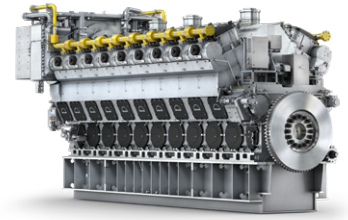


MAN 51/60DF



Performance data

	Cylinder	6L							
Cylinder variants	6L 12V 18V								
Operational setup		1							2
Frequency [Hz] - Speed [rpm]		50-500/60-514						50-500/60-514	
Alternator efficiency @PF1.0		98.10 %						98.10 %	
Output per cylinder [kW]		1050						1150	
Engine output [kWm]		6300						6900	
GenSet output [kWe]		6180						6769	
Liquid: Efficiency mech. (at 100 %)	SC min. MN 70-95, with CCV	48.2 %						45.7 %	
	CC min. MN 70-95, tropical with CCV	47.0 %						-	
Liquid: Efficiency electr. (at 100 %)	SC min. MN 70-95, with CCV	47.3 %						44.8 %	
	CC min. MN 70-95, tropical with CCV	46.1 %						-	
Gas: Efficiency mech. (at 100 %)	SC min. MN 70-95, with CCV	50.6 %						48.6 %	
	CC min. MN 70-95, tropical with CCV	49.5 %						-	
Gas: Efficiency electr. (at 100 %)	SC min. MN 70-95, with CCV	49.7 %						47.7 %	
	CC min. MN 70-95, tropical with CCV	48.5 %						-	
Load		100 %	75 %	50 %	25 %	100 %	75 %	50 %	25 %
Gas: Heat rate mech. [BTU/kWh]	SC min. MN 70-95, with CCV	6739	6929	7374	8511	7014	7042	7374	8701
	CC min. MN 70-95, tropical with CCV	6900	6995	7374	9080	-	-	-	-
Gas: Heat rate electr. [BTU/kWh]	SC min. MN 70-95, with CCV	6870	7063	7517	8676	7150	7179	7517	8869
	CC min. MN 70-95, tropical with CCV	7034	7130	7517	9256	-	-	-	-
Gas: Pilot fuel consumption [BTU/kWh]	SC	94.78	132.69	208.52	412.30	94.78	132.69	208.52	412.30

Load	Cylinder	6L							
		100 %	75 %	50 %	25 %	100 %	75 %	50 %	25 %
Cylinder variants	6L 12V 18V								
Liquid: SFOC mech. (total) [g/kWh]	SC min. MN 70-95, with CCV	175.0	176.0	178.0	196.0	184.5	183.5	184.5	208.5
	CC min. MN 70-95, tropical with CCV	179.5	182.0	187.5	206.0	-	-	-	-
Liquid: SFOC electr. (total) [g/kWh]	SC min. MN 70-95, with CCV	178.4	179.4	181.4	199.8	188.1	187.1	188.1	212.5
	CC min. MN 70-95, tropical with CCV	183.0	185.5	191.1	210.0	-	-	-	-
Liquid: Heat rate mech. [kJ/kWh]	SC min. MN 70-95, with CCV	7473	7515	7601	8369	7878	7835	7878	8903
	CC min. MN 70-95, tropical with CCV	7665	7771	8006	8796	-	-	-	-
Liquid: Heat rate electr. [kJ/kWh]	SC min. MN 70-95, with CCV	7617	7661	7748	8531	8031	7987	8031	9075
	CC min. MN 70-95, tropical with CCV	7813	7922	8161	8967	-	-	-	-
Gas: Heat rate mech. (total) [kJ/kWh]	SC min. MN 70-95, with CCV	7110	7310	7780	8980	7400	7430	7780	9180
	CC min. MN 70-95, tropical with CCV	7280	7380	7780	9580	-	-	-	-
Gas: Heat rate electr. (total) [kJ/kWh]	SC min. MN 70-95, with CCV	7248	7452	7931	9154	7543	7574	7931	9358
	CC min. MN 70-95, tropical with CCV	7421	7523	7931	9766	-	-	-	-
Gas: Pilot fuel consumption [kJ/kWh]	SC	100	140	220	435	100	140	220	435
		1.40 %	1.91 %	2.82 %	4.83 %	1.35 %	1.88 %	2.82 %	4.73 %
Specific lube oil consumption [g/kWh]		0.38	0.51	0.76	1.52	0.35	0.46	0.70	1.39
Minimum lower heat value (gas) [kJ/Nm³]		28000							
Minimum methan number without derating		70							
Fuel oil types		HFO; MGO (DMA, DMZ); MDO(DMB)							
Engine-internal emission control limit		Gas: 400 mg/Nm³ NO _x @15 % O ₂ , dry, @100 % load; Liquid: 2000 mg/Nm³ NO _x @15 % O ₂ , dry, @100 % load							
Continuous low load (liquid/gas) [%]		20/10							
	Cylinder	12V							
Cylinder variants	6L 12V 18V								
Operational setup		1				2			
Frequency [Hz] - Speed [rpm]		50-500/60-514				50-500/60-514			
Alternator efficiency @PF1.0		98.50 %				98.50 %			
Output per cylinder [kW]		1050				1150			
Engine output [kWm]		12600				13800			
GenSet output [kWe]		12411				13593			

