

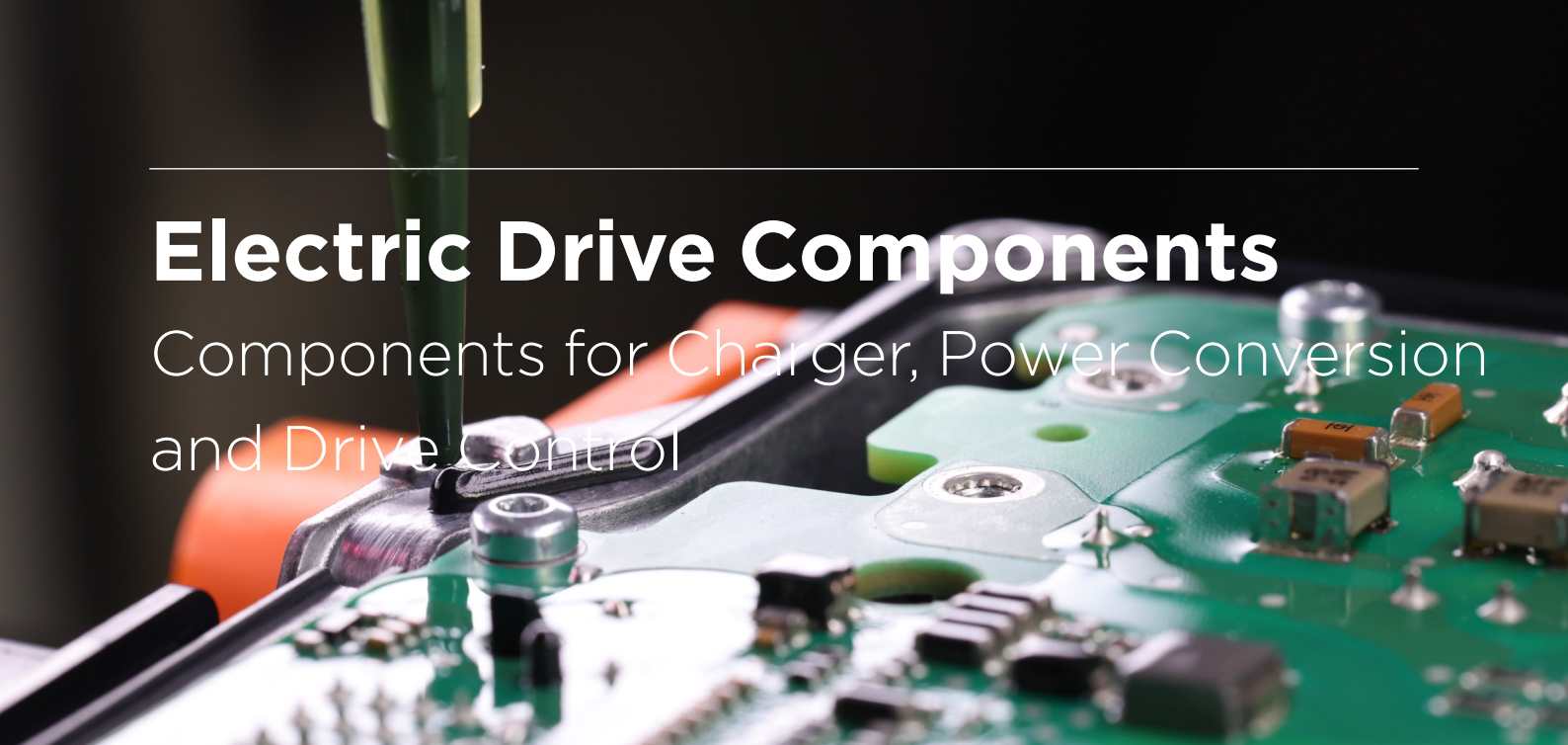
# Intelligent Dispensing Solutions **for Electric Vehicles**

Solutions for the Automotive Electronics Industry



# Electric Drive Components

## Components for Charger, Power Conversion and Drive Control



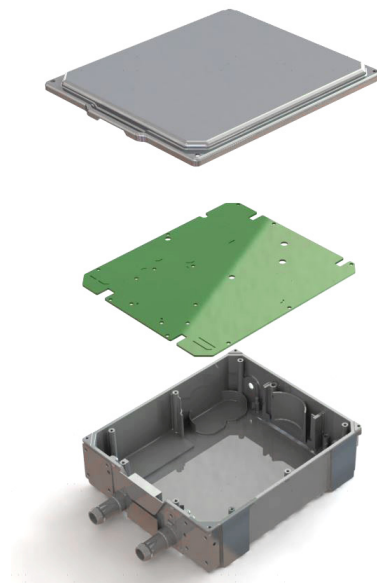
**Electric Vehicles have many modules such as Onboard Charging Units, Conversion and Control modules. These modules are subject to extreme environmental conditions and by their nature of power conversion generate excessive heat. They include large and heavy coil windings for power handling, magnetic cores, capacitors, inductors and other components. For safe and reliable vehicle operation effective thermal management, staking, bonding and conformal coating are required.**

