

GENERATION
UTILITY
TELECOM
SUBSTATION & DISTRIBUTION
C&D: YOUR TOTAL UTILITY SOLUTION PROVIDER



Total Solutions Provider



See how one "Total Solutions Provider" can make your processes simpler.

△ **QUALITY**

△ **RELIABILITY**

△ **INNOVATION**

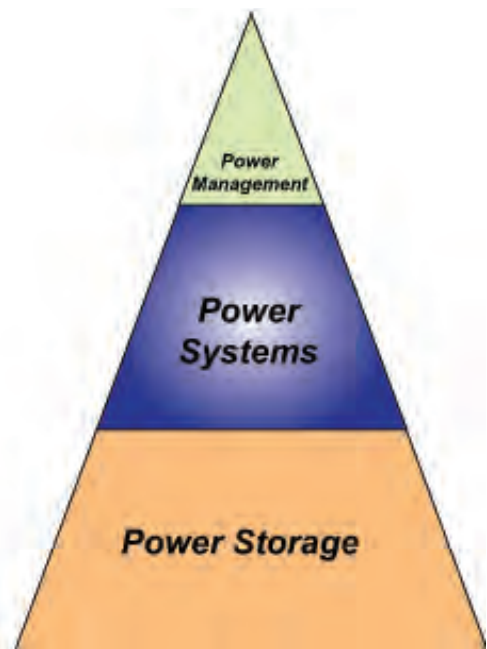
One source with years of experience to provide solutions for the ever changing Utility and Energy Infrastructure Markets that demand quality and reliability by providing the best in class power solutions from VLA (flooded/vented lead acid batteries) and VRLA (valve regulated lead acid batteries), SCR, Ferro-resonant, switch-mode rectifier and monitoring products to name a few. Whatever your needs require C&D can provide reliable best in value products manufactured to the highest standards all from ONE PROVIDER.

C&D's Integrated Power Systems (IPS) Division is a leader in the Utility market and has been for over 45 years, continuously developing and manufacturing a broad array of quality products for each segment of this market. C&D brings together high-quality batteries and the most reliable power systems on the market. We integrate these into custom power solutions for our global customer base.

OUR MISSION

Our mission at C&D (IPS) is to provide the best quality power systems, designed to give you the maximum performance over the life of the product. With our offering of SCR, Ferro-Resonant, and Switch-Mode rectifier products, we know and understand all the applications for the Utility Market customer. Our totally integrated battery & power solutions, designed & built in our Dunlap facility, make our product the most reliable and the best value of any product in the USA. Our field service and support is best in class and located in Dunlap Tennessee manufacturing facility also. Let us show you how we can serve your very demanding market.

**Power
Batteries
System Integration
Application Support
Installation
Field Service**



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Renewable Energy

.....VRLA Battery Solutions

C&D Technologies offers many products to support the Renewable Energy Market and other cyclic applications. Products include VLA batteries, VRLA batteries, Lithium Ion batteries, and associated system components. Since the Renewable Energy Market requires a wide range of operating parameters, and typically high cycle life, C&D has engineered products specifically for these duty cycles and extreme operating conditions. C&D's **VR Solar** series offer multiple battery footprints and form factors that all incorporate industry leading **DCS** Technology for the highest cycle life from a VRLA battery. C&D's **CPV** products provide a proven high cycling, VLA solution. C&D **Lithium Ion** systems provide a high energy density, small footprint solution for those applications that require these capabilities. In addition to the energy storage products, C&D offers all the associated equipment for these systems including racks, trays, cabinets, battery monitoring and automated watering systems.



msEndur II

We offer many VRLA solutions that meet the requirements of the Utility/Energy & Infrastructure market including Oil & Gas Exploration, Offshore Platforms, Signaling Sites, Electric Utility Substations and other applications. Our VRLA solutions range from 30AH to 2180AH and are ideal for step load applications common in the Energy & Infrastructure market.

- Liberty 1000
- Liberty MSE
- msEndur II
- SGC Series
- VR Solar
- Lithium Ion



VR Solar TFA (True Front Access)



