processes covered will include molten metal flame spraying, powder flame spraying, wire flame spraying, ceramic rod flame spraying, detonation flame spraying, high velocity oxy/fuel spraying (HVOF), cold spraying, plasma spraying, electric arc spraying, and RF plasma spraying.
- Equipment will be on display. Several spray guns will be available for attendees to handle and discuss throughout the class. Other larger items such as complex systems and spray booths will be illustrated and discussed.
- Application examples will be presented for a variety of requirements from several different industries.
- Industry usage charts will be reviewed listing several processes and coating applications used by various industries.

RWMA RESISTANCE WELDING SCHOOL

WEDNESDAY, NOVEMBER 20

7:45 a.m. – 5:30 p.m.

W27: RWMA RESISTANCE WELDING SCHOOL

The two-day resistance welding school is sponsored by the American Welding Society and the Resistance Welding Manufacturing Alliance, and conducted by industry specialists. The basics of resistance welding and real-life application of the process are covered. Participants learn at their own pace and discuss specific welding concerns with the instructors. You are invited to bring your own samples for discussion.

Please plan to be present for both days of the school. The program is limited to 100 students. In addition, there will be tabletop exhibits both days, demonstrating the latest resistance welding products offered by RWMA-member companies. The registration fee includes: a copy of the Resistance Welding Manual, Revised Fourth Edition (a \$125 value) and a course binder containing all instructor presentations.

7:45 a.m. – 8:00 a.m.

Welcome and Introduction to Resistance Welding

Bill Brafford, Tuffaloy Products, Inc.

8:00 a.m. – 8:30 a.m.

Basics of Resistance Welding Video – Part I

8:30 a.m. – 11:00 a.m.

Electrodes and Tooling

Focus on the classification, selection and maintenance of electrodes and fixtures as they pertain to numerous applications. By revealing some problem-solving techniques and suggestions, Bill will familiarize you with some powerful problem/evaluation/solution techniques that will keep your production process running longer—and operation more efficient.

Bill Brafford, Tuffaloy Products, Inc.

11:15 a.m. – 12:15 p.m. **Tabletop Exhibits**12:15 p.m. – 12:45 p.m. **Lunch Served**

12:45 p.m. – 2:45 p.m.

Welding Controls

This discussion focuses on the selection, descriptions, and applications of welding timers, contactors, and accessories. Packed with a punch, Don drives home $H = I^2 RT$ in a way you'll never forget. He shows you how this invaluable formula is used in every resistance welding application — every day — every cycle — all the time!

Don Sorenson, Director of Engineering, ENTRON Controls, LLC.

RWMA RESISTANCE WELDING SCHOOL

3:00 p.m. – 5:30 p.m.

Electrical Power Systems

This session reviews the descriptions and maintenance of electrical power components and conductors from the weld control to the electrode. This lively presentation has something for everybody. Utilizing several small demonstrations, Mark helps you understand this very important part of the resistance welding process which will keep you on the edge of your seat!

Mark Siehling, Vice President Engineering, RoMan Manufacturing Inc.

THURSDAY, NOVEMBER 21

8:00 a.m. – 10:00 a.m.

Welding Processes & Machines

This session will reinforce the very essence of how the resistance welding process works and how the process relates to each of the four resistance welding processes. This session will be full of application examples from each process and how machinery utilizes the individual components and elements illustrated in the other sessions.

Tim Foley, Automation International, Inc.

10:15 a.m. – 10:45 a.m.

Basics of Resistance Welding Video – Part II

10:45 a.m. – 12:00 p.m.

Troubleshooting and Maintenance

With over 30 years' experience in the auto industry, specifying, installing and troubleshooting resistance welding systems, Bruce will give you tips on how to find the reasons why welds don't turn out the way you would like. This presentation is filled with real-life examples of problems that baffled maintenance persons.

Bruce Kelly, Kelly Welding Solutions

12:00 p.m. – 1:15 p.m. **Lunch Served**

1:15 p.m. – 3:15 p.m.

Initial Machine Set-Up

Robert takes you through the selection and maintenance procedures of proper weld schedules and preventive maintenance programs designed to make your resistance welding operations profitable. Hands-on demonstrations peak this presentation.

Robert Matteson, Taylor–Winfield Technologies, Inc.

3:15 p.m. – 3:45 p.m.

Q & A Session

PROFESSIONAL PROGRAM

Pick and choose between concurrent sessions for the latest in welding research and commercial developments. Pay by the day or attend the entire four-day program, with special discounts for students and members of AWS, FMA, SME, PMA, or CCAI.

4-Day Professional Program: W32

4-Day Student Professional Program: W33

1-Day Professional Program: Monday W28,

Tuesday W29, Wednesday W30, Thursday W31

MONDAY, NOVEMBER 18

SESSION 1: AUTOMATION AND SENSORS

1:00 p.m. – 5:30 p.m.

Chair: Prof. D. Farson, The Ohio State University

1A. 1:00 p.m. Real-Time Detection for Short-Circuit Mode GMAW

Joseph Russell, Yoni Adonyi, Derek Hoyt and Nathan Berthiaume, LeToureau University

1B. 1:30 p.m. Using Intelligent Automation to Improve Tank and Vessel Welding Productivity and Quality

Jeffrey Noruk and Blake Holmes, Servo Robot Inc.

1C. 2:00 p.m. Case Studies: Implementation of Sensors for Robotic Welding

Chris Anderson and Jack Moore, Yaskawa Motoman

1D. 2:30 p.m. The Use of Vision System for Robotic Laser Welding of Tube-to-Tubesheet

Paul Denney, The Lincoln Electric Company

1E. 3:00 p.m. Closed-Loop Controlled Microwave Design for Ceramics to Metal Joining

Allen Worcester, Yoni Adonyi, SeungHyun Kim and Tim Privitt, LeToureau University

1F. 3:30 p.m. Development of Single-Side Resistance Spot Welding Technology Applying In-Process Welding Current and Electrode Force Control

Muneo Matsushita, Rinsei Ikeda and Kenji Oi, JFE Steel Corp.

1G. 4:00 p.m. Vision Based Real-Time Monitoring and Control of Metal Transfer in Laser Enhanced Gas Metal Arc Welding

Yan Shao and YuMing Zhang, University of Kentucky

1H. 4:30 p.m. A Study on Robust Weaving Width Control Algorithm Using Arc Sensor in TIG Welding

Seokhyoung Lee, Hyeong-Soon Moon, Jong-Cheol Kim and Ji-On Kim, Hyundai Heavy Industries Co, Ltd.

