

# AC Traction Motor **ACTM** Integrated Starter Generator **ISG**

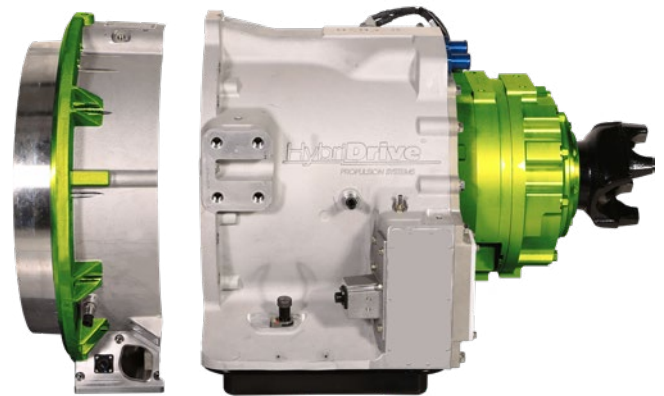
**BAE Systems' Power and Propulsion Solutions' products increase a vessel's operating efficiency and performance with unique electric power and propulsion solutions.**

The Integrated Starter Generator (ISG) provides electric power to both the propulsion motor and vessel auxiliary loads. The liquid-cooled, high power-to-weight ratio AC Traction Motor (ACTM) is a permanent magnet traction motor and reduction gear, that can connect directly to a propeller shaft to provide vessel propulsion power.

The traction motor incorporates a fixed-ratio planetary reduction gear, often eliminating the need for an additional reduction gearbox. The traction motor provides high power and superior low-end 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.

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



Integrated Starter Generator (ISG)    AC Traction Motor (ACTM)



DDTM-100

### Integrated Starter Generator (ISG)

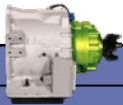
- Mechanically simple; long life
- Sensorless for improved reliability
- Eliminates conventional starter wear
- Installation flexibility: engine isn't mechanically connected to the driveline

### AC Traction Motor (ACTM)

- Superior low-end torque and high power-to-weight ratio
- Fits in conventional gearbox space claim
- Proven design, with over 12,000 operating worldwide

### Benefits

- Easy installation
- Reduced maintenance
- Reliable, low lifecycle cost
- Electric propulsion with low noise and vibration
- WEG cooled. No separate oil cooler required
- Completely high-voltage protected for safety



AC Traction Motor (ACTM) Ratings				
System	HDS100	HDS200	HDS300	HDS400
Model	DDTM-100	ACTM-200	ACTM-300	ACTM-400
<b>Power</b>				
Maximum	150 kW (201 hp) 1200 – 3200 rpm	200 kW (268 hp) 675 – 2500 rpm	220 kW (295 hp) 950 – 1200 rpm	300 kW (402 hp) 950 – 1500 rpm
Continuous	120 kW (161 hp) 630 – 2485 rpm	160 kW (215 hp) 540 – 2500 rpm	200 kW (268 hp) 950 – 1200 rpm	300 kW (402 hp) 950 – 1500 rpm
<b>Torque</b>				
Continuous	974 Nm (718 ft-lbs) 0 – 1120 rpm	2850 Nm (2069 ft-lbs) 0 – 510 rpm	2010 Nm (1482 ft-lbs) 0 – 950 rpm	3015 Nm (2223 ft-lbs) 0 – 950 rpm
<b>Speed</b>				
Operational	0–4000 rpm	0–2500 rpm	0–1200 rpm	0–1500 rpm
<b>Physical</b>				
Length (end of shaft)	21.8 in (554 mm)	24.8 in (629mm)	25.7 in (653 mm)	25.7 in (653 mm)
Width	24.2 in (615 mm)	24.1 in (613 mm)	24.1 in (613 mm)	24.1 in (613 mm)
Height	26 in (595 mm)	22.4 in (569 mm)	22.4 in (569 mm)	22.4 in (569 mm)
Weight (wet)	424 lbs (192 kg)	804 lbs (352 kg)	855 lbs (388 kg)	855 lbs (388 kg)
<b>Cooling</b>	Jacket water ethylene (or propylene)-glycol, 15 gpm (57 lpm) / Internal ATF, electric oil pump, filter, cooler, oil sump			
<b>Operating Temperature</b>	Coolant: -40° to 95°F (-40° to 35°C) / External ambient: -40° to 149°F (-40° to 65°C)			



Integrated Starter Generator (ISG) Ratings				
System	HDS100	HDS200	HDS300	HDS400
Model	ISG-100	ISG-200	ISG-300	ISG-400
<b>Power</b>				
Continuous	145 kW at 2100 rpm	200 kW at 2300 rpm	230 kW at 2000 rpm	350 kW at 1800 rpm
<b>Torque</b>				
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	
<b>Maximum Speed</b>	2700 rpm	2700 rpm	2700 rpm	2700 rpm
<b>Physical</b>				
Length (beyond FWH)	6 in (155 mm)	6 in (155 mm)	6.3 in (160 mm)	10.5 in (267 mm)
Width	23.6 in (600 mm)	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)	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	378 lbs (172 kg) /+26 lbs (12 kg) for CWK
<b>Cooling</b>	Jacket water ethylene (or propylene)-glycol, 15 gpm (57 lpm)			
<b>Operating Temperature</b>	Coolant: -40° to 95°F (-40° to 35°C) / External ambient: -40° to 149°F (-40° to 65°C)			

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