Thermal management fluids consist of high concentrations of abrasive fillers with a high viscosity and density. Achieving stable and repeatable dispensing of these fluids requires dispense and mix technology specifically designed for this application. Our dispense technology R&D team has taken these parameters into consideration to achieve a high level of dispense performance.

- On-Board Charger (OBC)
- DC/DC Inverter
- Power Distribution Controller (PDU)
- Motor/Motor Controller

### Fluids

- 1 and 2k Potting
- THT Pin Reinforcement with Silicone
- Conformal Coating
- RTV Sealing



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# ADAS Components

## Intelligent Protection for Safe Driving

Intelligent driver assistance systems are amazing innovations of the automotive industry and are designed to create a safer driving environment. Fluids are integral in making products safe and reliable. Fluids such as thermally conductive adhesives are used to conduct heat to keep devices at an optimal temperature while underfill is used to secure devices that undergo shock and experience temperature cycling. In terms of assembly, fluids that protect from electromagnetic interference create seals and bond housings.

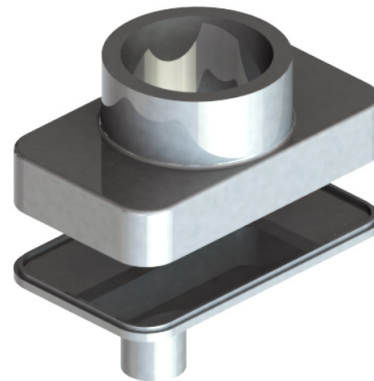
The fluids applied are generally high-viscosity with abrasive fillers. Dispense technology must be designed to compensate for these fluids while maintaining high repeatability. Dispense machines also integrate features to track and compensate for variations in dispense results. Closed loop solutions provide a complete package for high reliability application.

### Product

- Millimeter Radar
- LiDAR
- Car Camera
- Auto Driving Domain Controller

### Application

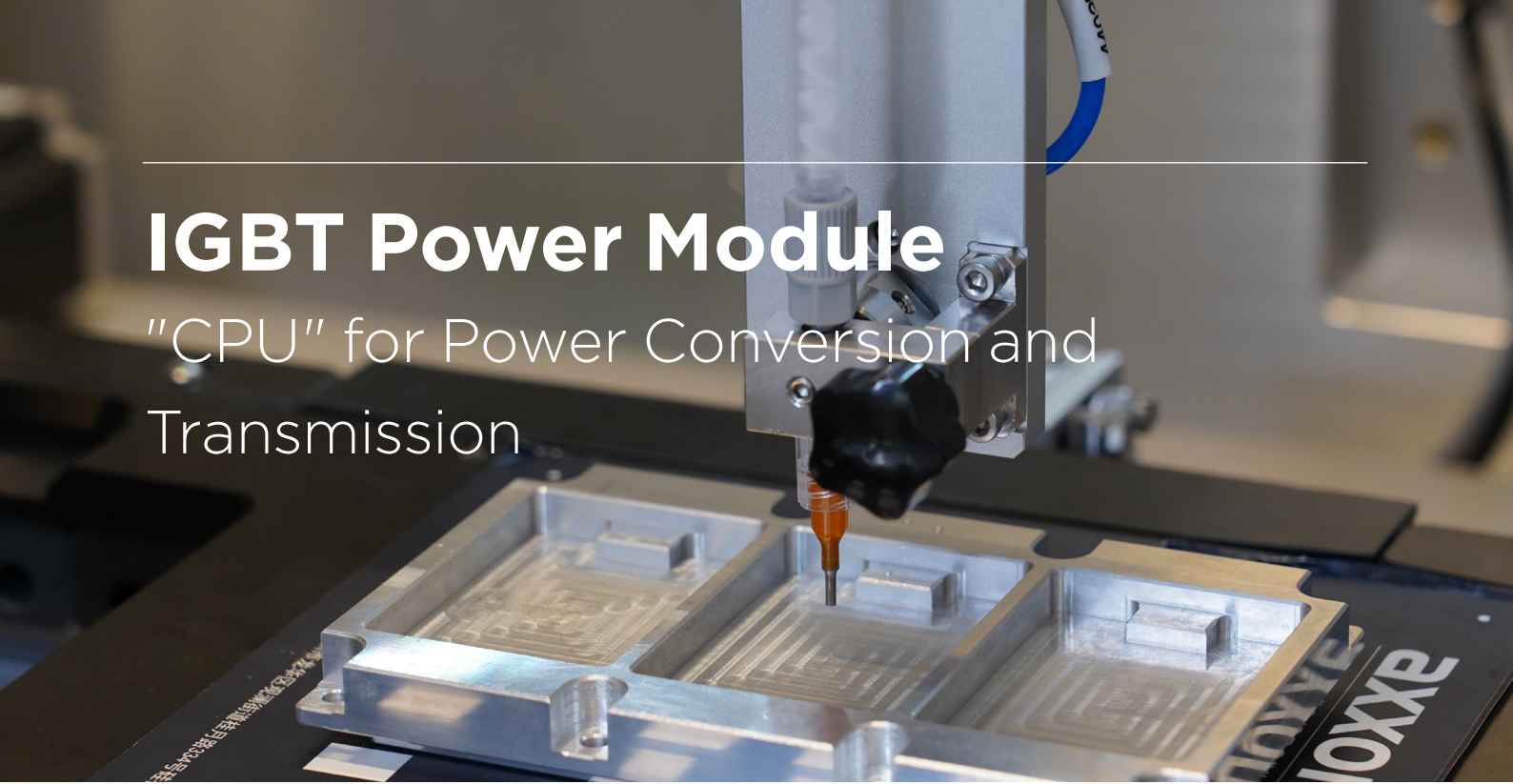
- Underfill
- Thermally Conductive Adhesive
- Sealants
- EMI Sealing