1I. 5:00 p.m. Development of a Macro/Micro Telerobotic Welding System for Working in the Nuclear Pipeline Maintenance

Haichao Li, Hongming Gao and Na Dong, State Key Lab of Advanced Welding and Joining, Harbin Institute of Technology, and YuMing Zhang, University of Kentucky

SESSION 2: NSF-CIMJSEA WELDING METALLURGY

1:00 p.m. – 5:00 p.m.

Chair: Prof. S. Liu, Colorado School of Mines

2A. 1:00 p.m. Development of a New Generation Cast Pin Tear Test for Evaluation of Solidification Cracking in Weld Metals

T. C. Luskin, B.T. Alexandrov and J.C. Lippold, The Ohio State University, and S.L. McCracken, Electric Power Research Institute

2B. 1:30 p.m. Vareststraint Weldability Testing: Comparison of Laser and Arc Welding

Stephen Tate and Stephen Liu, Colorado School of Mines

2C. 2:00 p.m. Metallurgical Characterization of High Strength Alloys Competitive Evaluation of Welding versus Hot Induction Bending

Tiffany Y. Ngan, B.T. Alexandrov and J.C. Lippold, The Ohio State University, and John Lawmon, American Engineering & Manufacturing, Inc.

2D. 2:30 p.m. Post Weld Heat Treatment Response of 2.25Cr-1Mo Steel

David Hodgson and J.C. Lippold, The Ohio State University

2E. 3:00 p.m. The Microstructural Evolution and Aging Response of Dissimilar Metal Welds Involving Alloy N

Robert Hamlin and John DuPont, Lehigh University

2F. 3:30 p.m. Precipitate Evolution in Cr-Mo Welds

Soumya Mohan and S.Suresh Babu, The Ohio State University, and Teresa Melfi, Badri Narayanan and Ben Schaeffer, The Lincoln Electric Co.

2G. 4:00 p.m. Microstructural Characterization and Bond Evolution in Dissimilar Material Welds Made Using VHP UAM

Niyanth Sridharan and S. Suresh Babu, The Ohio State University

2H. 4:30 p.m. Advanced High Strength Steels for Energy Efficiency

Daniel Tung, S. Suresh, Gary Cola and Wei Zhang, The Ohio State University

SESSION 3: APPLIED TECHNOLOGY I

1:00 p.m. – 5:30 p.m.

Chair: Dr. P. Hochanadel, Los Alamos National Laboratory

3A. 1:00 p.m. Development of AC Gas Metal Arc Welding for Welding Thin Automotive Components

Frank Armao, The Lincoln Electric Company

3B. 1:30 p.m. Measuring Equipment for Welding Properties of MIG/MAG Welding Wires

Kai Boockmann and Michaela Boockmann, Boockmann GmbH

3C. 2:00 p.m. Waveform in Arc Welding of Aluminum Alloys - Effect on Bead Profile and Performance

Jian Zhang and Murat Acar, The Lincoln Electric Company

3D. 2:30 p.m. Development of a Versatile Deep Bore Laser Cladding Tool

Andrew Nissly, Nittany Laser Technologies, and Edward Reutzel and Todd Palmer, Penn State University

3E. 3:00 p.m. Using Welding Information to Drive Continuous Improvement

Caleb Krisher, Miller Electric Mfg. Co.

3F. 3:30 p.m. Dissimilar Metal Welding Critical Considerations for Assured Success

Russel Fuchs and Jeff Soltis, Bohler Welding Group USA, Inc., and Herbert Heuser and Bernd Hoberg, Böhler Schweisstechnik Deutschland GmbH

3G. 4:00 p.m. Zone Flow™ Fume Extraction Technology

Allan Hilbert, Miller Electric Mfg. Co.

3H. 4:30 p.m. Optimization of Corrosion Resistance and Weldability - A Challenge for Superduplex Filler Metals

Joe Zawodny and Russel Ruchs, Bohler Welding Group USA, Inc., and Volker Gross and Bernd Hoberg, Böhler Schweisstechnik Deutschland GmbH

3I. 5:00 p.m. Failure Analysis of Lean Solution Cooler Exchanger Tube to Tube-Sheet (TTS) Weld Failure

Hamad Almostaneer, Mohammed Al-Rabie and Harry Schrijen, Sabic Technology Center

PROFESSIONAL PROGRAM

TUESDAY, NOVEMBER 19

SESSION 4: KEYNOTE ADDRESSES

8:00 a.m. – 10:00 a.m.

Chair: Prof. J.N. DuPont, Lehigh University

4A. 8:00 a.m. Keynote Speaker 1
Evolution of Steels, Joining Trends and
Challenges in the Automotive Industry

Murali D. Tumuluru

4B. 9:00 a.m. Keynote Speaker 2
Additive Manufacturing Developments for
Industrial Exploitation - A Suite of Processes

Ian Harris, Edison Welding Institute

SESSION 5: NSF-CIMJSEA MODELING

10:00 a.m. – 12:00 p.m.

Chair: Prof. S. Kou, University of Wisconsin

5A. 10:00 a.m. Effect of LTTW on Weld Distortion
and Residual Stress Control - Experimental
Verification and Numerical Modeling

Sindhu Thomas, Ali Alshawaf and Stephen Liu,
Colorado School of Mines, and Zhili Feng, Oak Ridge
National Laboratory

5B. 10:30 a.m. Multi-Scale FEA Modeling of
Brazed Joint Structures in Ni-based Superalloys
for Gas Turbine Applications

Brian Riggs, B.T. Alexandrov and Avraham Benatar,
The Ohio State University

5C. 11:00 a.m. Weld-Metal Solidification of
Ternary Mg-Al-Ca Alloys – An Application of
Computational Thermodynamics

Tayfun Soysal and Sindo Kou, University of
Wisconsin

5D. 11:30 a.m. Modeling Microstructure
Evolution during Laser Metal Deposition

K. Makiewicz, A. Prabhu, S.S. Babu and
A. Chaudhary, The Ohio State University

SESSION 6: NSF-CIMJSEA PROCESSING

10:00 a.m. – 12:00 p.m.

