Clean Power. Clear Air. Complete Solutions.



NORTHERN LIGHTS

Hybrid Marine Components

Northern Lights redefines the engine room

Northern Lights Hybrid Marine combines its high performance Lugger propulsion engines with BAE System's HybriDrive[®] Propulsion System – the world's most successful series hybrid. Northern Lights Hybrid Marine uses topquality components to ensure optimum performance in the demanding marine environment.

Propulsion Control System

The Propulsion Control System (PCS) and the System Control Unit (SCU) modulate the flow of power between the generator, diesel engine and engine storage module. Overall system performance can be customized to an operator's specific requirements. Diagnostic information is provided by the PCS to maintain optimal performance.

Benefits

- Rugged, durable, and highly reliable
- Flexible installation and cooling
- Standard communications interface
- Supports prognostics health management
- Optional heater output eliminates need for fuel-fired heater
- Performance can be tailored to customer needs

Selectable acceleration settings

- Onboard diagnostics
- SAE 1939 CAN interface
- System control and vessel interface electronics mounted externally
- PCS is liquid cooled for superior thermal management and control

ACTM - AC Traction Motor

Features

- Superior low-end torque
- High power-to-weight ratio
- Standardized mounting interfaces
- AC induction motor eliminates
- brush maintenance
- Mechanically simple; long life
- Self-contained cooling
- Long-life Transynd[®] synthetic ATF
- Permanent magnet, brushless generator

Benefits

- Superior acceleration and gradeability
- Reduced maintenance
- Flexible for worldwide marine platforms
- Reliable, low life-cycle cost
- Easy installation



ISG - Integrated Starter Generator

The AC Propulsion System provides power to the vessel through a traction motor and generator.

The liquid cooled, high power-to-weight ratio electric motor connects directly to a standard prop shaft and propeller. The traction motor incorporates a fixed ratio reduction gear, providing a smooth, no-shift ride and eliminates the need for a gear shifting transmission.

The hybrid motor's simple design reduces the cost of maintenance as well as the overall life cycle cost. The AC motor drives the propeller, leaving the marine propulsion motor and energy storage system free to operate your vessel's other systems. This unique design reduces exhaust emission, frees up engine room space and saves money on auxiliary equipment.

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Energy Storage Module

Hybrid Marine's energy storage module (ESM) offers exceptional performance in renewable energy applications. The modules are smaller and lighter than traditional energy storage systems, and can be specially configured and combined. Each installation is supported with a system controller to manage and coordinate all of the modules in a given pack.

Benefits

- Inherent safe cell chemistry combined with a sophisticated battery management system guarantees safety
- Unmatched deep discharge cycles. 10 to 20 year working life with lifetime warranty provided by manufacturer
- Wide temperature range of -40° C to 60° C
- Rapid maximum charge rate of 2C and maximum discharge rate of 10C
- Energy storage capability from 45kWH and up
- Completely sealed and 99% recyclable
- IG67 compliant and Lloyd's Type Approved.

Features

- Up to 10 times the capacity and power of traditional batteries
- One quarter the weight of traditional battery packs
- 10 times the life cycle of traditional batteries
- Completely maintenance free
- · Safest heavy duty power rating on the market
- Reliable, fail safe battery management technology
- Data flexible J1939 compatible data communication protocol



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PCS and SCU Ratings

Power:	2 x 200 kW continuous	Power: 2
Operating Temperature: consult factory		(a
Coolant Temperature:		1
-	-40°F to 149°F	a
	(-40°C to 65°C)	Torque: 5
	113°F (45°C) nominal	(
External Amb	3	
	-40°F to 167°F	a
	(-40°C to 75°C)	Speed: 0
		GVWR: fo
PCS Length:	36.2 in. (919 mm)	()
PCS Width:	22.4 in. (569 mm)	
PCS Height:	9.3 in. (237 mm)	Length (end of
PCS Weight (wet): 188 lbs. (85 Kg)		Width:
		Height:
SCU Length:	15.15 in. (385 mm)	weight (wet):
SCU Width:	8.70 in. (221 mm)	Coolanta
SCU Height:	3.91 in. (99 mm)	Locket water eth
SCU Weight:	10 lbs (4.5 kg)	glycol) 15 gpm
		Integrated WFG
Coolant:		controller, oil/w
PCS-	Water ethylene/glycol	Operating Tem
(or propylene	glycol) 15 gpm (57 lpm)	Coolant temp: -4
SCU-	Air cooled	•External ambien

HDS200 Propulsion Motor Ratings

Power:	200 kW (265 hp) peak	
	@ 500 - 2000 rpm	
	160 kW (215 hp) cont.	
	@710 - 2485 rpm	
Torque:	5100 Nm (3760 ft-lbs) peak	
-	@ 0 - 200 rpm	
	3800 Nm (2790 ft-lbs) int.	
	@ 0 - 450 rpm	
Speed:	0 - 2485 rpm	
GVWR :	for vessels up to 41,000 lbs	
	(18,630 kg)	
Length (end of shaft): 24.8 in. (629 mm)		
Width:	24.1 in. (613 mm)	
Height:	22.4 in. (569 mm)	

24.1 in. (613 mn
22.4 in. (569 mn
777 lbs. (352 kg)

ylene glycol (or propylene (57 lpm) / internal ATF. and ATF, oil pump & ater cooler, filter & oil sump perature: 0° to 167°F (-40° to 75°C) t: -40° to 185°F (-40° to 85°C)

ESM Ratings

Max. voltage:	705 VDC
Min. votage:	504 VDC
Capacity:	105 AH
Energy:	45kWH+
Length:	27 inches (704 mm)
Width:	77 inches (1,946 mm)
Height:	11 inches (274 mm)
Weight:	1,200 lbs (545 kg)

These components are part of the Northern Lights marine propulsion system and are not sold separately. They are intended for use only with a Lugger propulsion engine.

Specifications and ratings are considered accurate at time of publication but are not intended for installation. Contact the factory for specification updates and installation information.