# IGBT Power Module

"CPU" for Power Conversion and Transmission



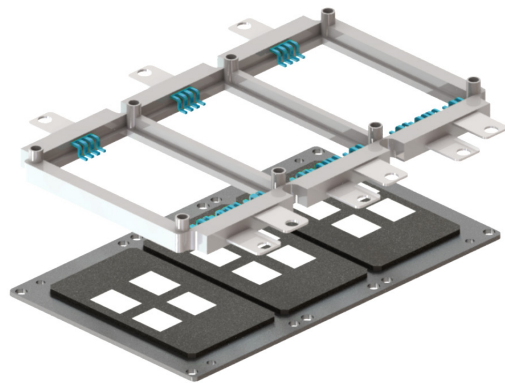
As a switch for current conversion and transmission, the IGBT power modules affect the performance of the vehicle motor system.

The signal transmission between the chip and the PCBA is conducted through a heavy gage pin. Before inserting the heavy gage pin, it is necessary to apply solder paste for the electrical connection between the pin and substrate. The base is then bonded to the heat sink by a silicone.

After assembling the base, it is potted in a vacuum with a transparent, insulating silicone to achieve a 0 bubble application. The efficiency of a product is enhanced when an air free application is achieved. Our R&D team has developed systems that can quickly degass fluids in a rapid and efficient manner.

## Fluid Application

- Pin-in-Paste - Solder Paste
- Base Heat Sink Bonding - Silicone
- Vacuum Potting
- Conformal Coating



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# Driving in the Entertainment Cabin