Chair: Prof. J. Steele, Colorado School of Mines

6A. 10:00 a.m. Influence of Fluid Convection on
Formation of Weld Pool during Laser Cladding

Y.S. Lee, S.Suresh Babu and Dave Farson, The Ohio
State University, and Mark Nordin, Rolls Royce

6B. 10:30 a.m. Gas-Metal Arc Welding of
Magnesium Alloys: Spatter and Gas Porosity

Dustin Wagner, Youngki Yang, Hiromi Konishi and
Sindo Kou, University of Wisconsin

6C. 11:00 a.m. A Novel Technique for Small-
Scale Impact Welding and Welding Parameter
Characterization

Bert Liu and Anupam Vivek,
The Ohio State University

6D. 11:30 a.m. Characterization of Robotic
Gas Metal Arc Welding

Andrew Neill and John Steele,
Colorado School of Mines

SESSION 7: WELDING METALLURGY I

2:00 p.m. – 5:30 p.m.

*Chair: Dr. B. Alexandrov, The Ohio State
University*

7A. 2:00 p.m. Microstructure Characterization
of High-Cr Ni-Base Filler Metal

Xiuli Feng, Eric Fusner and J.C. Lippold, The Ohio
State University

7B. 2:30 p.m. Development of Continuous
Cooling Transformation Diagrams for Weld Metal
of Creep-Resistant Steels

Joseph Steiner, B.T. Alexandrov and J.C. Lippold,
The Ohio State University

7C. 3:00 p.m. Microstructural Evolution and
Mechanical Properties of Thermally Simulated
Eglin Steel

Brett Leister and John DuPont, Lehigh University

7D. 3:30 p.m. Development of CCT Diagrams for
the CGHAZ of Creep-Resistant Steels

Katie Strader, Xiuli Feng, B.T. Alexandrov and
J.C. Lippold, The Ohio State University

7E. 4:00 p.m. An Investigation of the Effect of
Nickel as an Alloying Agent on Toughening and
Strengthening Mechanisms in High Strength
Low Alloy (HSLA) Submerged Arc Welding
(SAW) Multiple-Pass Welds

Kin-Ling Sham and Stephen Liu,
Colorado School of Mines

7F. 4:30 p.m. Quantitative Microstructure
Analysis in Grade T22 Steel Welds

Xiuli Feng, B.T. Alexandrov, Joseph Steiner,
Katherine Strader and J.C. Lippold,
The Ohio State University

7G. 5:00 p.m. Microstructural Evaluation of
Penetration Enhancing Flux Through Paint, and
Cored Wire Addition to 304L Stainless Steel

Kevin Faraone, Honeywell FM&T and J.C. Lippold,
The Ohio State University

SESSION 8: MODELING

Room: 2:00 p.m. – 5:30 p.m.

Chair: Prof. S.S. Babu, The Ohio State University

8A. 2:00 p.m. Laser Micro-welding to Form
Electrical Contacts On Photovoltaic Devices

Ashwin Raghavan, T. DebRoy, and Todd Palmer,
The Pennsylvania State University

PROFESSIONAL PROGRAM

8B. 2:30 p.m. Grain Refinement of Aluminum Alloy Weld Metal

Carl Cross, Los Alamos National Laboratory, and P. Schempp, A. Pittner and M. Rethmeier, BAM

8C. 3:00 p.m. Physics-based Formulation of Heat Generation for Thermo-Mechanical Modeling of Rotary Friction Welding

Wei Zhang and S.Suresh Babu, The Ohio State University, and David Mahaffey, AFRL, Wright-Patterson AFB

8D. 3:30 p.m. Optimum Design Based on Mathematical Model and Neural Network to Predict Reinforcement for Duplex Fillet Joints

Carolina Payares-Asprino and John Steele, Colorado School of Mines, and Lusía Fernanda Espinosa, Universidad Simón Bolívar

8E. 4:00 p.m. Weld Penetration Control in GTAW Based on 3D Weld Pool Measurements

YuKang Liu and YuMing Zhang, University of Kentucky

8F. 4:30 p.m. Development of High-Cr, Ni-base Filler Metals based on Computational and Experimental Techniques

Adam Hope and J.C. Lippold, The Ohio State University

8G. 5:00 p.m. Data Driven Models of Human Welder Behavior: A Comparison Between Unskilled and Skilled Welders

WeiJie Zhang and YuMing Zhang, University of Kentucky

WEDNESDAY, NOVEMBER 20**SESSION 9: HIGH ENERGY DENSITY WELDING PROCESSES**

8:00 a.m. – 11:00 a.m.

Chair: Prof. T. Palmer, The Pennsylvania State University

9A. 8:00 a.m. Improved Drilling Studies of Crimped Tubes of 304L

T.J. Lienert, J.O. Sutton and R.T. Forsyth, Los Alamos National Laboratory

9B. 8:30 a.m. Investigation of Plasma Arc Welding as A Method for the Additive Manufacturing of Ti-6Al-4V Alloy Components

Joe Stavinoha, Wolf Robotics, and Bruce Madigan, Montana Tech

9C. 9:00 a.m. Effect of Mn and N Vaporization during Laser Beam Welding of Alloy 21Cr 6Ni 9Mn Weldment Mechanical Properties

Pfeif Erik, M. Mataya and D. Olson, Colorado School of Mines, and Carl Cady and Shang Liu, Los Alamos National Labs

9D. 9:30 a.m. Laser-GMA Hybrid Welding of Alloy 690

Jared Blecher, Huiliang Wei, Todd Palmer and T. DebRoy, The Pennsylvania State University

9E. 10:00 a.m. ATIG and Laser Process for Titanium Welding With Cryolite-Containing Fluxes: Penetration Enhancement and Corrosion Resistance

Ali Aishawaf, Stephen Liu and Tariq AISabti, Colorado School of Mines

9F. 10:30 a.m. Experimental Study of Laser Enhanced GMAW Using a High Power Density Fiber Laser

Jun Xiao and YuMing Zhang, University of Kentucky and Guangjun Zhang, Harbin Institute of Technology

SESSION 10: APPLIED TECHNOLOGY II

8:00 a.m. – 11:30 a.m.

