# C7.1 MARINE GENERATOR SET (U.S. EPA Tier 3 / IMO II)

92, 111, 143 ekW - 50 Hz 106, 138, 163 ekW - 60 Hz



C7.1 Marine Generator Set (radiator cooled) U.S. EPA Tier 3 / IMO II Image may not reflect actual product.

# STANDARD ENGINE EQUIPMENT

- Modular tube and fin radiator with sight gauge
- Open crankcase ventilation system
- Common rail fuel system
- Simplex fuel and oil filters
- Integral plate-type oil cooler
- 3-phase AREP generators which provide the functionality of a permanent magnet excitation system
- EMCP4.2 control panel with remote monitoring capability
- Anti-vibration mounts under base
- Gear-driven sea-water and jacket-water pumps
- Safety shutdowns for low oil pressure, high water temperature, and overspeed
- Fresh water level indicator
- Watercooled exhaust manifold and turbocharger

# **ENGINE SPECIFICATIONS**

**Configuration** In-line 6, 4-stroke-cycle diesel

**Emissions** U.S. EPA Tier 3 / IMO II compliant, CCNR Stage II

Rated Engine Speed 50 Hz 1500 rpm 60 Hz 1800 rpm

**Bore x Stroke** 105 mm x 135 mm / 4.13 in x 5.31 in

**Displacement** 7.01 Liter 428 cu in

**Aspiration** Turbocharged-aftercooled aspiration **Governor** Electronically

Refill Capacity Lube Oil System w/Oil filter change: 21 L (5.6 gal) Cooling System: 40 L (10.5 U.S. gal) - hex

**Oil Change Interval** 500 hrs

**Cooling** Radiator cooled

Flywheel Housing SAE No. 02 flywheel housing with SAE SAE No. 02 in flywheel 134 teeth)

Rotation Counterclockwise from flywheel end

# **OPTIONAL ATTACHMENTS**

- Marine Classification Society (MCS) Approval ABS, BV, CCS, CRS, DNV GL, LR, ClassNK, PRS, RINA
- Control System Governor droop kit (selecting this kit enables paralleling with appropriate customer-suppied switchgear)
- Remote Instrument Panels
- Generators & Generator Attachments
- Space heater kit, installed 120V AC, 240V AC Fuel System

Flexible fuel lines, fuel cooler, duplex fuel filters, double wall high pressure fuel lines

- Lube System High level dipstick, oil filler, dubplex oil filters
- Exhaust System Dry elbow and bellows, dry elbow, dry flange, temperature sensor
- Charging System
- Idler pulley (when no charging alternator is selected
- Starting System

Additional 12V or 24V electric starter, air starter, jacket water heater options

# **RATING DEFINITION AND CONDITIONS - PRIME POWER**

Typical applications: For vessels operating with generator sets that provide power to the propulsion systems. All ratings are Prime Ratings according to ISO 8528-1 for unlimited usage per year at a load factor of  $\leq$  70%. 10% overload capability is required for a maximum of 1 hour out of every 12 and a maximum of 25 hours total per year.

Ratings are based on SAE J3046 and J1349 standard conditions of 100 kPa (29.61 in Hg) and 25°C (77°F). These ratings also apply at IS08665, IS03046-1:2002E, DIN6271-3, and BS5514 standard conditions of 100 kPa (29.61 in Hg), 27°C (81°F), and 60% relative humidity.

Fuel rates are based on fuel oil of 35° API [16°C (60°F)] gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29°C (85°F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal).

Marine Auxiliary Engines are mainly used as generator set engines; however, they can be used for electrically driven pumps, winches, conveyors, thrusters, when it is specified. Engines can be radiator cooled or heat exchanger/keel cooled.

# LET'S DO THE WORK."



# **TECHNICAL DATA**

# **C7.1 Marine Generator Set**

# **PERFORMANCE DATA**

#### (EM5082) - 50 Hz

	Brake Specific Fuel Consumption							
% Power	eKW	eKW bhp lb/bhp-hr bkW g/bkW-l						
100	92	144,8	0,693	108	234,9			
75	69	110,9	0,736	82,7	249,6			
50	46	77,5	0,766	57,8	259,8			
25	23	45,0	0,774	33,6	262,4			