## Enhancing the Driving Experience

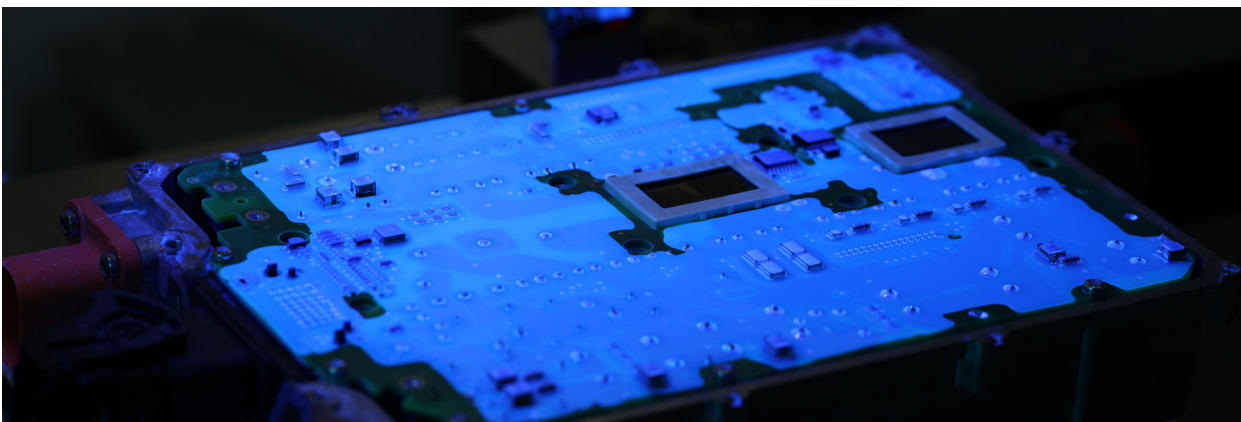
The vehicle cabin has become an environment where the driver and vehicle interact. Sensors, cameras and audio work together to interpret the drivers needs and status. These sensory devices connect people, vehicles, and mobile devices of all kinds, for a personalized interactive experience.

The cabin domain controller is subjected to a harsh environment during normal operations. Frequent vibration, humidity and high temperatures put the display in a special class of its own, requiring special components and assembly methods. Fluids are carefully selected to offer the best performance for heat management (TIM), humidity and shock resistance. High-density PCBAs place demands on the performance of the conformal coating and components reinforcement. The lightweight designs require the use of hot melt adhesive for shell assembly.

- Cabin central control screen
- Cabin domain controller

### Fluid Application

- Solder Paste - Pin in Paste
- RTV Bonding
- Vacuum Potting
- Conformal Coating



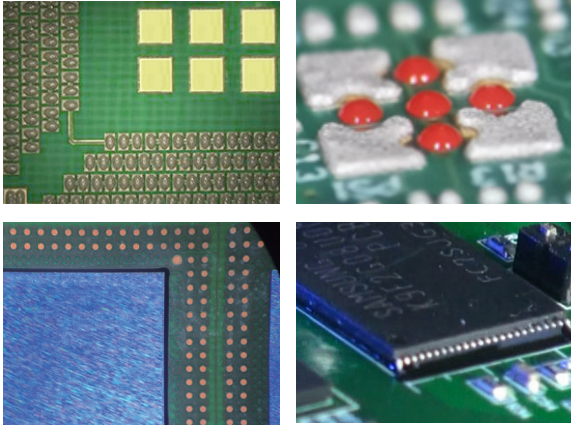


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# One Stop Process Control Solution

## We facilitate your E-mobility

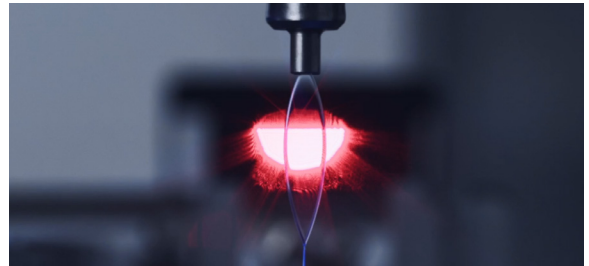
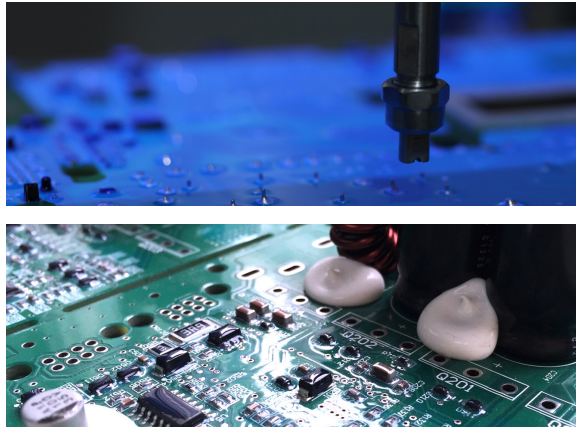
SMT dispensing



