V20 TE2

670 kW (1500 rpm) - 740 kW (1800 rpm)

1/ GENERAL		1500 rpm	1800 rpm
Engine type		V20 TE2	
Basic engine type		FVAE2885X*A100 - 504094915 XY	
Number cylinder		8	
Firing order (N°1 nearest to fan)		1-3-7-2-6-5-4-8	
Cylinder arrangement		V form 90°	
Valves per cylinder		4	
Cycle		diesel 4 stroke	
Injection system		direct common rail	
Electronic engine control unit		CAT ADEM III	
Induction System		Turbo aftercooler air/air	
Bore	mm	145	
Stroke	mm	152	
Total displacement	liter	20,08	
Mean piston speed	m/s	7,6	9,12
Compression ration		16,01	
Flywheel rotation		anti clockwise viewed on flywhell	
Housing flywheel		SAE 0	
Flywheel		18"	
Moment of inertia			
without flywheel	Nm^2	1,41	
flywheel only	Nm^2	4,46	
BMEP			
Prime Power	bar/kPa	25,0 / 2500,5	23,3 / 2325,3
Stand-by Power	bar/kPa	27,5 / 2750,5	25,6 / 2557,8
Dry weight (including cooling package)	kg	~ 2118	
Energy to coolant	kcal/kWh	325	318
Energy to charge cooler	kcal/kWh	171	188
Energy to radiation	kcal/kWh	38	43
Dimensions L x W x H	mm	2359 x 1563 x 2079	

2/ PERFORMANCES			1500 rpm	1800 rpm
Continuous Power	(gross)	kWm	507	565
Prime Power	(gross)	kWm	629	702
Stand-By Power	(gross)	kWm	690	770
Fan consumption		kWm	20	30
Continuous Power	(net)	kWm	487	535
Prime Power	(net)	kWm	609	672
Stand-By Power	(net)	kWm	670	740
Performance conditions				
temperature		°C	≤ 40	
altitude asl		m	≤ 1000	

FPT POWERTRAIN TECHNOLOGIES

3/ COOLING PACKAGE		1500 rpm	1800 rpm
Type		liquid	
Recommanded coolant		water + 50% paraflu 11	
Coolant capacity			
engine only	liter	35	
radiator and hoses	liter	62	
Coolant pump flow	l/min	600	800
Pression cap setting	kPa (bar)	70 (0,7)	
Shutdown switch setting	°C	105	
Maximal additional restriction	Pa	250	
Air To Boil Prime Power	°C	54	50
Fan			
diameter	mm	1050	
number of pale		12	
drive ratio		1 : 1	
speed	rpm	1500	1800
air flow	m^3/s	12,36	15,27
power consumption	kWm	20	30

4/ LUBRICATION		1500 rpm	1800 rpm
Oil sump capacity			
max	liter	80	
min	liter	21	
Oil system capacity including filters	liter	85	
Oil pressure at rated speed	kPa	300-500	
Oil temperature			
normale	°C	89	
max	°C	120	
Engine angularity			
longitudinale	degrees	0°	
trasverse	degrees	0°	
Servicing intervall	hours	1000	
Oil specification		ACEA E3/ E5	
Oil consumption	%fuel	< 0,1	

5/ INTAKE SYSTEM		1500 rpm	1800 rpm
Air consumption at 100 % of load	m^3/h (kg/h)	2492 (3000)	2696 (3246)
Air intake restriction clean filter	kPa (mbar)	2(20)	
Air intake restriction dirty filter	kPa (mbar)	5 (50)	
Air filter type		dry	

6/ EXHAUST SYSTEM		1500 rpm	1800 rpm
Gas flow at stand by power	kg/h	3132	3399
Max temperature at PRP (25°C)	°C	560	550
Max allowable back pressure	kPa (mbar)	8 (80)	
Exhaust gas temperature	kcal/kWh	623	618

7/ FUEL SYSTEM		1500 giri	1800 giri
Fuel consumption at			
Stand-By	gr/kWh (l/h) [kg/h]	197,6 (158,5) [132,4]	208,9 (187,6) [156,6]
full load	gr/kWh (l/h) [kg/h]	198,1 (144,5) [120,7]	212,7 (174,2) [145,0]
80%	gr/kWh (l/h) [kg/h]	199,7 (116,6) [97,3]	214,2 (139,8) [116,7]
50%	gr/kWh (l/h) [kg/h]	211,6 (77,3) [64,5]	228,1 (93,1) [77,8]
Fuel specifications		EN 590	
Feed pump max suction head	m	-	

8/ ELECTRIC SYSTEM		1500 rpm	1800 rpm
Voltage (negative to ground)	V	24	
Starter motor			
make		DENSO	
power	kW	8,5	
pull current	Amp		
hold current	Amp		
break away current	Amp		
cranking current	Amp		
Number of teeth on starter motor		14	
Number of teeth on flywheel		172	
Starting batteries			
recommended capacity	Ah 2 x	220	
discharge current	Amp	1200	
(EN 50342)			
Alternator			
voltage	V	28	
charge	Amp	90	

9/ COLD STARTING		1500 rpm	1800 rpm
Without air preheating	°C	-10	
With air preheating	°C	-25	

10/ EMISSION GASEOUS PARTICLES			1500 rpm		1800 rpm	
			Prime	Stand-by	Prime	Stand-by
No_x	Oxyde of nitrogen	gr/kWh	9,15	9,05	-	-
HC	Hydrocarbons	gr/kWh	0,113	0,12	-	-
No_x+HC		gr/kWh	9,26	9,17	-	6,2
CO	Carbon monoxide	gr/kWh	0,27	0,35	-	0,7
PT	Particles	gr/kWh	0,01	0,01	-	0,19

11 / DERATING

Ambient temperature [°C]	1500 rpm				1800 rpm		
	Continous	Prime	Stand-by		Continous	Prime	Stand-by
50	0,91	0,92	0,84		0,81	0,81	0,88
45	0,96	0,96	0,91		0,84	0,87	0,92
40	1	1	0,95		0,89	0,94	0,95
35	1	1	0,99		0,93	0,96	0,98
30	1	1	1		0,98	1	0,99
25	1	1	1		1	1	1
20	1	1	1		1	1	1
Altitude [m]	Continous	Prime	Stand-by		Continous	Prime	Stand-by
400	1	1	1		1	1	1
600	1	1	1		1	1	1
800	1	1	1		1	1	0,98
1000	1	1	1		1	1	0,96
1200	1	1	0,98		1	1	0,94
1400	1	1	0,96		1	1	0,92
1600	1	1	0,94		1	0,98	0,91
1800	1	1	0,92		1	0,96	0,89
2000	1	1	0,91		1	0,94	0,87
2200	0,99	0,98	0,89		0,99	0,92	0,85
2400	0,98	0,96	0,87		0,98	0,9	0,93
2600	0,97	0,93	0,85		0,97	0,88	0,82
2800	0,96	0,91	0,83		0,96	0,86	0,8
3000	0,95	0,89	0,81		0,95	0,84	0,78