Liberty 1000



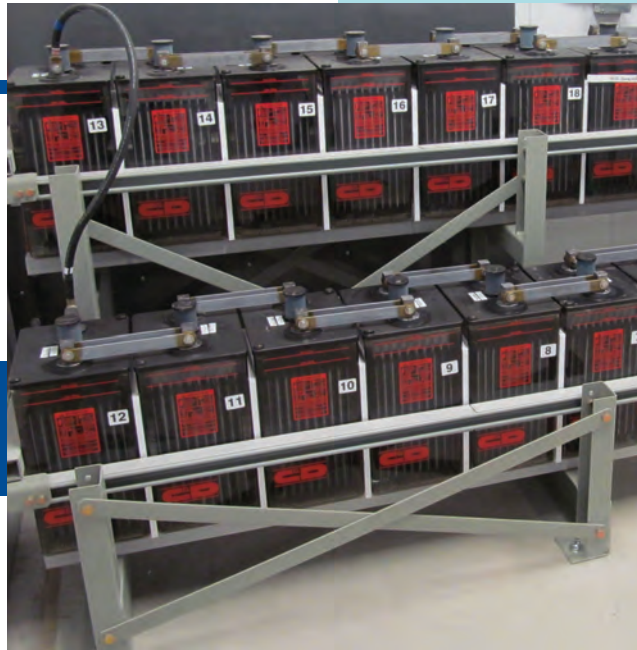
VR Solar



SGC Series



.....VLA (Flooded) Battery Solutions



**KCR
Battery
System**

C&D offers many VLA battery solutions optimized for use in Switchgear & Control applications including Electric Generation (including 1E Nuclear Safety Related Batteries), Transmission & Distribution Substations, Manufacturing Control Systems, Pipelines, Petrochemical processing plants and others. We offer solutions ranging from 50AH to 4000AH (8 hr. rate) that are ideal for both high rate/short duration and low rate/long duration step load discharges common in the Energy & Infrastructure market.

Models

AH Capacity Range

DCU/DU	50 – 200
DJ/DJU	110 – 200 (3 cell design)
XDJ	125 – 208 (3 cell design)
KCR/KAR	200 – 825
4LCY	248 – 669 (4 cell design)
XT/XT Plus/XTH Series	290 – 2606
LCR/LCY/LAR	900 – 2400
CPV	912 to 2150 (12hr rate)
LCUN	1304 – 2318
MCT	3000 & 4000

Battery racks seismically qualified for UBC, IBC, IEEE-693 and nuclear requirements.



DCU



DJU



LCR



MCT

ARE-Utility Chargers

The leader in single phase Utility Chargers

C&D offers a complete line of dependable high efficiency Ferro resonant and SCR chargers

Our offering:

- ARE-M – Ferroresonant is offered in 24, 48 & 130VDC
- ARE-S – SCR is offered in 48 & 130VDC

The C&D Advantage

- High reliability
- Good regulation of output voltage against wide variations of input voltages
- Short Circuit protection
- Low operating costs years of low maintenance service
- Designed specifically for utility applications, these rectifiers are easily adjusted to meet your specific operating requirements
- DNP3 communications
- C&D can provide your total solutions, rack mounted configurations and outdoor cabinets



SCR Series Float Chargers

C&D offers three phase silicon-controlled chargers

ARR-M

C&D offers a complete line of dependable high power float chargers



Our offering:

- ARR-M – is offered in the following DC Voltages 24, 48, 125 and 250VDC

The C&D Advantage

- Front access wiring reduces installation time and provide for ease of maintenance
- Listed to UL/CUL
- Microprocessor Controlled
- Low maintenance
- Remote Communications – MODBUS & DNP3
- Design provide for reliable power requirements on or off the battery
- Ideal for a wide variety of utility, industrial and other standby power supply applications



SAGEON® Power Systems for “Utility Telecom”

The Sageon Power System is a scalable DC power system offers the Utility Telecom Communication.

- Reliability
- User friendly windows interface
- SNMP – remote access
- Live Battery Monitoring 24/7 down to the cell level
- Load testing capability over the net
- Site Monitor – bring back critical alarm points via the power plant



SAGEON® MICRO



19" Rack - Sageon II



- Up to 200A
- Flexible DC distribution
- Bulk power or with distribution
- Flexible configurations
- Compact design
- Rectifier offering
 - 1400W
 - 1920W
 - 2400W



Sageon

SAGEON® II

- From 200A N+1 to 600a
- Flexible Configuration
 - BULK power
 - 20 or 40 position distribution
- Offered in three different configurations
- 200A
- 400A
- 600A
- 2400W rectifiers



SAGEON® III

- Up to 1200A capacity
- Optional
 - GJ breakers
 - Up to 60 AM1 breaker positions
- Battery Monitoring
 - Monitor up to 16 strings
 - Monitored via SNMP
 - Monitor voltage down to the cell level
 - Remotely load test over the internet
 - Can detect a bad cell

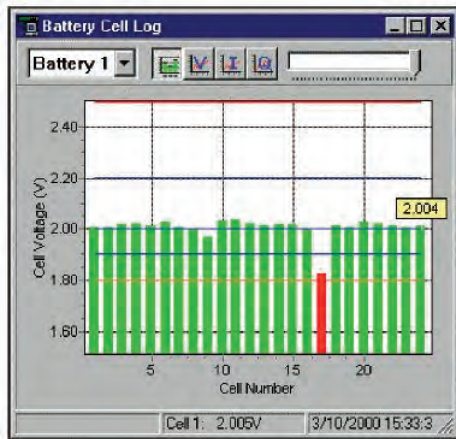
The Sageon® comes standard with (1) ambient temperature sensor and (1) battery temperature sensor.

