

# SMART Electrification

Integrated | Connected | Efficient



## Parker's SMART Electrification Technology Portfolio

ENGINEERING YOUR SUCCESS.



# Motion Technology that Enables a Cleaner Tomorrow



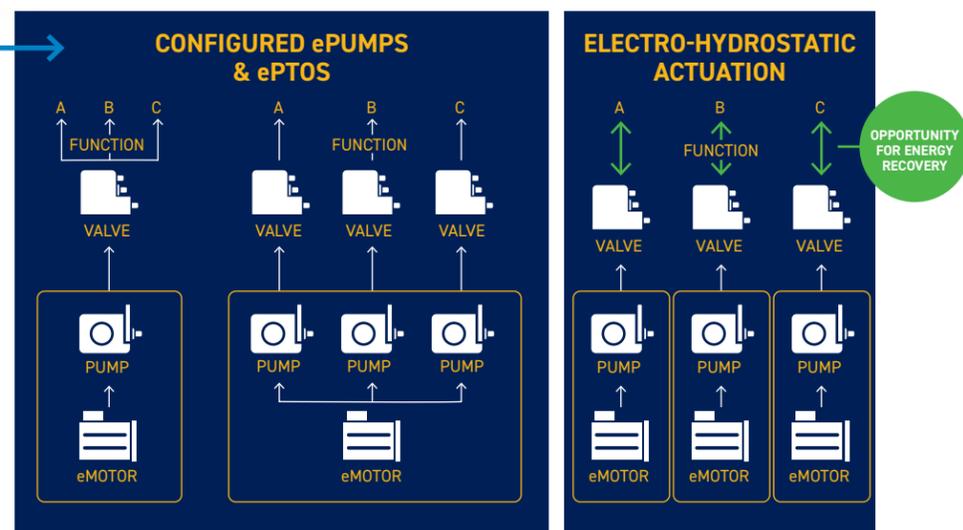
Built from the ground up to enable battery-powered electrified mobile machines, Parker's SMART Electrification products integrate the best of electric and hydraulic motion to provide integrated, efficient and connected motion control solutions for applications operating in the harshest environments.

Whether your application requires advanced hydraulic pump control, generator function or traction control for mobile machinery, Parker's SMART Electrification products are designed to work together as a system to optimize machine performance and ease of use.

## System Architectures for Electrified Machines

### IMPROVING SYSTEM PERFORMANCE AND EFFICIENCY

Parker engineers understand the needs of mobile machines and can help design the right electro-hydraulic solution to maximize performance and efficiency.

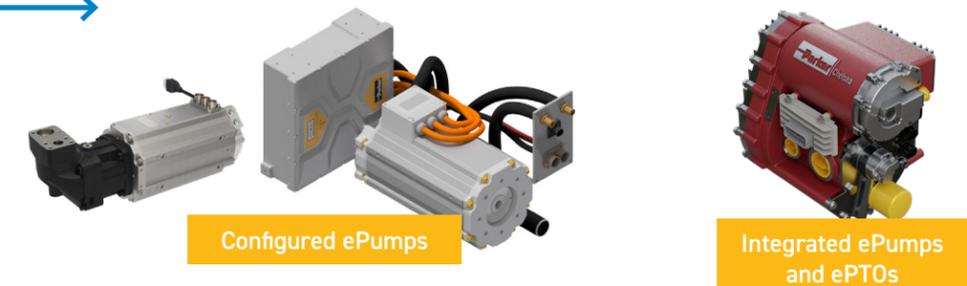


# SMART Electrification Technology Portfolio

## Integrated

Pre-engineered and tested ePumps utilize Parker's full range of technologies matched for optimal performance.

**INTEGRATED** technologies that deliver rugged hydraulic performance with precise electronic control. Parker brings decades of technology domain expertise and application know-how together to integrate motors, pumps and controls for electrified machines.



## Connected

Plug and play hardware and software solutions that makes precise system control seamless.