Chair: N. Porter, Edison Welding Institute

10A. 8:00 a.m. Getting Outside Your Own Box: Implementing an End-user Driven Product Development and Design Processes

John Henderson, Ross Fleishmann and David Pryor, Victor Technologies

10B. 8:30 a.m. Comparison of Mechanical Properties and Productivity Using the Various SMAW Techniques for Pipelines

Quenton Champ and Russel Ruchs, Bohler Welding Group USA, Inc., and Manfred Hofer, Böhler Welding Holding GmbH

10C. 9:00 a.m. Recent Developments in Joining Technologies for Electric Packaging

Weiping Liu, Indium Corp.

10D. 9:30 a.m. How to Keep Stainless Steel 100% Stainless

Robert Sauders, Bohler Welding Group USA, Inc.

10E. 10:00 a.m. Productivity Improvements for GTAW Pipeline Girth Welding

Andrew Wasson, Nathan Nissley, Neerav Verma and Rick Noecker, ExxonMobil Upstream Research Co.

10F. 10:30 a.m. Improvement to Drawn Arc Stud Welding Process

David Workman and Nancy Porter, Edison Welding Institute

10G. 11:00 a.m. Control of Welding Distortion in Large Stainless Steel Structures

Suresh Srinivasan, Consultant, and N. Raju, Welding Research Institute

SESSION 11: WELDING METALLURGY II

1:30 p.m. – 6:00 p.m.

Chair: Prof. P. Mendez, University of Alberta

11A. 1:30 p.m. Use of Calorimetry to Create CCT Diagrams

P. F. Mendez, J. Gibbs and A. Kamyabi, University of Alberta

11B. 2:00 p.m. Electrode Life, Tensile Properties and Weld Microstructures in Resistance Spot Welding of Hot-Stamped Ultra-High Strength Steel Sheets

Kevin Chan, Huys Industries Ltd., Dulal Chandra Saha, Sashank Nayak and Paulo Penner, University of Waterloo, and Elliot Biro, ArcelorMittal Dofasco Inc.

11C. 2:30 p.m. Welding of Advanced Naval Steels

Jason Bono and John DuPont, Lehigh University

11D. 3:00 p.m. Investigation of the Weldability of High-Cr Ni-base Filler Metals

Timothy Luskin, B. T. Alexandrov and J.C. Lippold, The Ohio State University, and S.L. McCracken, Electric Power Research Institute

11E. 3:30 p.m. Cold Metal Transfer Weld Overlays - Application in Nuclear Power Repair

Nathaniel McVicker, Eric Przybylowicz, B.T. Alexandrov and J.C. Lippold, The Ohio State University

11F. 4:00 p.m. Resistance Spot Welding of UNS S32304 and UNS 32205 Duplex Stainless Steels

Yves F. da Silva, GGB Brazil, Dany Centeno and Sérgio Brandi, University of Sao Paulo, Valdir Furlanetto, Welding Science, and Marcio Batista, Volkswagen Brazil

11G. 4:30 p.m. Time-Temperature Transformation in 3207 Hyperduplex Stainless Steel

Doris Ivette Villalobos Vera and J.C. Lippold, The Ohio State University

11H. 5:00 p.m. Investigation of Processing Properties of Copper Based Filler Metals in MIG and Laser Brazing Processes of Steel Sheets with Different Strength Characteristics

Michael Ebbinghaus, Fontargen

11I. 5:30 p.m. Metallurgy of Laser Cladding Ni-WC Wear Resistant Overlays High Cr White Cast Iron for Oil and Gas Applications

G. Wood, D. Hamre, S. Guest, K. Bell, P. F. Mendez, University of Alberta

SESSION 12: ARC WELDING PROCESSES

1:30 p.m. – 6:00 p.m.

Chair: Prof. Y.M. Zhang, University of Kentucky

12A. 1:30 p.m. Efforts to Reduce Manganese Fume Emissions During Flux Cored Arc Welding of Standard Carbon Steels

Stanley Ferree, ESAB Welding and Cutting Products

12B. 2:00 p.m. Arc Separability and Measurement of Arc Components

Shujun Chen, Fan Jiang and Zhenyang Lu, Beijing University of Technology, and YuMing Zhang, University of Kentucky

12C. 2:30 p.m. Effect of Waveform and Frequency on AC Square Wave Submerged Arc Welding of AISI 304L Joints for Cryogenic Applications

Karine d'Avila Zaccari, Antonio Souza and Carlos Faggiani, Lincoln Electric Brazil, and Sérgio Brandi, University of Sao Paulo

12D. 3:00 p.m. Metal Transfer Control in Arcing-Wire GTAW

Shujun Chen, Ning Huang, Zhenyang Lu, YuMing Zhang and Yan Liu, Beijing University of Technology

12E. 3:30 p.m. Effect of Waveform and Frequency on Submerged AC Square Wave Equipment on Weld Metal Chemical Composition of ER308L, ER309L, ER2209 and ER2594

Jair Mendonca, Infraero, Sao Paulo, Karine d'Avila Zaccari, Lincoln Electric Brazil, and Sérgio Brandi, University of Sao Paulo

12F. 4:00 p.m. Feasibility Study of Cross Arc Welding Process

Shujun Chen, Liang Zhang, Zhenyan Lu, Yuming Zhang and Yuping Wang, Beijing University of Technology

12G. 4:30 p.m. Corrosion Resistance of Autogeneous Duplex Stainless Weld Metal Deposited by Orbital TIG Welding Process

Chan Kim, Jeong-Kweon Joo, Young-Pil Kim and Jun-Tae Choi, Hyundai Heavy Industries Co, LTD

12H. 5:00 p.m. Mechanical and Microstructural Properties of CMT- MIG Welded AW 5083 and AW 6082 Aluminum Alloys

B. Güngör, Turkish Naval Forces, E. Kaluc and E. Taban Kocaali University, and A. Şik, Gazi University

12I. 5:30 p.m. Relation Between Stability of the Pulse Cycle Time and Weld Surf Undulation in Pulsed GMA Welding

Rajasekaran Shanmugam and R.Umarani, EI-Shaddai Welding and Cutting Consultants

SESSION 13: SOLID-STATE WELDING PROCESSES**1:30 p.m. – 6:00 p.m.***Chair: Prof. Y. Adonyi, LeToureau University***13A. 1:30 p.m. Effects of Welding-Induced Residual Stresses on Fatigue Crack — Propagation in Friction Stir Welded API 5L X80 Pipeline Steel**

Jeffrey Soward and J. David McColskey, National Institute of Standards and Technology, and Antonio J. Ramirez and Victor Pereira, Brazilian Nanotechnology National Laboratory

