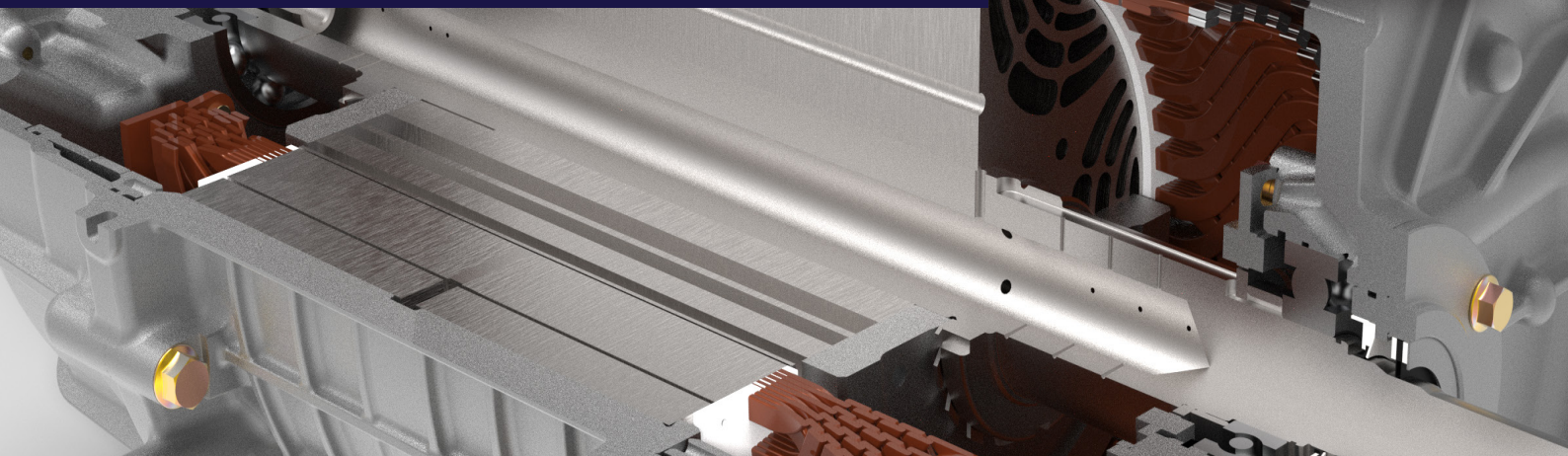


RARE EARTH AND COPPER FREE ELECTRIC TRACTION MOTOR SOLUTION

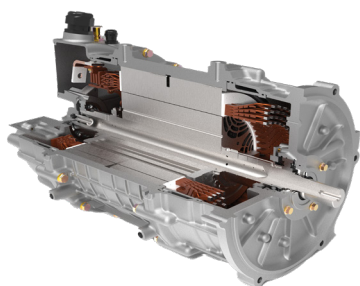


The Alumotor is perfect for light commercial vehicle, off-highway and other applications that demand low cost or highly sustainable solutions

The Alumotor comprises a collection of technologies that can be strategically deployed to reduce cost and increase sustainability by eliminating copper (Cu), permanent magnets or both. This flexible set of technologies can be scaled in power and optimised for cost vs performance.

The Alumotor has an aluminium (Al) hairpin winding and a magnet free rotor, enabling a more robust and sustainable supply chain and removing over 40% of the cost of a standard electric motor.

The aluminium hairpin winding and the magnet free rotor alongside the innovative cooling technology enables increased vehicle operating efficiency whilst drastically reducing material cost, as shown in the comparison below.



The Alumotor is well suited for light commercial vehicle, off-highway and specialised vehicle applications requiring low-cost, sustainable, robust solutions in xEV vehicle portfolios. Alumotor has demonstrated technology readiness by successfully completing critical validation tests.

KEY BENEFITS

- Designed with sustainable supply chain security in mind
- Over 40% manufacturing cost reduction
- Flexibility to balance cost vs performance
- Scalable to a variety of applications
- Robust and durable design

The table below shows the verified values of Ricardo's Alumotor technology demonstrator. Size, performance and voltage are just an example of the technology's potential.

PEAK TORQUE	400 Nm at 3500 RPM
RATED TORQUE	250 Nm at 5000 RPM
MAX SPEED²	14,000 RPM
PEAK POWER	195 kW at 6000 RPM
RATED POWER	131 kW
POWER DENSITY	3 kW/kg
COOLING	OIL COOLED AND OIL SPRAY JETS
EFFICIENCY	92% OVER WIDE REGION OF EFFICIENCY MAP
VOLTAGE	800 Vdc

² Subject to final validation tests

Motor	Magnets with copper	Magnets with aluminium	Alumotor ¹
Cost	\$305	\$239	\$181
Saving	-	\$67	\$124
% Saving	-	28%	41%

¹ Alumotor uses no permanent magnets or copper

FIND OUT MORE ABOUT ALUMOTOR

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