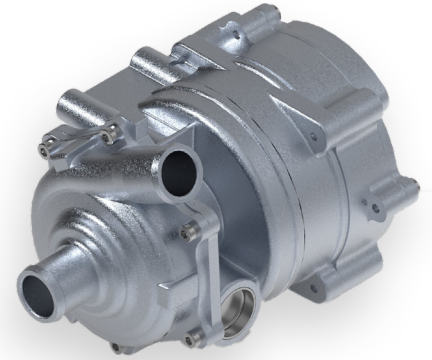


WATER



OIL

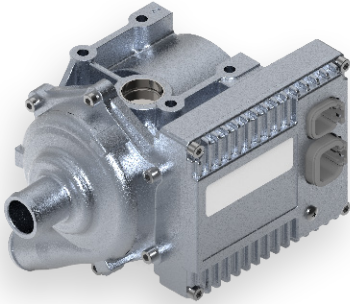
AIR



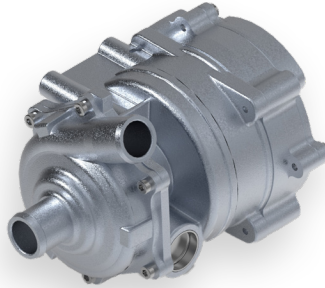
WATER PUMPS & FANS

SmartFlow® WP DC electric water pumps are high performance, severe duty pumps utilized in extreme environments. Compact and quiet, each WP model is also corrosion and water resistant. It is built with a long-life brushless DC motor, high efficiency design, and durable die-cast aluminum construction. The fully integrated motor controller allows for full variable CAN or on/off control.

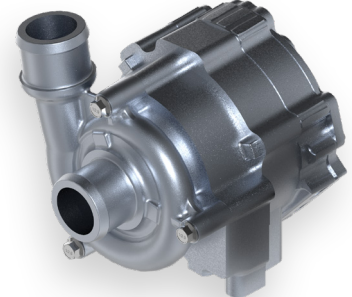
The combination of technology and durability allow EMP water pumps to be used in a variety of applications and markets including on/off highway, electric vehicle, power generation, and more.



WP32



WP120



WP150

Flow Capacity	5 - 25 GPM (19 - 95 LPM)	Flow Capacity	10 - 35 GPM (38 - 132 LPM)	Flow Capacity	35 - 85 GPM (132 - 321 LPM)
Pressure Rise	Up to 25 PSI (172 kPa)	Pressure Rise	Up to 35 PSI (241 kPa)	Pressure Rise	Up to 26 PSI (180 kPa)
Voltage Options	12V / 24V	Voltage Options	12V / 24V	Voltage Options	12V / 24V

Transit

Refuse

Heavy Duty EV

Military



11" FiL & FiC



15" FiL & FiC

Flow Capacity	900-1800 SCFM (1530-3060 m ³ /hr)	Flow Capacity	1500-3300 SCFM (2550-5600 m ³ /hr)
Pressure	Up to 2.8 inches H ₂ O (700 Pa)	Pressure	Up to 2.6 inches H ₂ O (650 Pa)
Voltage Options	12V / 24V	Voltage Options	12V / 24V / *48V

The **SmartFlow® FiL** and **FiC** DC electric fan models feature long-life brushless motors that are reliable even in the harshest conditions. These fully reversible fans offer CAN, PWM, on/off, as well as temperature or pressure control options to stay compatible with your current system technology. The FiL is primarily used on EMP electric cooling systems, communicating using proprietary LIN based protocol. The FiL can also be controlled using a PWM signal or ON/OFF. The FiC is primarily controlled by customer using J1939 CAN.

EMP SmartFlow® fans out-perform competitors in heavy-duty applications such as construction, transit, refuse, on/off highway, military, and more. E-Mark, UL, and CSA certifications are available.

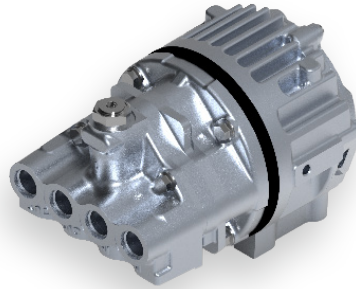
*Prototype only

OIL PUMPS AND ALTERNATORS

Smartflow® OP DC electric oil pumps are positive displacement gear pumps featuring a brushless DC motor with an integrated motor drive controller. These pumps have all-cast aluminum construction and are sealed and fully submersible. Using proprietary technology, the eOP line has best in-class performance for flow and pressure. Applications include lubrication, bulk transfer, cooling, circulation, and general oil management.



OP40 & 80



OP3530



OPC40 & 80

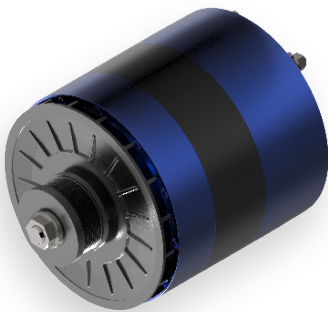
Flow Capacity	4.0 & 8.0 GPM (15.1 - 30.3 LPM)	Scavenge Stage Capacity	3.5 GPM (13.2 LPM)	Flow Capacity	4.0 & 8.0 GPM (15.1 - 30.3 LPM)
Discharge	100 & 80 PSI (690 & 550 kPa)	Pressure Stage Capacity	3.0 PSI (11.4 LPM)	Discharge	100 & 80 PSI (690 & 550 kPa)
Voltage Options	12V / 24V	Voltage Options	12V / 24V	Voltage Options	12V / 24V

