



## High Performance Motors, Compact Design

### Application Specific Permanent Magnet AC Motors (PMAC)

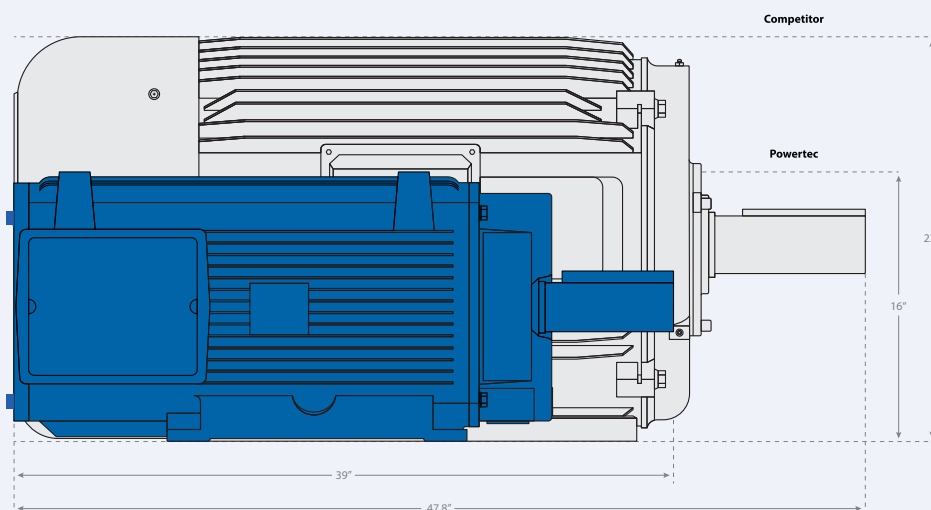
#### Powertec Performance Benefits Compared to Induction Motors

- Consistent Torque Across RPM Range
- Reduced Size
- Significantly Reduced Weight
- Optimized Performance
- Reliability in Challenging Environments

	Induction Motor 150 HP	Powertec Replacement Motor
Weight (lbs)	2260	950
Power Density	9.1 W/in <sup>3</sup>	20.7 W/in <sup>3</sup>
Locked Rotor Torque (ft/lb)	470	800
Frame (NEMA)	447T	328T
Frame Enclosure	TEFC	TEFC

### SMALLER, LIGHTER, MORE TORQUE

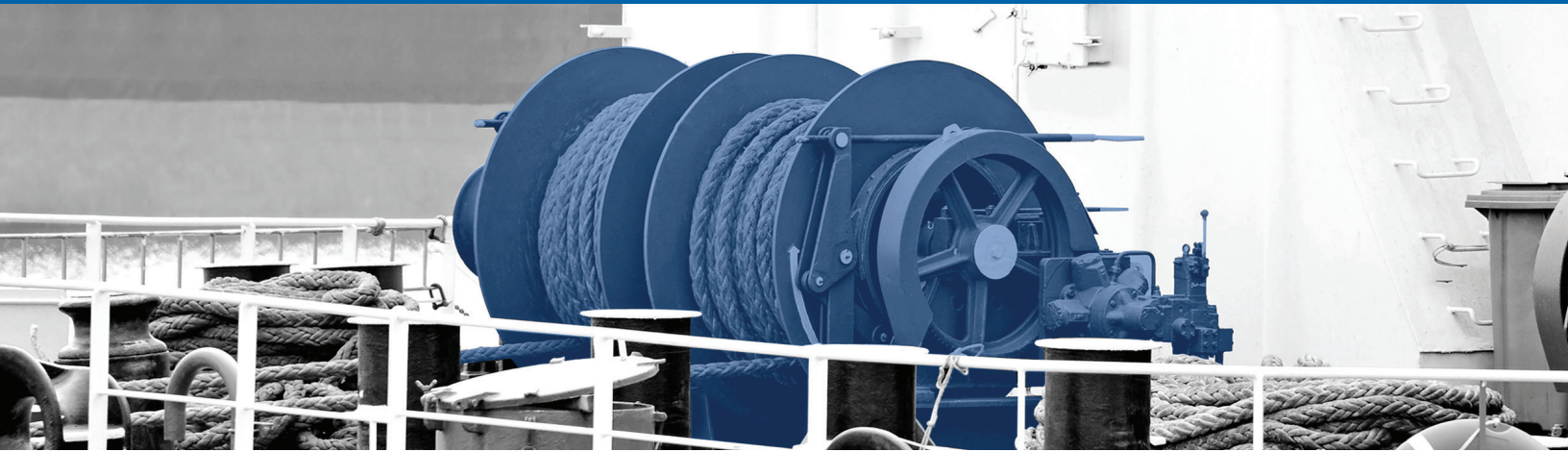
#### Size Comparison of PMAC Motor vs. Standard Induction Motor



#### BENEFITS

- ↑ **220% Higher Power Density**
- ↘ **190% Smaller Frame Size**
- ↓ **58% Less Weight**
- ↑ **Up to 9% Higher Efficiency**
- ↗ **Wider RPM Range**
- τ **Torque From Zero Speed**

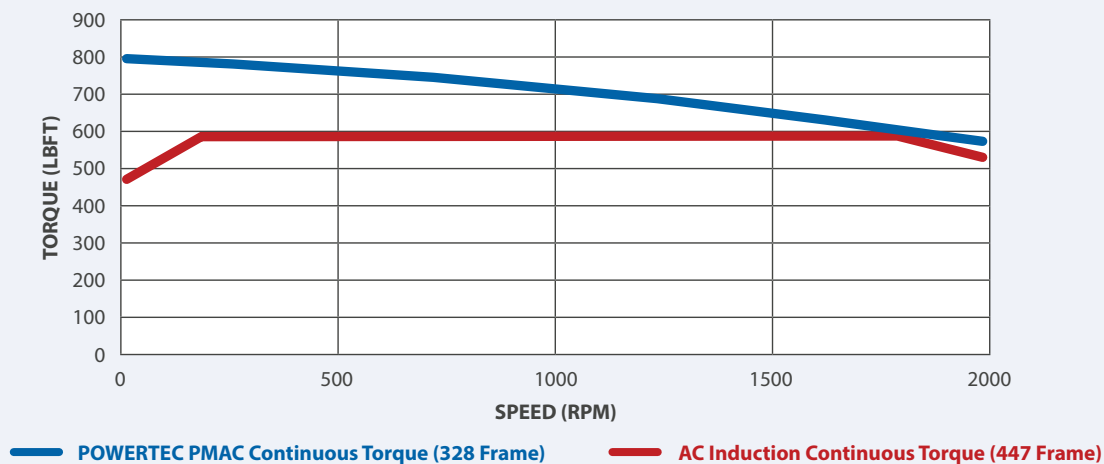
Scale Drawing for comparison only - actual design may vary depending on customer requirements.



## Common Marine Applications

- Anchor Windlass
- Winches
- Cargo Elevator
- Mooring System

PMAC vs Induction Continuous Torque Ratings



- ✓ Powertec Motors offer a significant **weight reduction of 1300+lbs (over half)**.
- ✓ PMAC design can possibly **eliminate the gearbox** with increased range flexibility.
- ✓ Physical dimensions are **reduced by 190% in volume**.
- ✓ Efficiency is dramatically **improved by 3-9%** across the speed range.
- ✓ PMAC motors consistently deliver **higher torque density** and **better low-speed performance**.