#### (EM5083) - 50 Hz

	Brake Specific Fuel Consumption							
% Power	eKW	eKW bhp lb/bhp-hr bkW g/bkW-h						
100	111	172,9	0,687	129	232,9			
75	83,2	131,8	0,743	98,3	252,1			
50	55,5	91,2	0,729	68	247,2			
25	27,8	51,9	0,773	38,7	262			

#### (EM5084) - 50 Hz

	Brake Specific Fuel Consumption								
% Power	eKW	eKW bhp lb/bhp-hr bkW g/bkW-h							
100	143	218,5	0,643	163	217,9				
75	107,2	166,2	0,680	124	230,5				
50	71,5	113,8	0,710	84,9	240,6				
25	35,8	63,4	0,753	47,3	255,3				

#### (EM5085) - 60 Hz

	Brake S	Brake Specific Fuel Consumption						
% Power	eKW	eKW bhp lb/bhp-hr bkW g/bkW-hr						
100	106	164,9	0,708	123	240,1			
75	79,5	126,1	0,747	94,1	253,4			
50	53	87,8	0,749	65,5	253,9			
25	26,5	50,3	0,878	37,5	297,7			

#### (EM5086) - 60 Hz

	Brake Specific Fuel Consumption								
% Power	eKW	eKW bhp lb/bhp-hr bkW g/bkW-hr							
100	138	211,8	0,659	158	223,4				
75	103,5	160,9	0,673	120	228,3				
50	69	110,7	0,719	82,6	243,7				
25	34,5	62,1	0,803	46,3	272,4				

#### (EM5087) - 60 Hz

	Brake Specific Fuel Consumption							
% Power	eKW	eKW bhp lb/bhp-hr bkW g/bkW-hr						
100	163	246,6	0,669	184	226,7			
75	122,2	186,3	0,690	139	234,1			
50	81,5	128,3	0,719	95,7	243,9			
25	40,8	71,2	0,790	53,1	267,8			

#### Note:

Consult your local Cat dealer to create a customized engine TCO (Total Cost of Ownership) analysis specific to your vessel. Dealers (only): Please reference TMI Web for most current information.

## **DIMENSIONS & WEIGHT**

	Length (1)	Height (2)	Width (3)	Engine dry weight			
min.	2659 mm/105 in	1651 mm/65 in	993 mm/39 in	1808-1996 kg/3978-4391 lb			
Note: Do not use these dimensions for installation design. See general dimension drawings for detail.							

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# C7.1 MARINE GENERATOR SET (U.S. EPA Tier 3 / IMO II)

100, 118, 150 ekW - 50 Hz 118, 150, 175, 200 ekW - 60 Hz



C7.1 Marine Generator Set U.S. EPA Tier 3 / IMO II Image may not reflect actual product.

# STANDARD ENGINE EQUIPMENT

- Crankcase ventilation system
- Common Rail fuel system
- 12V and 24V starter motor and battery charging alternator
- Mounted air cleaner
- Integral plate-type oil cooler
- 3-phase AREP generators which provide the functionality of a permanent magnet excitation system
- EMCP4.2 control panel with remote monitoring capability
- Isolated sump
- Anti-vibration engine mounts
- Glowplugs aid starting in cold weather
- Gear-driven sea-water and jacket-water pumps
- Safety shutdowns for low oil pressure, high water temperature, and overspeed
- Worldwide Extended Service Coverage (ESC) available
- Watercooled exhaust manifold and turbocharger

# **ENGINE SPECIFICATIONS**

**Configuration** In-line 6, 4-stroke-cycle diesel

Emissions U.S. EPA Tier 3 / IMO II compliant, CCNR Stage II

Rated Engine Speed 50 Hz 1500 rpm 60 Hz 1800 rpm

**Bore x Stroke** 105 mm x 135 mm / 4.13 in x 5.31 in

**Displacement** 7.01 Liter 428 cu in

**Aspiration** Turbocharged-aftercooled aspiration **Governor** Electronically

### **Refill Capacity**

Lube Oil System w/Oil filter change: 21 L (5.6 gal) Cooling System: 40 L (10.5 U.S. gal) - hex

**Oil Change Interval** 500 hrs

**Cooling** Heat exchanger or keel cooled

Flywheel Housing SAE No. 02 flywheel housing with SAE SAE No. 02 in flywheel 134 teeth)