Also included is a cell wiring harness, and inline protection devices for power and sense wiring.



Sageon III

BATTERY MONITORING

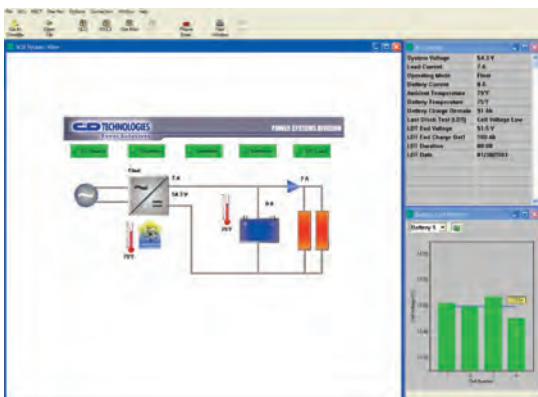


- Monitor up to 16 strings
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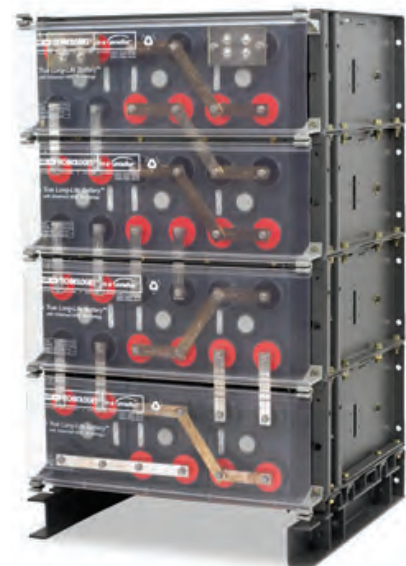
The Sageon® comes standard with (1) ambient temperature sensor and (1) battery temperature sensor.

Also included is a cell wiring harness, and inline protection devices for power and sense wiring.

- Pick up remote site information via SNMP
- 8 analog in
- 12 discrete in
- 4 relay out
- All comes back via controller



Battery Cell Monitor	
Current	0 A
Cell 1 Volts	2.110 -1%
Cell 2 Volts	2.120 -1%
Cell 3 Volts	2.125 +0%
Cell 4 Volts	2.145 +1%
Cell 5 Volts	2.130 +0%
Cell 6 Volts	2.145 +1%
Cell 7 Volts	2.120 -1%
Cell 8 Volts	2.105 -1%
Cell 9 Volts	2.075 -3%
Cell 10 Volts	2.155 +1%
Cell 11 Volts	2.155 +1%
Cell 12 Volts	2.135 +0%
Cell 13 Volts	2.135 +0%
Cell 14 Volts	2.135 +0%



msEndur II

SAGEON® SHIELD **(Standalone Battery Monitoring)**

- Use the shield to have battery monitoring on other brands of DC plants
- Measure voltage on batteries down to the cell level
- Bring it all back via Sageon® Sageview

The Sageon® Shield comes standard with (1) ambient temperature sensor and (1) battery temperature sensor.

Also included is a cell wiring harness, and inline protection devices for power and sense wiring.



INTEGRATED POWER SOLUTIONS



C&D has the ability to provide total solutions for our customers. We design & manufacture:

- Batteries
- DC Power Plants (Utility & Telecom)
- Racks & trays
- Through our applications group we can offer complete integrated solutions

Rack Solutions – C&D has a complete offering of:

- Custom Engineered racks
- Modular
- Pre-wired
- 23" & 19" space efficient configurations

19" Rack - Sageon II

OUTDOOR CABINETS



C&D outdoor metal enclosures house batteries and chargers required to provide DC power for remote applications. They are ideal where reliable power is needed to operate such DC devices as motor operated disconnect switches, circuit breakers, supervisory controls and other emergency equipment. The available options permit these units to be operated in a wide variety of ambient conditions.

C&D outdoor cabinets may be equipped with a charger (Installed when shipped), batteries (shipped separately with hydrometer and battery connections), hydrometer holder mounted inside the cabinet, and 6 in. (152 mm) legs for pad mounting, to create a total packaged power. The standard units are convection cooled with perforated metal covering the top and bottom vents. The top opening can be closed if desired.

The inside and outside of the cabinets are protected with durable polyester powder finish (AN151-61). Doors are double latched top and bottom and the door handle can be padlocked.