13B. 2:00 p.m. Spin Explosive Solid Bonding of Copper on Low Carbon Steel Base Plate

Jianping He, Donald Sirois, Howard Wikle and Bryan Chin, Auburn University

13C. 2:30 p.m. Refill Friction Stir Spot Welding of Aluminum Alloys

Kevin Chan and Nigel Scotchmer, Huys Industries Ltd., and Adrian Gerlich, University of Waterloo

13D. 3:00 p.m. Friction Stir Welding of 1-in Thick Steel

Brian Thompson, Tim Stotler, Mike Eff and John Seaman, Edison Welding Institute

13E. 3:30 Flash Butt Welding Techniques for Coil Joining of Advanced High Strength Steels

Robert Matteson, Taylor-Winfield Technologies

13F. 4:00 p.m. High Frequency-Enhanced Friction Stir Welding of Bridge Steels

Yoni Adonyi, Hayden Adams, Nathan Dix and Devon Peluso, LeToureau University

13G. 4:30 Friction Stir Welding of In-Situ Synthesized Al+12Si/TiC Metal Matrix Composites

Manas Mahapatra, Belete Sirahbizu Yigezu and P.K. Jha, Indian Institute of Technology Roorkee, and N.R. Mandal, Indian Institute of Technology Kharagpur

13H. 5:00 p.m. The Strength and Metallography of Bimetallic Friction Stir Joint Between AA6061 and High Hardness Armor Steel

Richard Miller, Focus Hope Industries

13I. 5:30 p.m. Tool Geometry Effect On The Thermal Condition and Material Flow of FSW of 7039 Aluminum Alloys

Manas Mahapatra, D. Venkateswarlu and S.P. Harsha, Indian Institute of Technology Roorkee, and N.R. Mandal, Indian Institute of Technology Kharagpur

THURSDAY, NOVEMBER 21**SESSION 14: NSF-CIMJSEA MECHANICAL & CORROSION PROPERTIES****8:00 a.m. – 11:30 a.m.***Chair: Prof. J.N. DuPont, Lehigh University***14A. 8:00 a.m. Stress Relaxation of Candidate Nickel-Base Superalloy Welds for Advanced Supercritical Coal-Fired Power Plants**

David Tung and J.C. Lippold, The Ohio State University

14B. 8:30 a.m. Stress Corrosion Cracking Mitigation of 7003 Al-Mg-Zn-Cu alloy Gas Metal Arc Welding

Tyler Borchers, S.Suresh Babu, Wei Zhang and David Phillips, The Ohio State University

14C. 9:00 a.m. Hydrogen Assisted Cracking in Dissimilar Metal Welds under Cathodic Protection Hydrogen Kinetics and Fracture Behavior

Desmond Bourgeois, B.T. Alexandrov, Jamey Fenske and J.C. Lippold, The Ohio State University

14D. 9:30 a.m. Corrosion Fatigue Behavior of Nickel Based Alloy Weld Overlay and Coextruded Coatings

Andrew Stockdale and John DuPont, Lehigh University

14E. 10:00 a.m. Microstructural and Mechanical Characterization of Developed Multiphase Wide Gap — Braze Alloys for the Repair of Nickel-Base Superalloys

Scott Nelson and Stephen Liu, Colorado School of Mines, and Srkanth Kottilingam, GE Power & Water

14F. 10:30 a.m. Microstructural Evolution and Creep Rupture Behavior of INCONEL(R) Alloy 740H(R) Welds

Daniel Bechetti and John DuPont, Lehigh University

14G. 11:00 a.m. Stress Rupture Evaluation of Steel Welding Consumables

X. Chai and S. Kou, University of Wisconsin, J. Bundy, Hobart Brothers, and S. Suresh Babu, The Ohio State University

PROFESSIONAL PROGRAM

THURSDAY, NOVEMBER 21

SESSION 15: WELDABILITY TOPICS

8:00 a.m. – 11:30 a.m.

*Chair: Prof. J.C. Lippold,
The Ohio State University*

15A. 8:00 a.m. Effects of Welding Variables on the Weldability of High Manganese Steel

Jae-Hee Lee, Young-Pil Kim and Jun-Tai Choi,
Hyundai Heavy Industries Co, LTD

15B. 8:30 a.m. Evaluation of Heat-Affected Zone Hydrogen-Induced Cracking for High-Strength Steels Using

Xin Yue, Xiuli Feng and J.C. Lippold,
The Ohio State University

15C. 9:00 a.m. Dilution Effect on Solidification Modes in Dissimilar Metal Welds

Ivan Mendoza and J.C. Lippold,
The Ohio State University

15D. 9:30 a.m. Application of the Delayed Hydrogen Cracking Test Ranking Susceptibility of Welds to Hydrogen-Assisted Cracking under Cathodic Protection

Desmond Bourgeois, B.T. Alexandrov, Shu Shi and J.C. Lippold, The Ohio State University

15E. 10:00 a.m. Stress-Relief Cracking in Creep-Resistant Steel Welds

Katie Strader, B.T. Alexandrov and J.C. Lippold,
The Ohio State University

15F. 10:30 a.m. Susceptibility to Hydrogen Assisted Cracking in Creep-Resistant Steel Welds

Joseph Steiner, Xiuli Feng, B.T. Alexandrov and J.C. Lippold, The Ohio State University

15G. 11:00 a.m. Evaluation of Hydrogen Embrittlement in Multi-pass Weld Metal of Pipeline Steels – Role of Microstructural heterogeneity

H.Y. Song, S.Suresh Babu and W. Zhang,
The Ohio State University

AWS POSTER SESSION

The AWS Poster Session held November 18-21 during show hours is an integral part of the AWS Professional Program. Graphic displays of technical achievements are presented for close, first-hand examination in the Poster Session. Posters present welding results and related material, which are best communicated visually, as well as research results that call for close study of photomicrographs, tables, systems architecture, or other illustrative materials. Posters are presented in five categories: Students in High School Welding Program, Students in a Two-Year College or Certificate Program, Undergraduate Students, Graduate Students, and Professionals. Be sure to stop by and observe this year's entries.

AWS EDUCATIONAL SESSIONS

3-Day AWS Educational Sessions: W37

1-Day AWS Educational Sessions:

Monday W34, Tuesday W35, Wednesday W36

MONDAY, NOVEMBER 18

8:00 a.m. – 5:00 p.m.