Power Gen

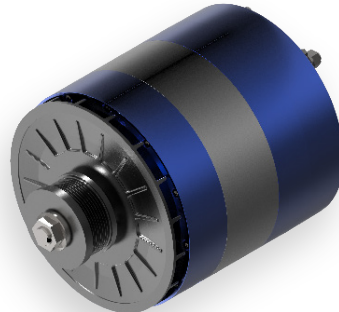
Mining

Forestry

Agriculture



P450 (24V / 48V)



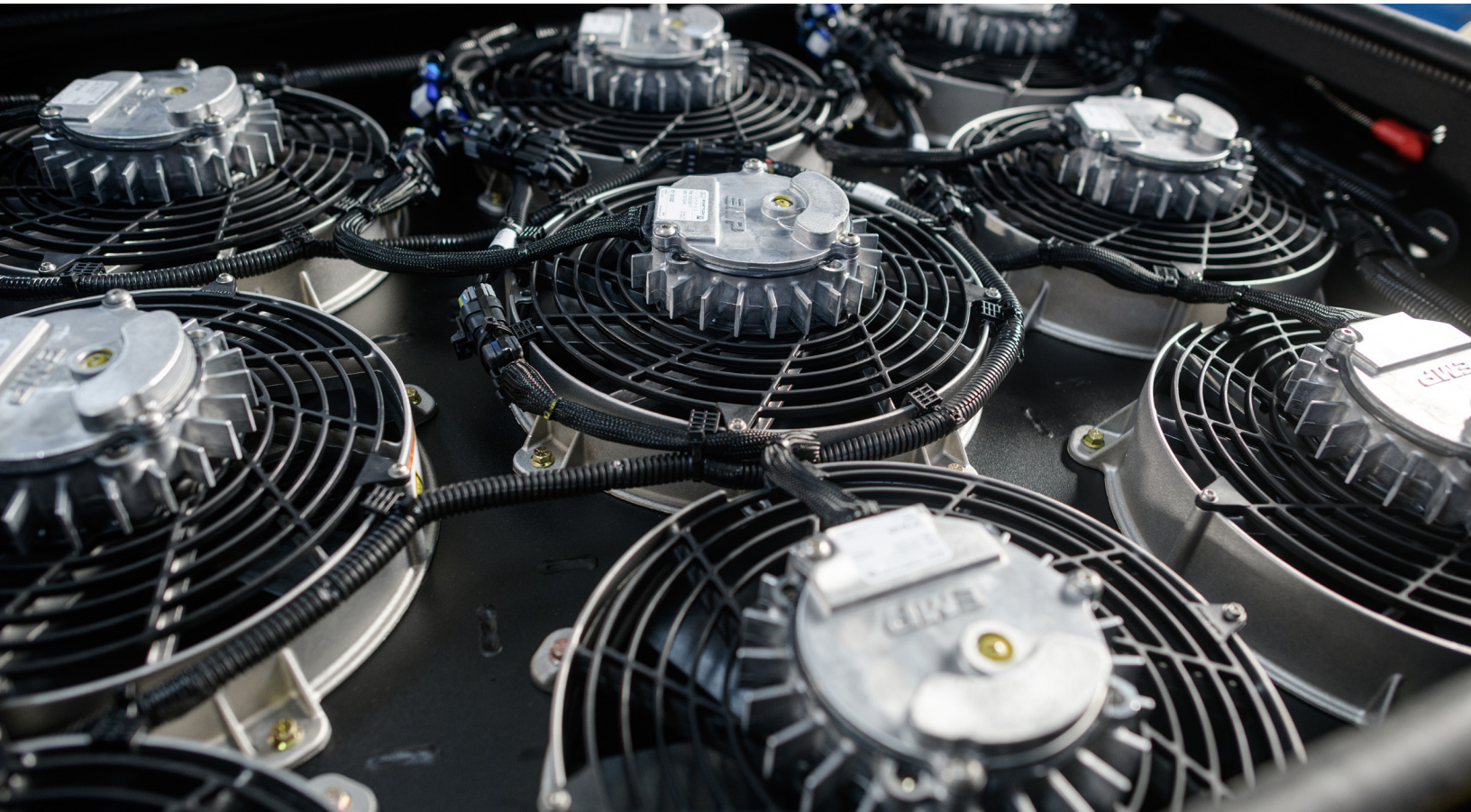
P535 (24V / 48V)

Peak Output	450 Amps / 250 Amps	Peak Output	535 Amps / 250 Amps
Idle Output	290 Amps / 175 Amps	Idle Output	325 Amps / 175 Amps
Peak Efficiency	82% / 83%	Peak Efficiency	83% / 85%

EMP's **Power Series** of brushless alternators provide remarkable performance at low speeds and idle. With high efficiency and durability, they are proven to perform under the harshest conditions. This efficiency also allows EMP alternators to run cooler, achieving a longer life than its competitors. Available in 28V or 56V, these alternators are equipped with electrical noise suppression and provide clean electrical power for heavy duty applications.

Market integrations include transit bus, mining, construction, military, agriculture, and more.

EMP engineers and manufactures high quality, innovative, electrified components and systems for any of your heavy duty thermal management needs. Whether they are used individually for water/glycol, oil, or air cooling, or as a part of a custom cooling system, the SmartFlow® line of products are the solution. Contact our sales team to learn more about EMP's current SmartFlow® lineup and other complete cooling solutions.

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