

Power and Propulsion Solutions Modular Traction System (MTS)

BAE Systems' Power and Propulsion Solutions increase a vessel's operating efficiency and performance with unique electric power and propulsion solutions.

The Modular Traction System (MTS) is composed of a traction motor/reduction gear and an integrated starter generator to provide propulsion and power for the vessel. The liquid-cooled, high power-to-weight ratio AC induction electric traction motor and reduction gear connect directly to a propeller shaft to provide traction propulsion power.

The traction motor incorporates a fixed-ratio planetary reduction gear, eliminating the need for a shifting transmission. The traction motor provides high power and superior low-end starting torque.

The generator is coupled directly to the engine crankshaft, resulting in a compact bearingless design. The generator is sized to convert all engine crankshaft power to electrical power for use by the system. The compact MTS occupies an equivalent space claim of a typical conventional transmission powertrain unit.

This system's design and packaging makes it easily adaptable to various configurations and easy to install. The simple design of the MTS reduces the cost of maintenance as well as the overall life cycle cost.

We offer three motor sizes dependent on the application and duty cycle.



AC Traction Motor (ACTM)

Integrated Starter Generator (ISG)

Features

- Mechanically simple; long life
- Integrated starter generator – eliminates conventional starter wear
- Superior low-end torque and high power-to-weight ratio
- Fits in conventional transmission space claim
- AC induction motor/permanent magnet generator — eliminates brush maintenance
- Installation flexibility: T-Drive or transverse engine mount

Benefits

- Reduced maintenance
- Flexible for worldwide various applications
- Reliable, low lifecycle cost
- Easy installation
- Sensorless ISG for improved reliability
- WEG cooled for MTS heat removal, no separate oil cooler required
- Completely high-voltage protected for safety

| | Traction Motor Ratings | | |
|-----------------------|---|---|---|
| | HDS100 | HDS200 | HDS300 |
| Power | | | |
| Peak | 190 kW (255 hp) 500 – 2485 rpm | 200 kW (268 hp) 500 – 2000 rpm | 230 kW (308 hp) 410 – 2110 rpm |
| Intermittent | 175 kW (235 hp) 455 – 2485 rpm | 180 kW (241 hp) 455 – 2400 rpm | 200 kW (268 hp) 360 – 2640 rpm |
| Continuous | 120 kW (161 hp) 630 – 2485 rpm | 160 kW (215 hp) 630 – 2485 rpm | 180 kW (241 hp) 590 – 2640 rpm |
| Torque | | | |
| Peak | 3300 Nm (2435 ft-lbs) 0 – 200 rpm | 5100 Nm (3760 ft-lbs) 0 – 200 rpm | 6500 Nm (4790 ft-lbs) 0 – 145 rpm |
| Intermittent | 2415 Nm (1780 ft-lbs) 0 – 455 rpm | 3800 Nm (2790 ft-lbs) 0 – 455 rpm | 5330 Nm (3930 ft-lbs) 0 – 360 rpm |
| Continuous | 1610 Nm (1190 ft-lbs) 0 – 630 rpm | 2400 Nm (1780 ft-lbs) 0 – 630 rpm | 2915 Nm (2150 ft-lbs) 0 – 590 rpm |
| Speed | | | |
| Operational | 0–2485 rpm | 0–2485rpm | 0–2640rpm |
| Overspeed | 2730 rpm | 2730 rpm | 2810 rpm |
| Physical | | | |
| Length (end of shaft) | 21.8 in (554 mm) | 24.8 in (629mm) | 25.7 in (653 mm) |
| Width | 24.1 in (613 mm) | 24.1 in (613 mm) | 24.1 in (613 mm) |
| Height | 22.4 in (569 mm) | 22.4 in (569 mm) | 22.4 in (569 mm) |
| Weight (wet) | 654 lbs (297 kg) | 804 lbs (352 kg) | 855 lbs (388 kg) |
| Cooling | Jacket water ethylene (or propylene) -glycol, 15 gpm (57 lpm) / Internal ATF, electric oil pump, filter, cooler, oil sump | | |
| Operating Temperature | Coolant: -40° to 167°F (-40° to 75°C) / External ambient: -40° to 185°F (-40° to 85°C) | | |
| | Traction Generator Ratings | | |
| | HDS100 | HDS200 | HDS300 |
| Power | | | |
| Continuous | 145 kW (194 hp) @ 2100 rpm | 200 kW (268 hp) @ 2300 rpm | 230 kW (308 hp) @ 2000 rpm |
| Torque | | | |
| Continuous | 660 Nm (486 ft-lbs) 0 – 2100 rpm | 830 Nm (610 ft-lbs) 0 – 2300 rpm | 1100 Nm (810 ft-lbs) 0 – 2000 rpm |
| Speed | | | |
| Operational | 0–2100 rpm | 0–2300 rpm | 0–2000 rpm |
| Overspeed | 2700 rpm | 2700 rpm | 2700 rpm |
| Physical | | | |
| Length (beyond FWH) | 6 in (155 mm) | 6 in (155 mm) | 6.3 in (160 mm) |
| Width | 23.6 in (600 mm) | 23.6 in (600 mm) | 23.6 in (600 mm) |
| Height | 23.6 in (600 mm) | 23.6 in (600 mm) | 23.6 in (600 mm) |
| Weight (wet) | 237 lbs (107 kg) /+26 lbs (12 kg) for CWK | 251 lbs (114 kg) /+26 lbs (12 kg) for CWK | 300 lbs (136 kg) /+26 lbs (12 kg) for CWK |
| Cooling | Jacket water ethylene (or propylene) -glycol, 15 gpm (57 lpm) | | |
| Operating Temperature | Coolant: -40° to 185°F (-40° to 85°C) / External ambient: -40° to 185°F (-40° to 85°C) | | |

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