Welding technology has rapidly advanced and it is difficult for welding educators on limited budgets to keep up with the changes. This conference, hosted by the National Center for Welding Education & Training (Weld-Ed), is an opportunity to provide welding educators and therefore future welders, technicians, engineers, and sales representatives with the knowledge to remain competent and competitive.

Attendees will learn about the six Educator Professional Development workshops offered by Weld-Ed each summer. The session will include a brief overview and

hands-on labs taken from each workshop. Following this session, representatives from some of the welding industry's leading companies will provide excellent technical, product, and educational resource information. The afternoon will include a "Technology Tour" with small groups led by Weld-Ed, visiting industry booths to be introduced to the latest equipment and technical information educators often find difficult to gather.

AWS EDUCATIONAL SESSIONS

TUESDAY, NOVEMBER 19

8:00 a.m. – 5:00 p.m.

This year's Plummer Memorial Education Lecture is titled "The Future of Welding Education" by Dr. Rick Polanin. Dr. Rick Polanin is Professor and Program Chair of the Manufacturing Engineering Technology and Welding Technology programs at Illinois Central College. He holds a Bachelor's and Master's degree from Illinois State University and a Doctorate from the University of Illinois. In addition to his responsibilities at the college, Dr. Polanin is a consultant in manufacturing engineering, and welding engineering and inspection. He has published text books, numerous papers, and made many technical presentations in the areas of Manufacturing, Robotics, Welding and Manufacturing Education. Dr. Polanin is a graduate of the Illinois Scholars program sponsored by the Illinois State Board of Education and Illinois Community College Board and is a Certified Manufacturing Engineer, Certified Welding Inspector, and a Certified Welding Educator. Dr. Polanin is a Co-Principal Investigator for a National Science Foundation grant sponsored Advanced Technology Center – Weld-Ed.

8:00 a.m. – 8:15 a.m.

Welcome/ Introduction

8:15 a.m. – 9:00 a.m.

STEM Education in the Welding Classroom

David Hernandez, American Welding Society

9:00 a.m. – 9:30 a.m.

Attracting and Engaging Students to Address the Manufacturing Labor Shortage

Deanna Postlethwaite, The Lincoln Electric Co.

9:30 a.m. – 9:45 a.m.

Networking Break

9:45 a.m. – 10:45 a.m.

Veterans to Welders - Career Building American Finest

Scott A. Mazzulla, Hobart Institute of Welding Technology

10:45 a.m. – 11:45 a.m.

Plummer Memorial Award Lecture

Dr. Richard W. Polanin

11:45 a.m. – 1:30 p.m.

Lunch

1:30 p.m. - 2:00 p.m.

Atkins Memorial Award Lecture

Greg Siepert, Hutchinson Community College

2:00 p.m. – 3:00 p.m.

Getting Onboard with the "New School" of Learning—Apps in Welding

Robert Udy, Salt Lake Community College

3:00 p.m. – 3:15 p.m.

New AWS Apps for Welding Education

David Hernandez, American Welding Society

3:15 p.m. – 3:30 p.m.

Networking Break

3:15 p.m. – 4:30 p.m.

SENSE Update

Ed Norman, EDCO Industries LLC and Steve Houston, American Technical Publishers

4:30 p.m. – 5:00 p.m.

SENSE Implementation Q&A

Ed Norman, EDCO Industries LLC and Steve Houston, American Technical Publishers

WEDNESDAY, NOVEMBER 20

8:00 a.m. – 5:00 p.m.

8:00 a.m. – 9:00 a.m.

Redefining the Welding Classroom

David Hernandez, American Welding Society

9:00 a.m. – 10:00 a.m.

Mastery Based Blended Learning

Robert Shigley, Victor Technologies

10:00 a.m. – 10:15 a.m.

Networking Break

10:15 a.m. – 11:15 a.m.

Lincoln Electric's Update of Training Tools for Welding Education

Jason Schmidt, The Lincoln Electric Company

11:15 a.m. – 12:15 p.m.

Finally a Welding Code Tutorial for Instructors

Robert Udy, Salt Lake Community College

12:15 p.m. – 1:00 p.m.

Lunch

1:00 p.m. – 2:00 p.m.

Miller Electric Educational Presentation

John Luck and Philip Sabee, Miller Electric Mfg. Co.

2:00 p.m. – 3:00 p.m.

ESAB Educational Presentation

Dwight Myers, ESAB Welding & Cutting Products

3:00 p.m. – 3:15 p.m.

Networking Break

3:15 p.m. - 4:00 p.m.

Recruiting Students to Your Welding Program

Group Discussion

4:00 p.m. – 5:00 p.m.

Practical Welding Metallurgy Object Lessons in Welding SA514 Materials

Larry Zirker, Zirker Consulting and Technology Inc.

SPECIAL PROGRAMS

MONDAY, NOVEMBER 18

2:00 p.m. – 3:00 p.m.

W38: AWS EDUCATION PROGRAM Q & A

This one hour session will provide a brief overview of new AWS educational initiatives and products including American Welding Online and the AWS virtual classroom. After the presentation, AWS Education Services staff will be available to answer questions.

MONDAY, NOVEMBER 18

1:00 p.m. – 5:00 p.m.

W39: BRAZING SYMPOSIUM

The 39th International Brazing & Soldering Symposium (IBSS) will be held November 18, 2013 at McCormick Place, Chicago, IL. At this Symposium authors will be presenting original and unpublished current research, applications and new developments in a broad spectrum of technical areas within the brazing and soldering fields. The sessions will have something for the scientists and the engineers to the practitioners and the novices that are considering brazing and soldering solutions to their joining applications. Technical and tutorial sessions will present some of the latest developments and provide information to assist your with your joining needs.

TUESDAY, NOVEMBER 19

12:00 p.m. – 2:00 p.m.

W40: AWS AWARDS LUNCHEON

As the Society and the industry it serves have grown, so has the need to recognize outstanding scientists, engineers, educators, and researchers. Join an assembly of distinguished award presenters, recipients, and guests for a well-paced ceremony and a delicious lunch. The cost for attending the ceremony is \$30 and is open to all registrants. Tickets will also be available at the door.