	Cylinder	12V							
Liquid: Efficiency mech. (at 100%)	SC min. MN 70-95, with CCV	48.2 %				45.9 %			
	CC min. MN 70-95, tropical with CCV	47.2 %				-			
Liquid: Efficiency electr. (at 100%)	SC min. MN 70-95, with CCV	47.5 %				45.3 %			
	CC min. MN 70-95, tropical with CCV	46.5 %				-			
Gas: Efficiency mech.(at 100%)	SC min. MN 70-95, with CCV	51.1 %				49.7 %			
	CC min. MN 70-95, tropical with CCV	49.8 %				-			
Gas: Efficiency electr. (at 100%)	SC min. MN 70-95, with CCV	50.3 %				48.4 %			
	CC min. MN 70-95, tropical with CCV	49.0 %				-			
Load		100 %	75 %	50 %	25 %	100 %	75 %	50 %	25 %
Gas: Heat rate mech. [BTU/kWh]	SC min. MN 70-95, with CCV	6682	6947	7611	8985	6947	7042	7374	8701
	CC min. MN 70-95, tropical with CCV	6853	6995	7374	9080	-	-	-	-
Gas: Heat rate electr. [BTU/kWh]	SC min. MN 70-95, with CCV	6784	7053	7727	9122	7053	7150	7486	8833
	CC min. MN 70-95, tropical with CCV	6957	7101	7486	9218	-	-	-	-
Gas: Pilot fuel consumption [BTU/kWh]	SC	95	133	209	412	95	133	209	412
Liquid: SFOC mech. (total) [g/kWh]	SC min. MN 70-95, with CCV	175.0	176.0	178.0	196.0	183.5	183.5	184.5	208.5
	CC min. MN 70-95, tropical with CCV	178.5	182.0	187.5	206.0	-	-	-	-
Liquid: SFOC electr. (total) [g/kWh]	SC min. MN 70-95, with CCV	177.7	178.7	180.7	199.0	186.3	186.3	187.3	211.7
	CC min. MN 70-95, tropical with CCV	181.2	184.8	190.4	209.1	-	-	-	-
Liquid: Heat rate mech. [kJ/kWh]	SC min. MN 70-95, with CCV	7473	7515	7601	8369	7835	7835	7878	8903
	CC min. MN 70-95, tropical with CCV	7622	7771	8006	8796	-	-	-	-
Liquid: Heat rate electr. [kJ/kWh]	SC min. MN 70-95, with CCV	7586	7630	7716	8497	7955	7955	7998	9039
	CC min. MN 70-95, tropical with CCV	7738	7890	8128	8930	-	-	-	-
Gas: Heat rate mech. (total) [kJ/kWh]	SC min. MN 70-95, with CCV	7050	7330	8030	9480	7330	7430	7780	9180
	CC min. MN 70-95, tropical with CCV	7230	7380	7780	9580	-	-	-	-
Gas: Heat rate electr. (total) [kJ/kWh]	SC min. MN 70-95, with CCV	7157	7442	8152	9624	7442	7543	7898	9320
	CC min. MN 70-95, tropical with CCV	7340	7492	7898	9726	-	-	-	-
Gas: Pilot fuel consumption [kJ/kWh]	SC	100	140	220	435	100	140	220	435
		1.40 %	1.89 %	2.73 %	4.58 %	1.38 %	1.88 %	2.82 %	4.73 %
Specific lube oil consumption [g/kWh]		0.38	0.51	0.76	1.52	0.35	0.46	0.70	1.39

