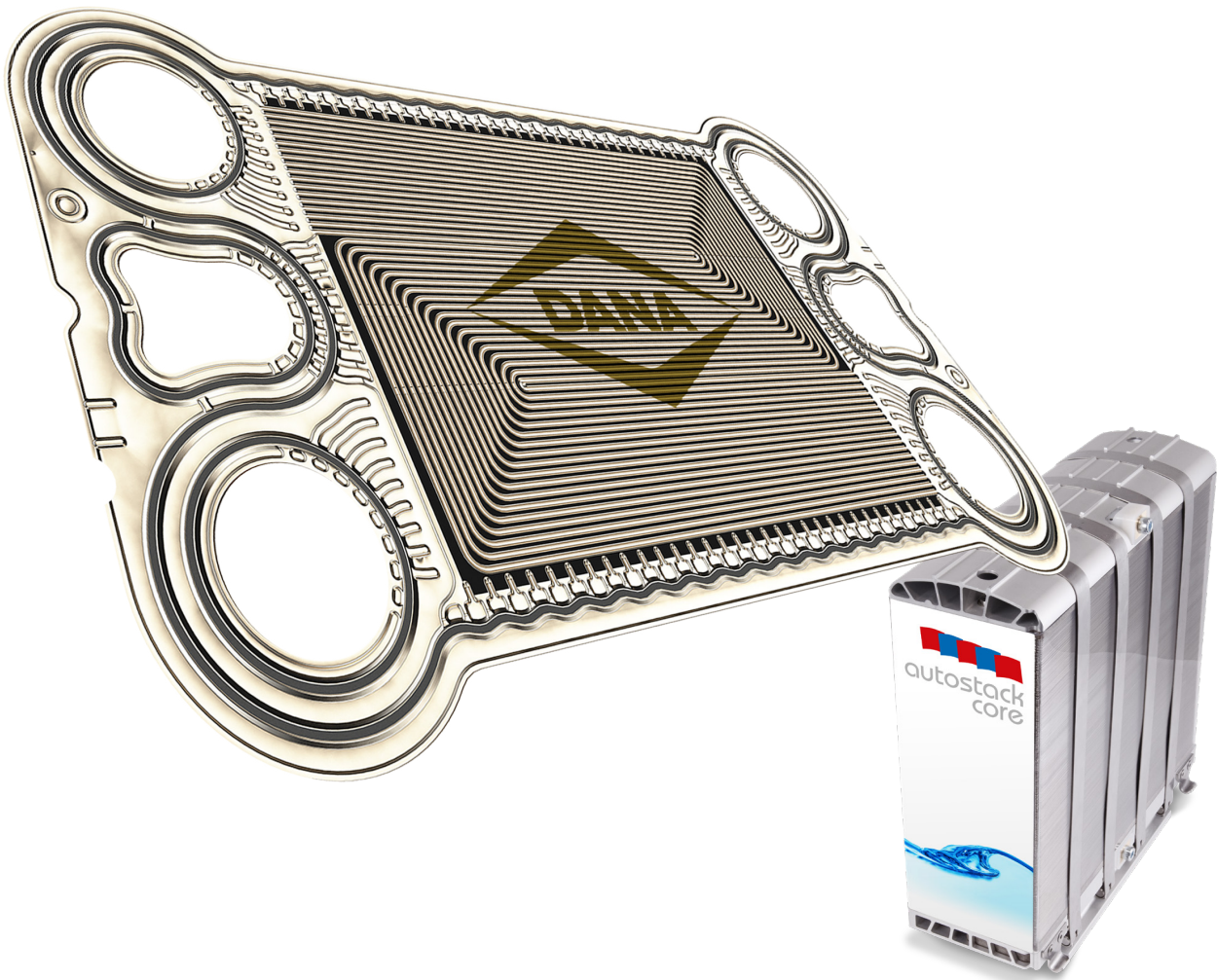




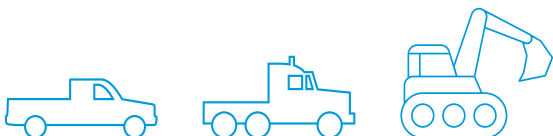
**VICTOR REINZ™**

# Metallic Bipolar Plates

## Fuel Cell and Electrolyzer Components



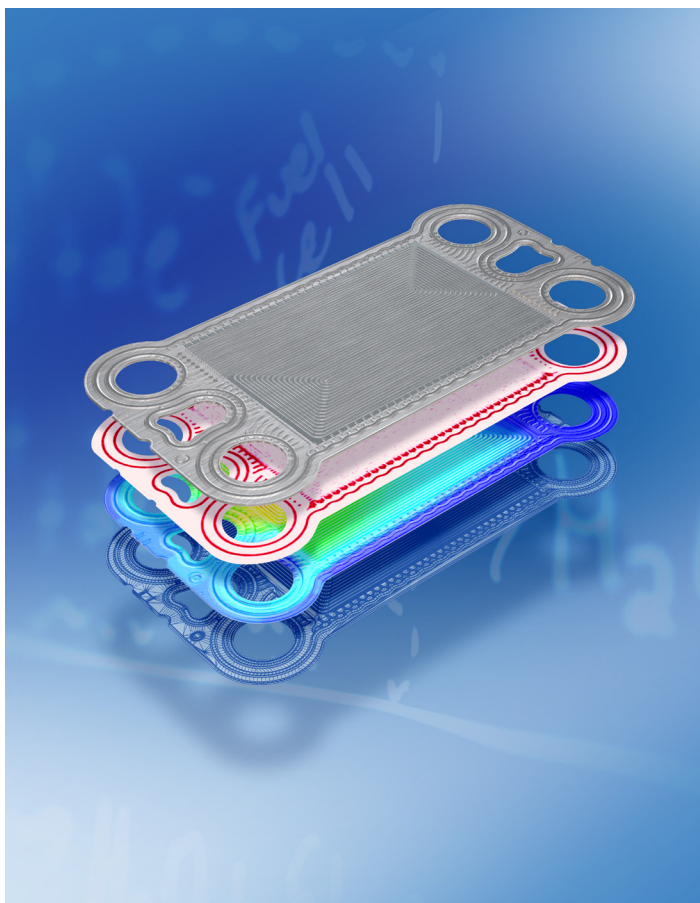
Ideal for Light Vehicle, Commercial Vehicle, and Off-Highway Vehicle Applications



# High-Volume Manufacturing Expertise Backed with Global Support

Dana is combining proven technologies with new developments to deliver next-generation metallic bipolar plate solutions. Our unique manufacturing approach offers a cost-effective method to meet the stringent power density, reliability, and cost requirements of fuel cell stack original equipment manufacturers (OEMs).

Applications for Dana's technologies include bipolar plates for polymer electrolyte fuel cells and electrolyzer. Markets for our state-of-the-art components and processes extend to stationary power, industrial mobility, and transportation.



## Completely Integrated Solutions

By offering a cost-effective bipolar plate technology that meets all customer requirements, Dana is helping to develop the growing global fuel cell and electrolyzer industries.

## Dana Delivers:

- In-house expertise and quality control
- Testing base material for:
  - Formability
  - Material composition
  - Electrochemical stability
- Product analysis
  - High-precision dimensional measurements
  - Functional analysis (pressure film and force deflection curves)
  - In-situ stack tests
- Analysis of cell components
  - Post-mortem analysis of bipolar plates, membrane electrode assembly (MEA), and gaskets
- Computer-aided design (CAD)
  - Integrated product design to meet customer needs
  - Transfer of customer specifications into metal bipolar plate technology
- Computational fluid dynamics (CFD)
  - Design optimization of fluid flow on header region, on plate level, and full-size stack
  - Optimal distribution and balancing of hydrogen, air, and coolant
- Finite element analysis (FEA)
  - In-depth analysis to fulfill customer needs on sealing performance
  - Simulation of plate forming process
  - Force distribution and balance between plate, MEA, and stack endplates
- Process, design, and materials
  - High-precision, high-speed stamping — full-dimensional accuracy to CAD
  - Sophisticated laser welding
  - Durable, high-performance, active area coating at a cost that is commercially viable
  - Unique, customizable elastic bead seal technology offers ultra-low permeation, increases power density, and reduces cost
  - ISO 9001:2008 and ISO / TS 16949:2009 certified

## Dana.com/Electrified

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### Application Policy

Capacity ratings, features, and specifications vary depending upon the model and type of service. Application approvals must be obtained from Dana TM4; contact your representative for application approval. We reserve the right to change or modify our product specifications, configurations, or dimensions at any time without notice.



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