MONDAY, NOVEMBER 18 -
THURSDAY, NOVEMBER 21

ROBOTIC ARC WELDING CONTEST

Robotic welding technicians will compete at FABTECH in Chicago to win free training and examination for the Certified Robotic Arc Welding (CRAW) Operator or Technician. Competition will include a timed written test and a challenging exercise with a live welding robot. The top three competitors will win an AWS duffel bag. Each participant will receive an AWS T-shirt with logo. The first-place winner will receive AWS CRAW training and the complimentary opportunity to sit for an actual CRAW exam.

TUESDAY, NOVEMBER 19 –
WEDNESDAY, NOVEMBER 20

WELDING WARS COMPETITION

Location: N2293, North Hall

Teams of three student welders (16+) will sign up online (\$10 entry fee per person). Each team will fabricate the weldment on a supplied print using GTAW, GMAW and plasma cutting, with sheared and cut material provided, within a time limit of two hours. A panel of certified welding inspectors will evaluate all weldments to AWS D1.1 based on accuracy of project to print specifications, weld size, overall weldment appearance, craftsmanship, professionalism, safety, etc. Info at www.aws.org/education.

WEDNESDAY, NOVEMBER 20

7:00 a.m. – 8:30 a.m.

W41: AWS PRAYER BREAKFAST –
MY FAITH AT WORK

Galen White is the Senior Welding Engineer at Maxal International in Traverse City, MI, a division of Hobart Filler Metals. Prior to joining Maxal he was the Welding Engineer at the ITW Welding Technology Center in Glenview, IL and at Miller Electric Mfg. Co. in Appleton, WI.

Galen is currently serving on several AWS subcommittees including AWS D1G (Structural Aluminum) and has recently developed a curriculum for the Boy Scouts of America to earn their Welding Merit Badge in Northern Michigan. He is a graduate of Ferris State University with a B.S. degree in Welding Engineering Technology and has several welding related patents. He is active in his local church and serves as one of the worship leaders and loves to play guitar. In addition to welding he enjoys riding his motorcycle and hunting/fishing. Galen and his wife, Natalie, have three daughters aged 10, 13, and 14.

THURSDAY, NOVEMBER 21

7:00 a.m. – 6:00 p.m.

AWS CERTIFICATION EXAM

Advance application required. Take your exam to certify as a CWI, CWE, CWS, CWSR, SCWI, CWEng, or test for endorsements. Call 1-800-443-9353 ext. 273, or go to www.aws.org/certification for details on the certification and registration requirements.

MONDAY, NOVEMBER 18**AWS OPENING SESSION & ANNUAL BUSINESS MEETING****9:00 a.m. – 12:00 p.m.**

During the AWS Opening Session and the 93rd Annual Business Meeting, 2013 AWS President Nancy Cole will give the Presidential Report and Dean Wilson will be inducted as the AWS President for 2014. Following the induction, the 2013 Class of AWS Counselors and Fellows will also be introduced. This meeting is open to all AWS Members and show registrants.

COMFORT A. ADAMS LECTURE**10:30 a.m. – 11:30 a.m.**

The Comfort A. Adams lecture this year is titled “Welding of Nickel Base Alloys for Energy Applications” by John N. DuPont. John N. DuPont, an AWS Fellow and a Fellow of ASM International, earned his PhD in materials science and engineering from Lehigh University where he is presently the R. D. Stout Distinguished Professor. He also serves as associate director of Lehigh’s Energy Research Center and holds a joint appointment in the Mechanical Engineering Department.

His research interests include processing-microstructure-property relations in solidification and joining of materials, laser-engineered net shaping, and alloy development. He has published about 140 papers, edited four books, and holds one U.S. patent. DuPont received the Adams Memorial Membership Award, Charles H. Jennings Memorial Award, William Spraragen Memorial Award, McKay-Helm Award, A. F. Davis Silver Medal Award, Warren F. Savage Memorial Award, Prof. Koichi Masubuchi Award, and the William Irrgang Award. DuPont received the National Science Foundation Presidential Early Career Award for Scientists and Engineers from President Clinton, and the Lehigh University College of Engineering Teaching Excellence Award. DuPont is a Principal Peer Reviewer for the Welding Journal, a reviewer for the Journal of Materials Engineering and Performance, and serves on the editorial board of Science & Technology of Welding and Joining. He is a past chair of the ASM International Committee on Fusion Welding, and past vice chairman of the ASM Committee on Joining. He is a member on several AWS committees including Awards, Research & Development, Handbook, Conference, and Technical Papers, and serves on the EWI Navy Joining Center Technical Advisory Board.

AWS OFFICERS/PRESIDENTS/COUNTERPARTS RECEPTION**6:30 p.m. The Hilton Chicago**

This reception is held annually during the show and is open to all registrants. Take advantage of this opportunity to meet the AWS Officers, network with members and prospects. A complimentary hors d’oeuvres buffet is included, along with a cash bar. Evening business attire.

TUESDAY, NOVEMBER 19**AWS AWARDS/AWS FOUNDATION LUNCHEON****12:00 p.m. – 2:00 p.m.**

As the Society and the industry it serves have grown, so has the need to recognize outstanding scientists, engineers, educators, and researchers. Join an assembly of distinguished award presenters, recipients, and guests for a well-paced ceremony and a delicious lunch. The cost for attending the ceremony is \$30 and is open to all registrants. Tickets will also be available at the door.

AWS NATIONAL NOMINATING COMMITTEE – OPEN MEETING**2:00 p.m. – 3:00 p.m.**

AWS Members are requested to submit their recommendations for National Officers to serve during 2014. Nominations must be accompanied by 16 copies of biographical material on each candidate, including a written statement by the candidate as to his/her willingness and ability to serve if nominated and elected.

WEDNESDAY, NOVEMBER 20

R.D. THOMAS, JR. INTERNATIONAL LECTURE

10:00 a.m. – 10:30 a.m.

The year's R.D. Thomas, Jr. Award recipient is Prof. Xiao-Ling Zhao from Monash University. His lecture is titled "ISO Standards for Welded Hollow Section Joints."

Prof. Xiao-Ling Zhao is the holder of a Bachelor and Master degree in Mechanical Engineering from Shanghai JiaoTong University, a PhD and Doctor of Engineering (higher doctorate) in Civil Engineering from The University of Sydney and a MBA (Executive) jointly awarded by The University of Sydney and The University of New South Wales. Prof. Zhao has been a member of WTIA (Welding Technology Institute of Australia) since 1992 and an active participant in the IIW (International Institute of Welding) in the last 20 years.