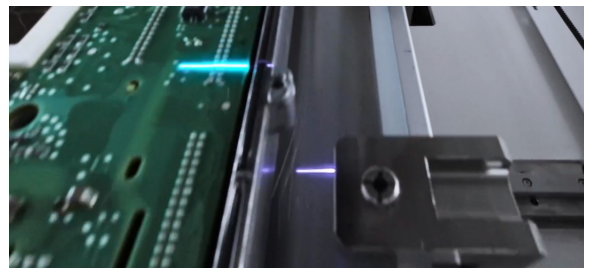
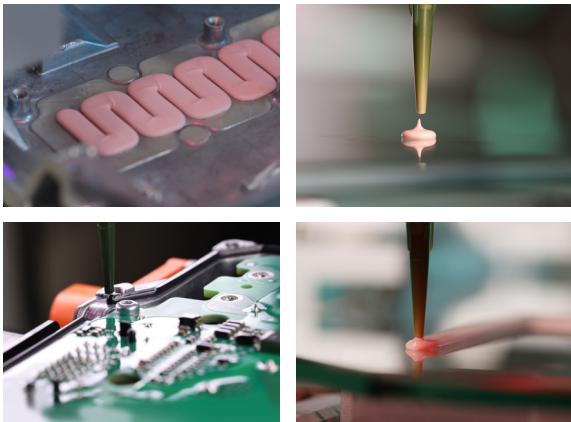
End-to-end dispensing process control solutions for all your automotive electronics applications. Standard and customized dispense pumps for high reliability and accuracy. Covering a wide range of fluids from solder pastes to adhesives and single and two part mixes. Any reservoir size, small and large to suit the required production volume.

Based on the process requirements and fluids, we provide a comprehensive solution for dispense platform, dispense pump, fluid feeding, pre-treatment and final inspection.

SMT coating & RTV dispensing

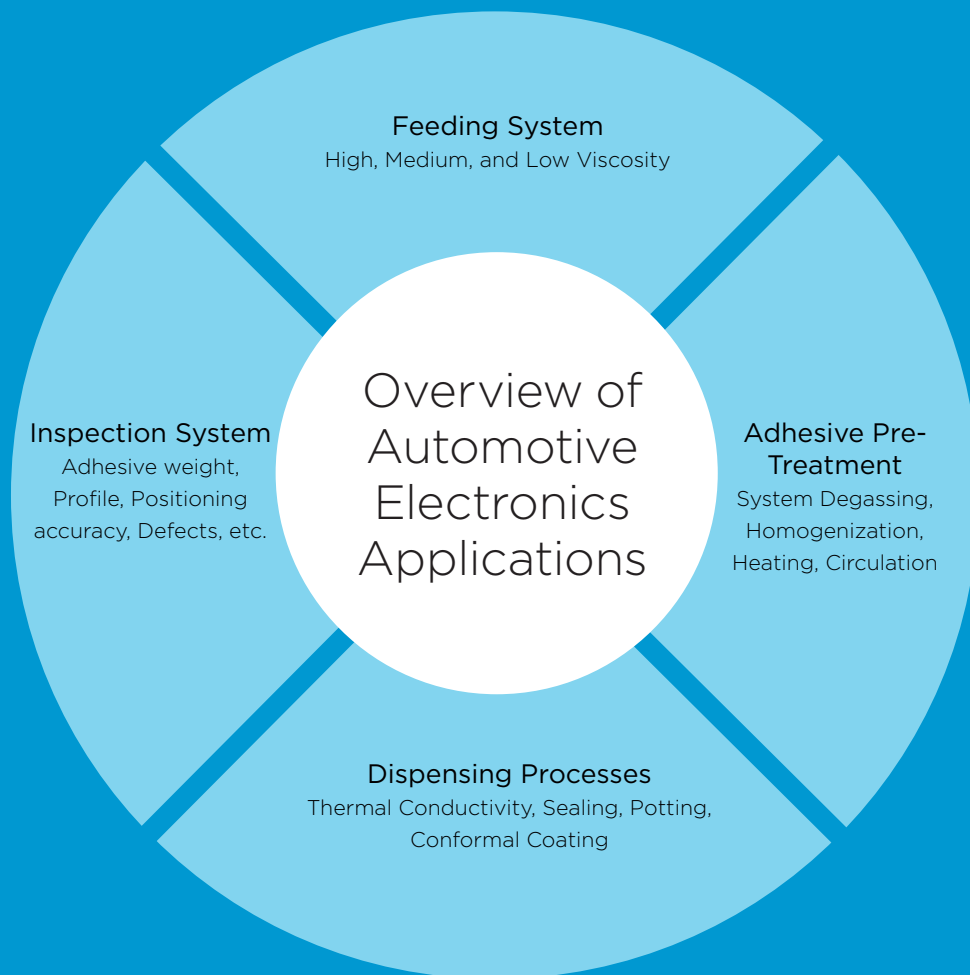


Back end assembly dispensing



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Feeding, Metering, Inspection,  
Closed-Loop Monitoring  
**Overall Process Solution**



# One Stop Solutions Thermal Management

Effective TIM dispensing starts with pulling fluid from the reservoir. Thermally conductive fluids are highly filled and high viscosity and subject to volatilizing and solidification when fed with traditional, high pressure systems. Our low-pressure non-pulsing pressure plate with Progressive Cavity Pump (PCP) eliminates issues seen with other feeding systems.



