

PRODUCTS & SERVICES ELECTRONICS

MTA

On-board battery chargers and high-voltage PDUs for EVs

HIGHER VOLTAGE SYSTEMS ARE NECESSARY FOR VEHICLE ELECTRIFICATION. TO MEET NEW REQUIREMENTS, MTA HAS DEVELOPED HIGH-VOLTAGE POWER-DISTRIBUTION UNITS AND ON-BOARD BATTERY CHARGERS FOR THE NEW GENERATION OF ELECTRIC AND HYBRID VEHICLES

The voltage of on-board systems inside cars has risen from the initial 24 to 48 volts in hybrid cars and to 400 and 800 volts in electric cars, and there is already talk of 1,200-volt schemes. Similar trends are also seen in the truck and off-highway world where there are now several electrified vehicle models already on the market. The electrification of vehicles has required, and is still requiring, a major shift in R&D, purchasing and manufacturing. Since the powers and voltages involved are now much higher than in the past, different materials, design systems and production technologies are needed. This involves a lot of testing, design and product validation.

High-voltage PDUs

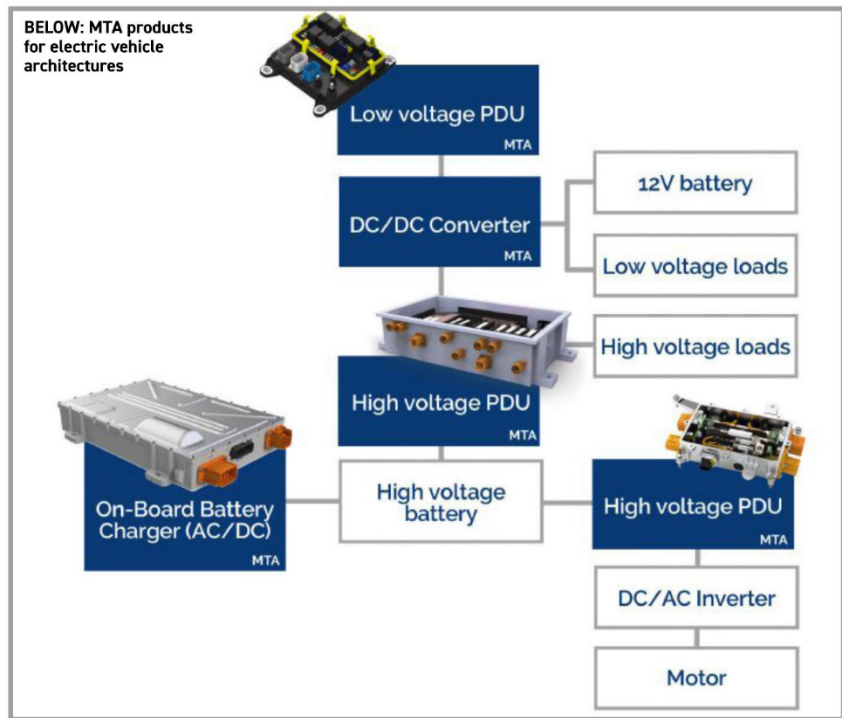
MTA, which has been developing electrical components for major OEMs for 70 years, has already taken up the challenge. In the field of electrification, the company is already producing power distribution units (PDUs) for major OEMs with entirely different technology from low-voltage products.

The HV (high voltage) PDUs developed by MTA electric BU have cast aluminum housings. This has replaced the plastic material typical of low voltage products. The aluminium used by MTA has a high percentage of recycled raw material ensuring robustness, insulation from external agents, optimal heat dissipation and correct EMC shielding. The company plans to also use aluminium for the 'busbars' which are the conduits for power distribution. This is because the aluminium is lighter than the traditional copper.

The latest developments for heavy duty include modular PDUs with integrated active cooling systems. The versatility of the PDUs allow them to adapt the same product to different platforms. An internal resin layer and a new technology for gaskets ensure waterproof features and electrical insulation without compromising optimal heating dissipation.

The current trend, mainly for heavy duty applications, is showing an increasing interest in PDUs with integrated electronics. They are able to manage communication protocols and diagnose the status of main internal components.

BELOW: MTA products for electric vehicle architectures



The system can integrate a measurement port for high voltage checking by service technicians that integrates safety circuits and additional internal covers. This guarantees safety in any condition during the service operation.

For optimal recharge

Another range of products for electric and hybrid vehicles is on-board battery chargers (OBCs) which have become increasingly popular among OEMs. Developed by MTA's electronic business unit, the OBCs cover voltages up to 1000V. They are easily integrated into the vehicle and built to resist harsh environments. They cover a wide range of commercial and industrial plug-in hybrid electric vehicles or pure electric vehicles including

small and large buses, trucks and vans, boats, underground vehicles and more.

Within the current range, notable products include the OBC BHP power class 19.2kW for the US market and power class 22kW for the European market, both single and three-phase AC power. Its conversion technology improves power density and specific power, and the bidirectional charging allows energy to flow to and from the battery. The bidirectionality allows MTA's customers to take full advantage of the latest applications of the 'internet of energy': vehicle to grid (V2G), vehicle to load (V2L) and vehicle to home (V2H).

The BHPs has IP67 and IP6K9K protection rating and a galvanic isolation ensuring a definitive safety separation between the vehicle and the grid. **IVT**