	Cylinder	12V
Minimum lower heat value (gas) [kJ/Nm³]		28000
Minimum methan number without derating		70
Fuel oil types		HFO; MGO (DMA, DMZ); MDO(DMB)
Engine-internal emission control limit		Gas: 400 mg/Nm ³ NO _x @15 % O ₂ , dry, @100 % load; Liquid: 2000 mg/Nm ³ NO _x @15 % O ₂ , dry, @100 % load
Continuous low load (liquid/gas) [%]		20/10

	Cylinder	18V	
Cylinder variants	6L 12V 18V		
Operational setup		1	2
Frequency [Hz] - Speed [rpm]		50-500/60-514	50-500/60-514
Alternator efficiency @PF1.0		98.70 %	98.70 %
Output per cylinder [kW]		1050	1150
Engine output [kWm]		18900	20700
GenSet output [kWe]		18654	20431
Liquid: Efficiency mech. (at 100 %)	SC min. MN 70-95, with CCV	48.2 %	45.9 %
	CC min. MN 70-95, tropical with CCV	47.2 %	-
Liquid: Efficiency electr. (at 100 %)	SC min. MN 70-95, with CCV	47.6 %	45.3 %
	CC min. MN 70-95, tropical with CCV	46.6 %	-
Gas: Efficiency mech. (at 100 %)	SC min. MN 70-95, with CCV	51.1 %	49.1 %
	CC min. MN 70-95, tropical with CCV	49.8 %	-
Gas: Efficiency electr. (at 100 %)	SC min. MN 70-95, with CCV	50.4 %	48.5 %
	CC min. MN 70-95, tropical with CCV	49.1 %	-

Load		100 %	75 %	50 %	25 %	100 %	75 %	50 %	25 %
Gas: Heat rate mech. [BTU/kWh]	SC min. MN 70-95, with CCV	6682	6947	7611	8985	6947	7042	7374	8701
	CC min. MN 70-95, tropical with CCV	6853	6995	7374	9080	-	-	-	-
Gas: Heat rate electr. [BTU/kWh]	SC min. MN 70-95, with CCV	6770	7039	7711	9104	7039	7135	7471	8816
	CC min. MN 70-95, tropical with CCV	6943	7087	7471	9200	-	-	-	-
Gas: Pilot fuel consumption [BTU/kWh]	SC	94.78	132.69	208.52	412.30	94.78	132.69	208.52	412.30

