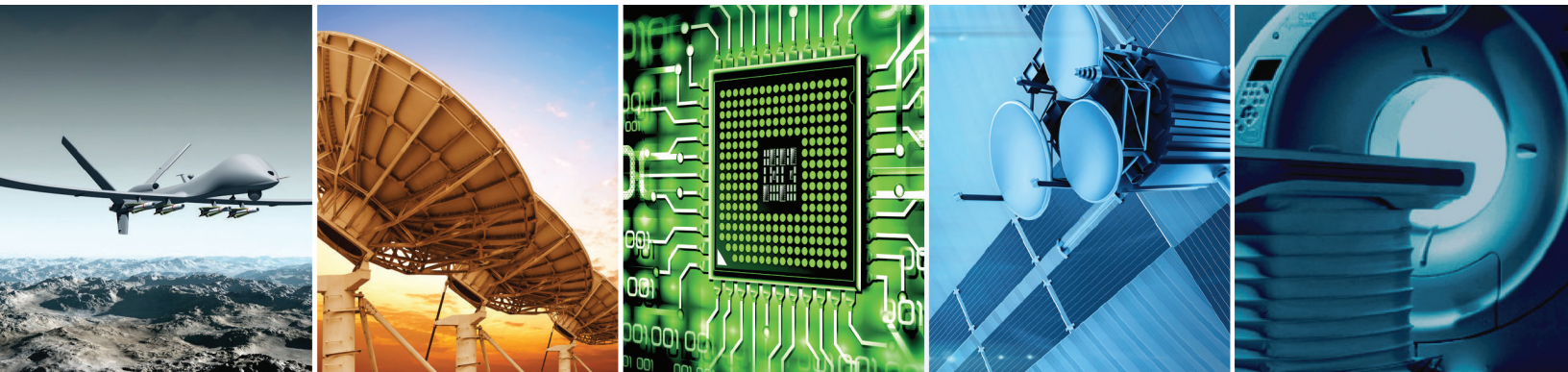




# MEDIA KIT 2016 - 2017





## MISSION

Calumet Electronics is committed to high-velocity, high-performance printed circuit board (PCB) engineering and fabrication solutions in North America, with a strong focus on aerospace, medical, defense and industrial sectors.

## VISION

We intend to provide our customers with the highest quality and most reliable PCBs that will stand up to their most rigorous applications.

We obtain high levels of performance by continually improving our manufacturing processes and through our employees' commitment to excellence in workmanship.

We strive to reduce lead times in all aspects of our operations. We are committed to continually adding new engineering and manufacturing capabilities.

We strive to serve our community by providing long-term employment and opportunities for employees to grow and develop.

## QUALITY POLICY

**Calumet Electronics is committed to exceeding customer expectations and to continual quality improvement.**

We believe that a simple and concise quality policy is most effective, memorable, and powerful; that our quality practices should be intrinsic and inherent in everything we do; and that our quality goals must encompass all aspects of our business and business relationships.

The words "Calumet Electronics" in our policy not only refers to employees critical to the manufacturing, inspection, and testing of our products, and the supervisor, facility, and management teams, but also to our suppliers, vendors, and contractors. We expect and require organizations that work with Calumet Electronics to meet, and help us exceed, our quality standards.

The words "exceeding customer expectations" indicates that we are committed to providing high-quality product to our customers by meeting or exceeding their specifications, including testing, certification, materials, and other intangibles. This statement also acknowledges each manufacturing workgroup's commitment to view downstream workgroups as their customer, moving product forward on schedule, with excellent workmanship, and meeting all quality criteria.

The words "continual quality improvement" acknowledges our commitment to constantly improving our own quality standards, measures, systems, process controls, and capabilities.



# HISTORY

Calumet Electronics Corporation sets the high-water mark in multilayer PCB fabrication and related solutions. As a second-generation company, Calumet’s focus remains grounded in the strong Midwestern work ethic established by the original founders in 1968. It was a time when economic downturn lead to the closure of local mining operations. A group of business men and women persevered, discovering new opportunities in integrated circuits. Their mission of providing family-sustaining employment for residents of the Keweenaw has continued ever since.

Calumet Electronics remains a leader in manufacturing safe, secure and sustainable printed circuit boards for the aerospace, defense, medical, industrial and commercial industries. A champion for process efficiency and financial sustainability, Calumet rises to meet the highest expectation of product quality, field reliability and on-time performance. Calumet is proud to be “Made in America” and committed to North American manufacturing.

# FAST FACTS

- Founded in 1968
- 100,000 sq. ft. manufacturing facility located in Calumet, Michigan
- Committed to North American manufacturing – no outsourcing
- Every PCB fabricated to IPC Class 3

## ACCREDITATIONS

Nadcap	MIL-PRF-55110
AS9100:2009	ITAR
ISO9001:2008	Cage Code
MIL-PRF-31032	

## INDUSTRIES SERVED

Aerospace & defense	RF microwave
Medical devices	Communication
Industrial controls	Automotive
Alternative energy	Test & measurement
Commercial	



100,000 square feet of manufacturing space



More than \$2M a year in capital investments



Committed to North American manufacturing – everything is made right here in our Michigan facility

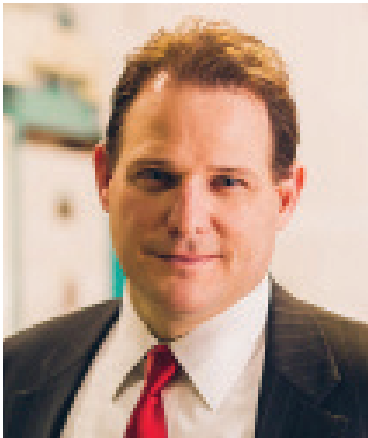
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# CAPABILITIES