Rotation

Counterclockwise from flywheel end

# **OPTIONAL ATTACHMENTS**

- Marine Classification Society (MCS) Approval ABS, BV, CCS, CRS, DNV GL, LR, ClassNK, PRS, RINA
- **Control System** Governor droop kit (selecting this kit enables paralleling with appropriate customer-suppied switchgear)
- Generators & Generator Attachments
  Space heater kit, installed 120V AC, 240V AC
- Fuel System Double wall fuel lines with enclosed common rail and mounted alarm reservoir, dublex fuel filters
- Lube System
  Dubplex oil filters
- Starting System

Additional 12V or 24V electric starter, air starter, jacket water heater options

# **RATING DEFINITION AND CONDITIONS - PRIME POWER**

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Fuel rates are based on fuel oil of 35° API [16°C (60°F)] gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29°C (85°F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.).

Marine Auxiliary Engines are mainly used as generator set engines; however, they can be used for electrically driven pumps, winches, conveyors, thrusters, when it is specified. Engines can be radiator cooled or heat exchanger/keel cooled.





# **TECHNICAL DATA**

# **C7.1 Marine Generator Set**

# **PERFORMANCE DATA**

#### (EM5050- 50 Hz

	Brake Specific Fuel Consumption							
% Power	eKW	eKW bhp lb/bhp-hr bkW g/bkW-l						
100	100	146,1	0,679	109	230,4			
75	75	108,2	0,732	80,7	248,3			
50	50	72,0	0,755	53,7	255,9			
25	25	36,7	0,845	27,4	286,6			

#### (EM5051) - 50 Hz

	Brake Specific Fuel Consumption							
% Power	eKW	eKW bhp lb/bhp-hr bkW g/bkW-l						
100	118	172,9	0,674	129	228,6			
75	88,5	128,2	0,727	95,6	246,5			
50	59	85,0	0,743	63,4	251,8			
25	29,5	43,2	0,832	32,2	282			

#### (EM5052) - 50 Hz

	Brake Specific Fuel Consumption								
% Power	eKW	eKW bhp lb/bhp-hr bkW g/bkW-t							
100	150	218,5	0,644	163	218,5				
75	112,5	162,2	0,699	121	237,1				
50	75	107,5	0,706	80,2	239,3				
25	37,5	54,7	0,769	40,8	260,6				

#### Note:

Consult your local Cat dealer to create a customized engine TCO (Total Cost of Ownership) analysis specific to your vessel.

Dealers (only): Please reference TMI Web for most current information.

## **DIMENSIONS & WEIGHT**

	Length (1)	Height (2)	Width (3)	Engine dry weight
min.	2142 mm/84.3 in	1263 mm/49.7 in	965 mm/38.0 in	1652 kg/3634 lb
max.	2185mm/86.0 in	1263 mm/49.7 in	965 mm/38.0 in	1840 kg/4026 lb
NI-+				

Note:

Do not use these dimensions for installation design. See general dimension drawings for detail.

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To find your nearest dealer, please visit: www.cat.com/marine

#### (EM5053) - 60 Hz

	Brake S	Brake Specific Fuel Consumption						
% Power	eKW	eKW bhp lb/bhp-hr bkW g/bkW-hr						
100	118	171,6	0,693	128	234,9			
75	88,5	127,9	0,736	95,4	249,6			
50	59	85,1	0,774	63,5	262,6			
25	29,5	43,7	0,897	32,6	304			

#### (EM5054) - 60 Hz

	Brake Specific Fuel Consumption						
% Power	eKW	bhp	lb/bhp-hr	bkW	g/bkW-hr		
100	150	218,5	0,649	163	220,1		
75	112,5	162,2	0,683	121	231,6		
50	75	108,2	0,728	80,7	246,9		
25	37,5	55,5	0,816	41,4	276,6		

#### (EM5055) - 60 Hz

	Brake Specific Fuel Consumption						
% Power	eKW	bhp	lb/bhp-hr	bkW	g/bkW-hr		
100	175	253,4	0,648	189	219,7		
75	131,2	189,0	0,681	141	231		
50	87,5	125,6	0,725	93,7	245,7		
25	43,8	64,3	0,804	48	272,5		

### (EM5056- 60 Hz

	Brake Specific Fuel Consumption						
% Power	eKW	bhp	lb/bhp-hr	bkW	g/bkW-hr		
100	200	289,5	0,641	216	217,2		
75	150	215,8	0,671	161	227,5		
50	100	143,4	0,728	107	247		
25	50	73,5	0,820	54,8	278		