Prof. Zhao has been chairing the IIW Subcommittee XV-E on Tubular Structures since 2002. Under his leadership the XV-E subcommittee wrote two ISO standards (ISO 14346 and ISO 14347), four design guides (available in 4 languages) and one text book on welded hollow section joints, and organised five International Symposia on Tubular Structures.

AMERICAN COUNCIL OF IIW

10:30 a.m.

(immediately following the R.D. Thomas, Jr. International Lecture)

American Council of the IIW, meeting of the U.S. member body of the International Institute of Welding.

IMAGE OF WELDING AWARDS CEREMONY

12:00 p.m. - 2:00 p.m.

The best and brightest stars in the welding industry will be honored for their outstanding industry achievements at the 11th Annual Image of Welding Awards. Presented by the AWS and WEMCO, a standing committee of AWS, the Image of Welding Awards is the industry's top honors saluting the year's most outstanding public initiatives and programs that promote the image of welding. By invitation only. This year the Image of Welding Awards Ceremony will be held in conjunction with the AWS Section Appreciation Lunch.

**Your LINK to Quality Cooling**

- Standard or Custom Chiller Lines
- Ideal Solutions - All Applications
- 60 Yrs as Partners in Production
- Redundant Solutions Available
- 24/7 Service & Support

Visit us at:
Booth S2367

800-YOU-KOOL
salesdept@dimplexthermal.com
www.koolantcoolers.com

GET THE BEST HOTEL RATES

Book your room through the official FABTECH hotel block and you are guaranteed to get the best rates (if you find a lower rate, let us know). Free shuttle service is available to and from McCormick Place and designated event hotels.

To find hotel information, make room reservations, take advantage of free shuttle, special discounts and more, go to fabtechexpo.com/accommodations.



HOTEL	DISTANCE FROM CONVENTION CENTER	RATE*
Avenue Crowne Plaza Hotel Chicago	5.0 Miles	\$199 to \$259
Chicago Marriott Downtown Magnif. Mile	3.1 Miles	\$249 to \$289
Courtyard by Marriott Downtown River North	3.2 Miles	\$222 to \$272
Embassy Suites Chicago Downtown	3.0 Miles	\$242 to \$272
Embassy Suites Chicago Lakefront (CCAI HQ)	3.0 Miles	\$239 to \$289
Fairfield Inn and Suites Downtown	5.0 Miles	\$209 to \$209
Fairmont Chicago	2.7 Miles	\$254 to \$314
Four Points by Sheraton Magnificent Mile	3.0 Miles	\$219 to \$219
Hilton Chicago (AWS HQ)	1.8 Miles	\$247 to \$322
Hilton Garden Inn Magnificent Mile	3.2 Miles	\$229 to \$249
Holiday Inn Chicago Mart Plaza	4.0 Miles	\$205 to \$230
Hyatt Mag. Mile (frmly Wyndham Chicago)	2.2 Miles	\$249 to \$299
Hyatt Regency Chicago (FMA HQ)	2.0 Miles	\$232 to \$307
Hyatt Regency McCormick Place	Adjacent	\$239 to \$337
Intercontinental Chicago Magnificent Mile (SME HQ)	2.0 Miles	\$265 to \$305
Omni Hotel Chicago	2.0 Miles	\$239 to \$279
Palmer House Hilton	2.0 Miles	\$237 to \$287
Radisson Blu Aqua Hotel	3.0 Miles	\$229 to \$254
Renaissance Blackstone Chicago Hotel	1.9 Miles	\$239 to \$259
Renaissance Chicago Hotel	2.9 Miles	\$259 to \$299
Sheraton Chicago Hotel and Towers	1.5 Miles	\$249 to \$279
Swissotel Chicago	3.1 Miles	\$254 to \$314
theWit, a member of the Hilton Family	3.0 Miles	\$259 to \$309
W Chicago Lakeshore	3.6 Miles	\$249 to \$349
Westin Chicago River North	4.0 Miles	\$269 to \$329
Westin Michigan Avenue Chicago (PMA HQ)	4.0 Miles	\$239 to \$289
Wyndham Grand Riverfront (Fmr. Hotel 71)	2.5 Miles	\$195 to \$245

* Quoted rates listed are for single rooms only and do not include tax. Additional fees may apply for double, triple and quad occupancy. Reservation requests and changes are subject to availability.

CONNECT WITH FABTECH

FABTECH is not just an event, it's a year-round experience. Connect and engage with other industry professionals and show attendees on FABTECH's social media sites — before, during and after the event!



Check out the new FABTECH blog! Find the latest industry news and technology updates, along with updates on the FABTECH exposition and conference at blog.fabtechexpo.com



Like us on Facebook at facebook.com/fabtechexpo and interact with our fans.



Follow us on Twitter, [@fabtechexpo](https://twitter.com/fabtechexpo) and [#fabtechexpo](https://twitter.com/fabtechexpo), to receive information and updates on the show and the industry.



Network with hundreds of industry professionals in our **FABTECH LinkedIn group** and join the active conversations.



Watch FABTECH on YouTube at youtube.com/fabtechexpo and share and discuss.



FABTECH 2013 IS MOBILE!

A native app is available now for iPhone, iPad and Android devices. There's also a web-based version of the application for all other web browser-enabled smartphones. The application is designed to enhance your show experience and puts important event information in the palm of your hand so you can access it anytime, anywhere. With features and tools like these, you won't miss a minute of the action:

- Interactive floor maps that make it easy to find who (and what) you are looking for
- Personalized agenda planner you can use to create a list of must-see exhibits
- A full schedule of education sessions and the ability to add to your planner
- Real-time alerts that remind you of what's happening at the show
- A live Twitter stream that connects you to up-to-the-minute show news
- Local destination information with restaurant options and things to do

Download the FABTECH 2013 App Now at fabtechexpo.com/mobile

Mobile App Sponsored By: **AMADA**

Fabricators & Manufacturers Association, Intl.®
833 Featherstone Road
Rockford, IL 61107



North America's Largest Metal Forming,
Fabricating, Welding and Finishing Event

November 18–21, 2013
McCormick Place | Chicago, IL



Scan code with your
mobile device to watch
FABTECH in action!

REGISTER TODAY at fabtechexpo.com

Use the Promo Code next to your address when registering online.