Design Expertise

AMETEK HCC Electronic Packaging has been in the microelectronic packaging industry for nearly sixty years. Its highly trained staff is dedicated to customers’ needs. AMETEK’s experienced engineering staff uses the latest CAD and CAM software to design all aspects of manufacturing, fixturing, process control and quality engineering. These cross-functional teams are highly motivated and focused on quality and on-time manufacturing. AMETEK works closely with its customers’ engineers to design the most producible and cost-effective solution.

Vertically Integrated Supply Solution

AMETEK HCC Electronic Packaging is vertically integrated in its design and manufacturing capabilities. AMETEK has an extensive tooling inventory and can create new tooling in-house to assist its customer in reducing time-to-market and product cost. AMETEK custom designs all shipping trays to protect products in transit. With over 150,000 sq. ft. of combined manufacturing space in the U.S. and Malaysia, AMETEK can be a single source for all microelectronic packaging needs. AMETEK has wide working knowledge and experience in using various metal, glass materials, and ceramic configurations to suit customer designs. Meeting $1 \times 10^{-9}$ in AMETEK’s finished product is routinely accomplished, exceeding the requirements of all current military connector specifications.
Glass-to-Metal Sealing (GTMS)

AMETEK HCC Electronic Packaging has made glass-to-metal seals since 1945. AMETEK developed and perfected a proprietary sealing process that produces strong and reliable seals at the highest level of hermeticity. As an industry pioneer AMETEK has vast experience and technical expertise to help solve the most challenging design and production objectives. AMETEK’s broad product line has numerous applications in diverse industries. AMETEK’s broad depth enables it to provide engineering solutions to meet the unique needs of its customers.

✔ Hermeticity
✔ High electrical insulation
✔ Wide temperature range
✔ Mechanical stability
✔ Resistance to harsh environment
✔ Lower cost
✔ Short lead time
✔ High conductivity thermal
✔ Prototyping ability
✔ In-house graphite fixture design and fabrication

Brazing and Soldering

AMETEK HCC Electronic Packaging is an expert in metal joining through brazing and soldering. AMETEK uses proprietary atmosphere controlled furnaces with precise heating and cooling profiles to produce the optimum microstructure of metal for strength and reliability. AMETEK has vacuum furnaces for special applications and muffle-type belt furnaces for high-volume production that are available for both high-temperature brazing and low-temperature soldering. All furnaces have easy-access flexibility for using various combinations of forming gas atmospheres to suit any material AMETEK works with. With these processes, your parts always will look clean and bright.
AMETEK HCC Electronic Packaging has over 35 years of experience in high-temperature cofired ceramic technology. AMETEK is an internationally recognized supplier to many industries utilizing ceramic technology for their products. AMETEK’s commitment to quality products coupled with its custom design and manufacturing experience has made it a leader in the markets it serves. AMETEK understands the intricacy and detail that is involved in designing a ceramic package, feedthrough or substrate. AMETEK takes pride in helping customers design some of the most advanced solutions in the world.

▲ Capabilities

✓ Custom ceramic design support
✓ Multilayer high-temperature cofired ceramic (HTCC) technology
✓ Utilize 90%-94% Al₂O₃ (black or white)
✓ Tungsten and moly-manganese base metallization
✓ Lens and lid attach with hermetic soldering
✓ Heatsink, lead and connector attach
✓ Meet Mil-Std-883 reliability standard
Metal Working

AMETEK HCC Electronic Packaging’s commitment to quality and delivery requires it to produce its own components. AMETEK’s tool makers understand the need for the highest quality and demanding tolerances required in the manufacture of microelectronic packages.

- Machining: palletized CNC vertical milling centers and turning equipment
- Stamping
- Deep drawing, flywheel and hydraulic press
- Punching
- Drilling and reaming, jig boring
- EDM: wire and plunge
- Grinding: feed through and surface
- Lapping and sanding
- Deburring: tumbling and hand deburring
- Heat treating
- Lead forming dies

Plating

Plating capabilities are an extremely critical manufacturing component in the microelectronic packaging industry. Utilizing rack, barrel, and vibratory techniques, AMETEK is able to apply a wide range of plating on various types of metal. All plating meets or exceeds current military specifications and industry standards. AMETEK’s 75,000 sq. ft. of combined plating area in two locations allows it to handle any production volume and delivery rate customers may need.

AMETEK HCC Electronic Packaging also is proud to be at the forefront in implementing available “green technologies” before mandated deadlines defined by local, state, and federal agencies. AMETEK is able to meet all product and process regulations worldwide.

www.hccelectronicpackaging.com
Inspection and Testing Capabilities

AMETEK HCC Electronic Packaging has all of the appropriate equipment and know-how to validate the compliance to your most demanding requirements.

- ✔ ✔ Statistical process control
- ✔ ✔ Coordinated measuring machines
- ✔ ✔ Optical comparators
- ✔ ✔ Liquid to liquid thermal cycle/shock
- ✔ ✔ Pressure test to 45,000 psi (at ambient temperature)
- ✔ ✔ Steam age/solderability testing
- ✔ ✔ Humidity testing
- ✔ ✔ High voltage to 6000 VAC/VDC
- ✔ ✔ Temperature cycling
- ✔ ✔ Optical measuring machines
- ✔ ✔ Lead fatigue
- ✔ ✔ Hermeticity validation to $1 \times 10^{-11}$ cc/sec of helium at 1 atmosphere differential pressure
- ✔ ✔ Insulation resistance to 10 gigaohms at 500 VDC
- ✔ ✔ Salt spray
- ✔ ✔ Compliance to JEDEC Std. 9
- ✔ ✔ Metallurgical lab for failure analysis
Prototyping

AMETEK HCC Electronic Packaging offers reduced lead times for prototyping. AMETEK understands the importance of getting prototypes out and into the market and works closely with its customers to design for manufacturability. AMETEK’s dedicated engineering and production staff streamlines the manufacturing process to insure the prototype parts are of the highest quality and delivered in a timely manner.

Trade Compliance

In 2011 AMETEK HCC Electronic Packaging worked with the U.S. State Department to receive commercial jurisdiction for its products. All designs and products are classified EAR99 unless otherwise directed by the customer. No additional paperwork or license is required. This commercial jurisdiction classification permits simplified engagements with customers abroad.

Malaysian Manufacturing Site

AMETEK HCC Electronic Packaging has expanded overseas with a manufacturing facility in Penang, Malaysia. This factory represents AMETEK’s continued effort to service their customers in and around Malaysia and respond to the growing demand in that region. AMETEK is proud to be offering the same reliable service and high quality product from Malaysia in which the electronic components industry has grown accustom from AMETEK’s US facilities.
HCC Electronic Packaging

Hermetic microelectronic packaging, connectors, headers, and substrate solutions that utilize custom metal working capabilities as well an expertise in Glass-to-Metal Sealing (GTMS), Ceramic-to-Metal Sealing (CTMS), and High-Temperature Cofired Ceramic (HTCC).

- Leading provider of microelectronic packaging, connectors, and substrates since 1955
- 150,000 sq. ft. of combined manufacturing space in the U.S. and Malaysia
- Multiple factory locations allowing for flexibility in manufacturing and security of supply
- Front end design engineering support
- Full tool room and machine shop
- High and low temperature brazing
- Precious metal plating operation
- High-Temperature Cofired Ceramic expertise
- GTMS and CTMS technology
- Testing to MIL-STD 883
- ISO 9001 registered
- AS9100 registered
- RoHS compliant