MOBILE BATTERY TRAILER

48 and 125 VDC mobile DC Power

For utility, industrial, and communications applications

Customer Benefits

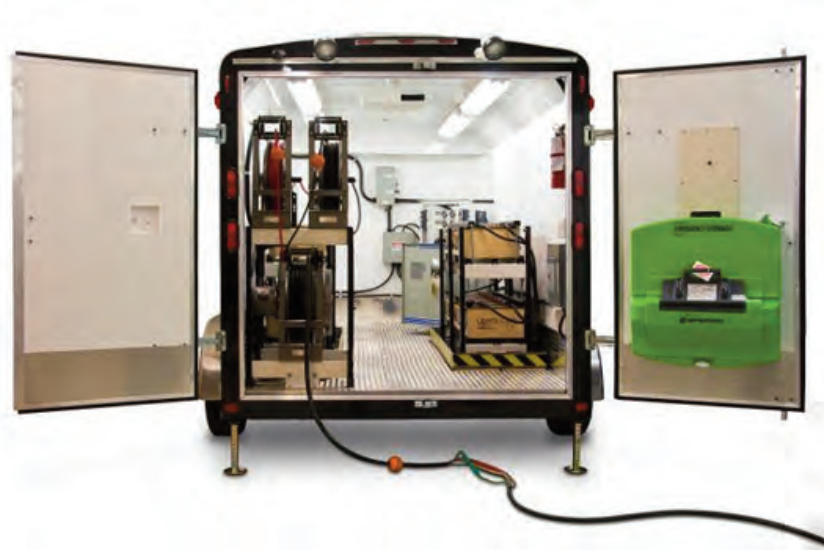
- Customizable:
 - Multiple voltages and A-Hr capacities
 - All battery types
 - Customer selectable charging and Rugged, reliable designs
- Complete Safety Features
- Accessories include:
 - Heating and A/C
 - DC Cable and reels
 - AC power interface for shore power
 - Storage for tools, equipment and safety devices



Applications

Substation Control Power
Emergency Back-up for communications nodes
Temporary power during battery testing and maintenance

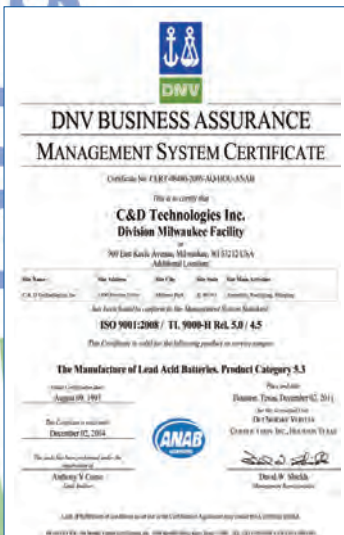
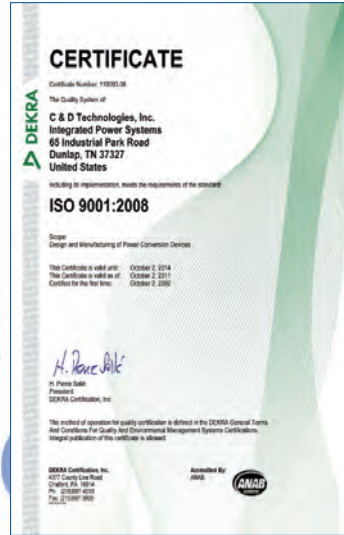
BUILD-OUT EQUIPMENT OPTIONS



- Enclosed tandem axle trailer
- Roof Vents
- Lighting options
- 32" Side Door
- Full Access Rear Barn Style Doors
- Corner Post Drop down jacks in rear corners – 3000Lb capacity
- DC Equipment:
 - VRLA, Gelled Lead-Acid, Nickel-Cadmium batteries available.
 - 24/48/125 VDC chargers to customer specifications
 - Various battery rack and spill containment designs
 - DC Voltage Converters
 - Disconnects
- Portable AC generator
- White vinyl ceiling
- 13,500 BTU a/c with heat strips
- 2- 500 watt quartz rear loading lights
- ¾ " plywood walls
- Equipment Compartments
- Acid Resistant Coating on floor
- Portable eyewash station
- Cable reels
- DC Connection Cables
- "Shore" Power Cable ***** Specify Plug type***** , if not pigtail
- 1-Bonding Cable on reel
- Safety Equipment – fire extinguishers, signage, hazardous lighting, first aid.
- AC and DC panels with circuit breakers
- Cutler Hammer 100amp Dual Throw Switch 125V/48v Output
- 4 outlets and 1 switch, - installed per NEC standards for Explosion Proof Location
- Conduit and connectors



C&D QUALITY CERTIFICATES



DNV



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