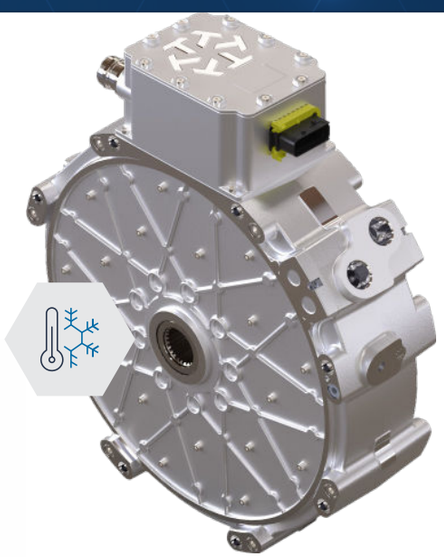
6 Benefits of Water-Glycol Cooling in Axial Flux Motors

This infographic details the advantages of water cooling when compared to oil cooling and how both affect axial flux motor integration, cost, efficiency, reliability, and system design.

Cooling architecture affects more than temperature. This infographic compares water-cooled and oil-cooled axial flux motors. Understand that in some applications, like premium automobiles, oil cooling is required and direct oil cooling can provide higher continuous rating of the motor. However, in other vehicles and equipment, water-glycol cooling can simplify integration; reduce complexity; lower pumping losses; and support reliable, compact performance.



1 Simplified Integration

Water-glycol cooling can use common vehicle thermal loops; oil cooling often needs a dedicated circuit.

2 Lowered Complexity

Water-cooled systems reduce sealing, filtration, and oil-compatible hardware requirements.

3 Decreased Pumping Losses

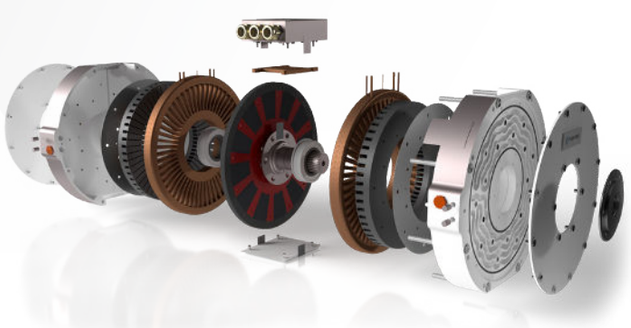
Water-glycol's lower viscosity reduces parasitic energy use when compared with oil.

4 Cleaner Electrical Separation

Indirect water cooling keeps coolant isolated from the windings and insulation.

5 Improved Debris Protection

Enclosed designs help keep debris away from the rotor and stator surfaces. In oil-cooled systems, the rotor is submerged in oil.



6 Enhanced Performance

An indirect water-cooled design supports compact packaging, high torque density, and reliable operation.