Bulk Fluid Feeding

Pre Weighing

Dispensing systems

Post Weighing



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Depositing TIM at high accuracy comes from metering the fluid rather than pressure only. We have taken this into consideration and incorporated abrasion resistant materials and a self sealing PCP that offers volumetric performance for single or 2K fluids. This self sealing, volumetric solution gives unmatched, no-drip performance.

Immediate process confirmation is available when using our pre- and post- weigh function with an optional 3D inspection solution. These systems provide a wide range of data to immediately analyze the dimensional, positional and weight performance.

## Application Products

- Domain controllers
- Cockpit center display
- Car camera
- Automotive millimeter-wave radar
- OBC charger
- DC/DC inverter
- Power Distribution Unit (PDU)
- On-board driver assistance
- Power battery module



Optical/3D Inspection



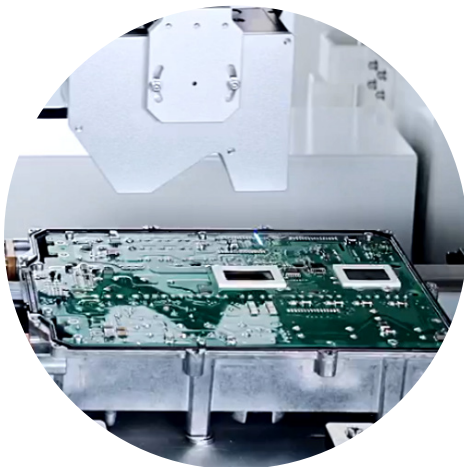
# Electric Vehicle Module Protection

## Sealing Bond



FIPG (Form-in-Place Gasket) are replacements for pre-formed seals. They are becoming more common due to products being designed with complex geometries that can be easily traced with a motion system. Additionally, when a pattern changes, the gantry system can easily be adjusted as well as the amount of fluid used in the gasket

Specific sealing requirements for width, height and position are easily adjusted with a dispensing system. We provide complete solutions that include bulk feeding of low to high viscosity fluids in all package sizes from 300cc to 5 gallon. PCP technology offers the highest level of flexibility allowing optimization of mix ratios and dispense rate through a simple adjustment in the software. The volumetric nature of the PCP cannot be matched for accuracy and repeatability.



## Potting Protection



Potting applications within the EV have expanded beyond traditional applications of sensors and connectors, to other high temperature devices such as inductors. Applying thermally conductive material enhances product life and performance.

Axxon Mycronic are committed to providing potting solutions for the hard and not so easy fluids with high filler content, 2 part with wide mix ratios and differing viscosities. The total solution includes fluid pre-treatment, degassing, heating, metering, pumping, process monitoring, bubble control, volumetric closed-loop control, weight check and overall product inspection.





# One Stop Solutions

# Conformal Coating Protection

PCBA are subjected to harsh environments such as high humidity, abrasion and shock. Reliability of these products commonly used in automotive electronics is greatly improved with conformal coatings. The conformal coating process selectively covers the surface of a PCBA using specialized coating technologies (spray, film coating and a precise droplet). Each technology allows process optimization for width, amount, rate, etc. Based on the precise nature of these dispense technologies fluids may be accurately placed to coat only the desired areas. Axxon Mycronic have developed reliable control technologies to maintain high levels of quality.

## Solution Features

- Large format platform for oversize and odd shaped devices
- Transport solutions to accommodate heavy, high clearance products common with EV power and charging devices.
- Removable transport roller is easy to clean and maintain.
- Customized dispense technology to apply damming fluids to control overflow
- Film coater improves efficiency for wide areas that require coating.
- Film width is optimized with newly developed Laser Fan Width control that does not require gantry motion, reduces fluid waste and yields enhanced accuracy over traditional methods.
- Available closed loop fluid monitoring includes electronic pressure control. No manual adjustment required.
- Axxon Mycronic CCAOI, can inspect coating fluids with UV tracers. Full width product scans within 25s.

## Application Products

- Domain controller PCBA
- Center control screen PCBA
- OBC/inverter power board
- OBC/inverter control board
- BMS control board





# Bringing tomorrow's electronics to life



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