Certification & Accreditation	
NADCAP	Aerospace AC7119, Scope: Rev D
ISO	ISO9001:2008
AS9100	AS9100:2009
Military	MIL-PRF-55110, MIL-PRF-31032
UL	Listed, E49465
ITAR	Registered

Factory Capacity	
Factory Floor Size	100,000 SqFt
Max SqFt/Month	100,000
Operating Capacity	60%

Manufacturing Capabilities Road Map			
FEATURE	STANDARD	ADVANCED	EMERGING
Circuit Layers	1 – 30	30+	40+
Circuit Trace/Space	.004"/.004"	.003"/.003"	.002"/.002"
Minimum Thickness - 2 to 6 Layer	.020"	.018"	.016"
Minimum Thickness - 8 to 22 Layer	.024"	.020"	.018"
Minimum Finished Core Thickness	.004"	.003"	</=.002"
Minimum Drilled Hole Thickness (Mechanical)	.010"	.008"	</=.006"
Minimum Finished Hole Diameter (Mechanical)	.008"	.006"	</=.004"
Blind Vias In	Yes	Yes	Yes
Microvias	Yes	Yes	Yes
Microvia Hole Diameter	.004" to .006"	.004"	<.004"
Buried Vias	Yes	Yes	Yes
Sequential Lamination	Yes	Yes	Yes
Copper Weight	0.25-3oz Foil	0.25-4oz Foil	>4 oz Foil
Copper Finished	1.25 - 4 oz Plated	1.25 - 5 oz Plated	5 - 6 oz Plated
Hole Aspect Ratio	12:01	16:01	>16:01
BGA Package Size	.5mm	.4mm	<.4mm
Tin/Lead Solder Finish (HASL)	63/37 SnPb	63/37 SnPb	63/37 SnPb
Lead-Free Solder Finish	SN100C HASL	SN100C HASL	SN100C HASL
Immersion Gold Finish	per IPC-4552	per IPC-4552	per IPC-4552
Immersion Silver Finish	per IPC-4553 (Thick)	per IPC-4553 (Thick)	per IPC-4553 (Thick)
Immersion Tin Finish	Yes	Yes	Yes
ENTEK(OSP) Finish	Yes	Yes	Yes
Carbon Ink	Yes	Yes	Yes
Gold Fingers	Yes	Yes	Yes
Controlled Impedance	Yes	Yes	Yes
Largest Panel Size	21" x 24"	21" x 24"	21" x 24"
Via Hole Plugging (non-conductive)	Yes	Yes	Yes
Via Hole Plugging (conductive)	No	Yes	Yes
Impedance Control	+/- 10%	+/- 7%	+/-5%

# WHY CALUMET?



## Demanding Applications

Calumet circuit boards are found in applications demanding zero failures and zero downtime. Our customers design and manufacture systems for industrial controls, power grid management, life support, medical diagnostics, avionics, aerospace, and the military. Calumet's high-performance PCBs are found at the heart of equipment designed and manufactured to provide a lifetime of reliable performance.

## Intelligent Engineering

Calumet performs comprehensive analysis of customer data. Our highly experienced in-house team of engineers provides a full suite of engineering services leveraging powerful software tools and automation. In addition to performing typical Design for Manufacturing (DFM) checks, our engineers discover and evaluate potential manufacturing issues and engage customers to suggest improvements that may improve yields and reduce cost.

## Advanced Equipment & Smart Systems

Calumet circuit boards are produced using some of the most advanced manufacturing equipment and technologies available, including Laser Direct Imaging, 8-Camera Multilayer Punch, X-Ray Drilling, and XACT PCB GeminiX Linear+ software. These systems are integrated and work together to build databases of predictive knowledge, panel-by-panel optimization for imaging and drilling, and provide critical data feedback to engineers for continual improvement of signal layer registration.

## Quality Through Process Control

Calumet believes that highly reliable manufacturing processes are the key to producing very consistent product. We monitor hundreds of key process characteristics critical to product quality. We strive to maintain each characteristic at or above a Cpk value of 1.33. Our strategically placed in-process inspections, final inspections, and automated electrical and mechanical verification steps assure our customers that Calumet circuit boards can be received and placed directly into their stock without additional incoming inspection.

## Nadcap Accreditation

Calumet Electronics is one of only sixteen printed circuit board manufacturers in North America to achieve Nadcap accreditation. In addition to our existing ISO 9001 and AS9100 certifications, Nadcap provides a significant pre-qualification status to attract and retain customers in aerospace, defense and other sectors where high reliability is required. Nadcap represents an unprecedented cooperative industry effort to improve quality, while simultaneously reducing cost and improving efficiencies.

## More than Just Circuit Boards

Calumet believes in developing long-term relationships with customers who share the same commitment to manufacturing excellence. Because we believe in total customer satisfaction, our customer service, engineering, and quality assurance teams always work to make customer needs a priority. Our policy is to exceed customer expectations and continually improve.

## Committed to North American Manufacturing

Calumet PCBs are found all over the globe, but each and every board is manufactured in North America. Calumet Electronics was founded in 1968 with the mission of creating jobs in Northern Michigan. Today, as a world leader in manufacturing high-performance PCBs, Calumet Electronics remains committed to North American manufacturing. We live here, play here, and work here.