Load	Cylinder	18V							
		100 %	75 %	50 %	25 %	100 %	75 %	50 %	25 %
Liquid: SFOC mech. (total) [g/kWh]	SC min. MN 70-95, with CCV	175.0	176.0	178.0	196.0	183.5	183.5	184.5	208.5
	CC min. MN 70-95, tropical with CCV	178.5	182.0	187.5	206.0	-	-	-	-
Liquid: SFOC electr. (total) [g/kWh]	SC min. MN 70-95, with CCV	177.3	178.3	180.3	198.6	185.9	185.9	186.9	211.2
	CC min. MN 70-95, tropical with CCV	180.9	184.4	190.0	208.7	-	-	-	-
Liquid: Heat rate mech. [kJ/kWh]	SC min. MN 70-95, with CCV	7473	7515	7601	8369	7835	7835	7878	8903
	CC min. MN 70-95, tropical with CCV	7622	7771	8006	8796	-	-	-	-
Liquid: Heat rate electr. [kJ/kWh]	SC min. MN 70-95, with CCV	7571	7614	7701	8479	7939	7939	7982	9020
	CC min. MN 70-95, tropical with CCV	7722	7874	8112	8912	-	-	-	-
Gas: Heat rate mech. (total) [kJ/kWh]	SC min. MN 70-95, with CCV	7050	7330	8030	9480	7330	7430	7780	9180
	CC min. MN 70-95, tropical with CCV	7230	7380	7780	9580	-	-	-	-
Gas: Heat rate electr. (total) [kJ/kWh]	SC min. MN 70-95, with CCV	7143	7427	8136	9605	7427	7528	7882	9301
	CC min. MN 70-95, tropical with CCV	7325	7477	7882	9706	-	-	-	-
Gas: Pilot fuel consumption [kJ/kWh]	SC	100	140	220	435	100	140	220	435
		1.40%	220.00%	2.73%	4.58%	1.36%	1.88%	2.82%	4.73%
Specific lube oil consumption [g/kWh]		0.38	0.51	0.76	1.52	0.35	0.46	0.70	1.39
Minimum lower heat value (gas) [kJ/Nm³]		28000							
Minimum methan number without derating		70							
Fuel oil types		HFO; MGO (DMA, DMZ); MDO(DMB)							
Engine-internal emission control limit		Gas: 400 mg/Nm³ NO _x @15 % O ₂ , dry, @100 % load; Liquid: 2000 mg/Nm³ NO _x @15 % O ₂ , dry, @100 % load							
Continuous low load (liquid/gas) [%]		20/ 10							

Dimensions

	Cylinder	6L		12V		18V	
Engine width	[inch]	124	124	192	192	192	192
Engine height	[inch]	229	229	254	254	254	254
Engine length	[inch]	333	333	393	399	531	531
GenSet length ¹	[inch]	510	510	603	609	744	744
Engine weight	[US t]	136	136	185	185	348	348
Engine transport weight	[US t]	n/a	n/a	241	241	347	347
GenSet dry mass ¹	[US t]	189	189	324	328	459	459
Engine width	[mm]	3156	3156	4884	4884	4884	4884
Engine height	[mm]	5807	5807	6450	6450	6450	6450
Engine length	[mm]	8464	8464	9970	10134	13489	13489
GenSet length ¹	[mm]	12957	12957	15311	15475	18899	18899
Engine weight	[t]	123	123	168	168	316	316
Engine transport weight	[t]	n/a	n/a	219	219	315	315
GenSet dry mass ¹	[t]	171.6	171.6	293.8	297.6	416.8	416.8

Dynamics

	Cylinder	6L							
Start request to full load** [sec.]	liquid/gas	41/61							
Engine load ramping down* [sec.]		10							
Load steps (SC) (with jet assist; liquid mode)	Engine base load [%]	20	40	60	80	20	40	60	80
	Load application [%]	33	33	33	20	33	33	33	20
	Cylinder	12V							
Start request to full load** [sec.]	liquid/gas	85/100							
Engine load ramping down* [sec.]		10							
Load steps (SC) (with jet assist; liquid mode)	Engine base load [%]	20	40	60	80	20	40	60	80
	Load application [%]	22	22	22	20	22	22	22	20
	Cylinder	18V							
Start request to full load** [sec.]	liquid/gas	85/100							
Engine load ramping down* [sec.]		10							
Load steps (SC) (with jet assist; liquid mode)	Engine base load [%]	20	40	60	80	20	40	60	80
	Load application [%]	22	22	22	20	22	22	22	20

* Afterwards engine operation at idling speed for a minimum of 1 min required before final engine stop

** With jet assist, hot and stand-by

Data updated December 2021

Disclaimer: All data provided in this document is non-binding. This data serves informational purposes only and is especially not guaranteed in any way. Depending on the subsequent specific individual projects, the relevant data may be subject to changes and will be assessed and determined individually for each project. This will depend on the particular characteristics of each individual project, especially specific site and operational conditions.