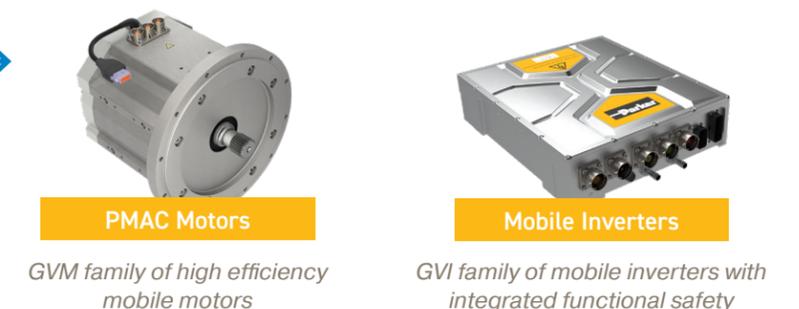
**CONNECTED** products and software that enable distributed and connected system control. Parker's IQAN and IQAN Open machine control products seamlessly integrate motion, I/O, network-connected hydraulic valves, sensors, displays and gateway connections to the cloud.



## Efficient

The heart of Parker's electrified portfolio includes proven PMAC electric motors paired with mobile inverters optimized for efficiency and functional safety.

**EFFICIENT** solutions that are designed and tested together for optimized system performance. From matched motors and inverters, to configured ePumps, Parker has the technology to enable better, more efficient mobile machines.



# Application Engineering Centers

Parker's Global Mobile Systems teams work with OEMs to develop innovative hybrid and fully electric solutions. The ability to optimize systems through whole-vehicle integration of both the electric and hydraulic elements makes Parker the global industry leader in intelligent motion and control for on- and off-road equipment.

The team prides itself on understanding how mobile machinery is used and misused in the field. Industry standards and regulations, both global and regional, are applied throughout the process. The result is exceptional value in areas that help OEMs maximize equipment efficiency for their end customers.



CHICAGO, USA



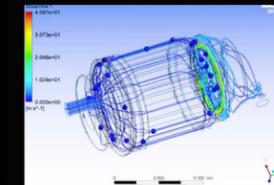
BORÅS, SWEDEN



# Motion Technology Center

Parker's Motion Technology Center (MTC) is a partnership between Parker's Aerospace and Motion Systems Groups. The engineers at MTC provide support in the areas of product development, system expertise and technology development for next-generation motion

technology systems that drive innovation for modern machines. MTC bridges the technology gap between higher risk, emerging technologies to lower risk near-term product development to optimize the efficiency of today's and tomorrow's electric machines.



## Partnerships that enable breakthroughs through SMART Electrification

After more than a century of experience serving our customers in a wide range of diversified industrial, hydraulic and aerospace markets, Parker is a trusted partner to develop solutions that help to solve the most complex engineering challenges. Working together with our customers, Parker enables technology breakthroughs that lead to a better tomorrow.



**APPLICATION EXPERTS**  
using application know-how to optimize machine performance and efficiency.

**PRODUCT EXPERTS**  
bringing the best of electric and hydraulic motion technologies together for a better tomorrow.

**TECHNOLOGY EXPERTS**  
dedicated to advancing new technologies for the electrification of mobile machines.

# Enabling Engineering Breakthroughs that Lead to a Better Tomorrow

Breakthroughs that make the world smarter, safer and more efficient would not be possible without Parker technologies.

## Electrified Motion Control

Motion control solutions for off-road and on-road electrified machines:

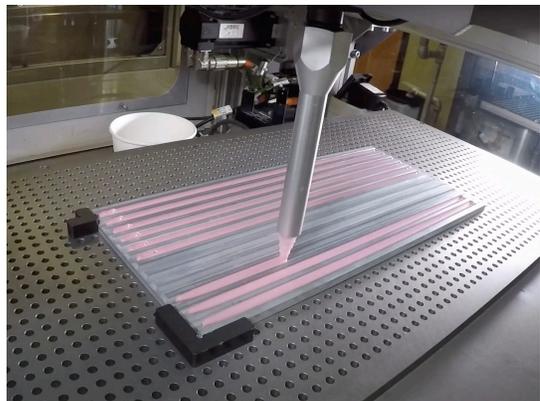
- > High-efficiency electric motors
- > Mobile inverters/motor controllers
- > Configured ePumps and ePTOs
- > CAN-bus connected hydraulic valves
- > Electronic controls for mobile machines
- > Steer-by-wire tactile feedback
- > Mobile controller software and sensors



## Engineered Materials

Technologies for improved safety, thermal management, weight savings and critical protection:

- > Flame-resistant coatings and high-temp materials
- > Structural adhesives and engineered plastics
- > Thermal gels
- > Vibration damping
- > Electrically conductive and isolating materials



## Filtration and Fluid/Gas Handling

Solutions for alternative fuels and thermal management:

- > Fluid conveyance and connections for thermal management solutions
- > CNG, LNG and hydrogen vehicle fuel conveyance and filtration systems

