

Gates ThermalPro™ Axial Flux water pumps have been specifically developed to optimise energy efficiency whilst delivering performance and reliability improvements for the systems they are used within.

System Overview	
Model	400 – 2.5kW Platform
Motor type	Three-phase brushless Axial Flux
Motor Mass	2.1Kg
Voltage design range	12V to 800V*
Flow rate (l/min)	<250
Maximum operating speed	<7000rpm
Control strategy	PWM, LIN, CAN
Coolant temp. (°C)	-40—120
Ambient Temp (°C)	-40 -135
IP rating	IP67

*400V and 800V pump are currently under development





THREE PHASE **AXIAL FLUX PUMP DESIGN** KEY ADVANTAGES



Gates Axial Flux eWP Design:

Higher power density and more compact package over equivalent radial flux machines

Dry Rotor

Increased motor efficiency, durability, reliability & NVH (vs a standard radial flux)

Chassis or Direct Mounting

Flexibility to available packaging

Isolated Control Board

Protected from coolant exposure

Modular & Scalable

Creating “family” architecture adaptable for different application requirements



Motor Design		Standards	
Motor details	Up to 12 tooth 10 Poles	Functional Safety	ISO-26262 *
Motor Housing Material	ADC	Safety of Intended Functionality	ISO 21448
Volute Housing and Impeller	ADC or Glass Reinforced Plastic	Cyber Security	ISO 21434*
Winding Type	Non-Overlap concentrated	EMC	ISO 11451 / ISO 11452/ ISO 10605/ CISPR25
Winding Material	Copper or Aluminum	Temperature Shock Test	DIN EN 60068-2-14
Stator & Rotor Core Material:	SMC (Soft Magnetic Composite)	Dust Test	ISO 20653
Permanent Magnet	Ferrous / Rare Earth	Thermal Cycle	IEC 60068-2-14
Temperature Protection:	Over temperature	Vibration Test	ISO 16750-3 / DIN EN 60068-2-6/DIN 60068-2-64
Voltage Protection:	Overvoltage, Undervoltage, short circuit		
Load Protection:	no-load, overload, locked impeller, anti-reverse connection		
Coolant Specification:	50:50 Ethylene Glycol to water ratio		

* Subject to customer requirement specification