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A) 2 units WARTSILA 18V220 SG power 3.2 Mw engines rebuild in 2011 and 2010.with 6200 hours and 3.100hours .:

1 unit 18v220 sg alternator Leroy Somer voltage 6.300v engine rebuild in 2011 ( new crankshaft) accessories CHP ; boiler smoke , transformer step up6.3kv/20 kv; radiator dry cooler, silencer, box panel order .

Ask price

1 unit 18V220 SG alternator Leroy Somer 6.3 KV engine rebuild in 2010 (accessories CHP , transformer step up 6.3kv /20 KV radiator dry cooler , silencer , box panel order .

Ask price

B) 3 units WARTSILA 12V220 SG power 2.1 Mw overhauled at 32.000hours 10.000hours since overhauled .

alternator Leroy somer . 400 voltes include the accessories (12V220 transformer step up 20 kv, boiler , silencer; box panel order/ radiator.

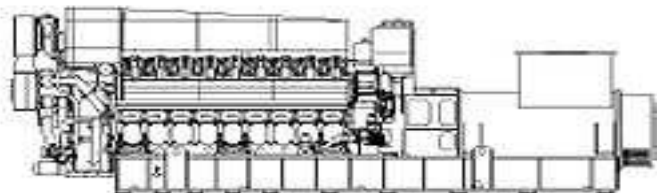
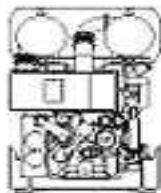
Ask price

C) 3 units Wartsila 12V220 SG power 2.1 Mw overhauled at 32.000 hours 11.000 hours since overhauled .

Each Gen set 12v220 alternator Leroy Somer 400v include the accessories ( transformer step up 20 kv, silencer primary, box panel order, radiator dry cooler,



**18V220**





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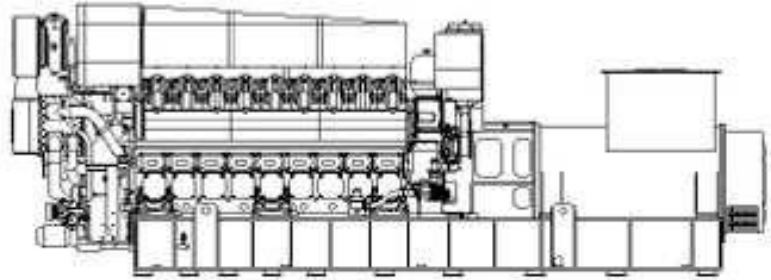
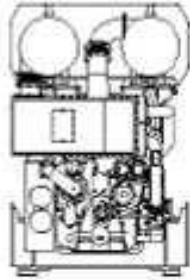
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**18V220**



**TECHNICAL DATA**

Version		HE	LN
<b>Electric power</b>	1) kWe	<b>2800</b>	<b>2800</b>
<b>Heat Rate</b>	BTU/kWh	<b>8018</b>	<b>8611</b>
a. Hot water cogen 195/122	kWh	2502	2661
	mmBtu/t	8.54	9.08
Total efficiency		81%	77%
b. Steam generation 130 psig			
sat. at cond 140 °F	kib/h	4.3	4.7
	mmBtu/t	4.47	4.89
Total efficiency		62%	60%

**GENERAL ENGINE DATA**

Bore	inch	8.7
Stroke	inch	9.5
Cylinder configuration	Vee	18.0
Cylinder displacement	liter	9.1
Rated speed	rpm	1200.0
Mean effective pressure	psig	256.0
Genset length	feet	25.2
Genset width	feet	6.0
Genset height	feet	9.0
Genset weight	ton	39.9
Max. altitude before dera	ft. ASL	4921
Max. suction air tempera	°F	86



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<b>Heat balance</b>		HE	LN
Fuel input (LHV)	2) nmBTU/h	22.45	24.11
Mechanical	kWm	2883	2883
HT cooling circuit	3) nmBTU/h	2.82	2.83
LO cooling circuit	3) nmBTU/h	1.06	1.13
LT cooling circuit	3) nmBTU/h	1.06	1.18
Recoverable exhaust	3) nmBTU/h	4.66	5.12
Unrecovered exhaust	3) nmBTU/h	2.53	3.53
Engine + alternator radiator	nmBTU/h	0.77	0.76
<b>Electrical efficiency</b>			
100% load		42.6%	39.6%
75% load		40.6%	37.4%
50% load		37.9%	34.5%
<b>Emissions (at 15% O2 vol. dry)</b>			
NOx (as NO2) max.	ppm-v	92	46
	11) g/kWhe	1.4	0.7
CO max. (untreated)	ppm-v	297	445
	11) g/kWhe	3.8	6.2
VOC	4) ppm-v	42	75
	11) g/kWhe	0.4	0.7
<b>Cooling circuit</b>			
HT water inlet temper.	5) °F	197	197
HT water outlet temperatu	°F	212	212
HT water flow	3) 12) gpm	376	377
LO inlet temperature	°F	167	167
LO outlet temperature	5) °F	185	186
LO flow	12) gpm	301	301
LT water inlet temperature	°F	104	104
LT water outlet tempe	5) °F	109	110
LT water flow	3) 12) gpm	424	393
<b>Air intake / exhaust gas</b>			
Air intake flow	3) lb/h	41,400	43,500
Exhaust gas flow	6) lb/h	42,700	44,800
Exhaust gas temperat	7) °F	671	689
Maximum exhaust back p	inch wg	20	20
<b>Miscellaneous</b>			
Min gas pressure to	9) psig	51	51
Lubricating oil consumptio	g/kWhe	0.5	0.5
	10) lb/h	3.1	3.1

Service conditions COP according to ISO 8528/1 and reference conditions according to ISO 3046/1:

HE: High efficient engine; LN: Low NOx engine

Methane number: HE engine > 80, LN engine > 72.

COP : continuous service without limitation time between the stated maintenance intervals - no overload allowed.

- 1) COP Generator terminals at p.f. = 0.85
- 2) Fuel is Natural gas. According to tolerance of +5%.
- 3) Tolerance ±10%.
- 4) Indicative value, the NMHC-emissions are highly dependent on gas composition and should be calculated case by case.
- 5) Tolerance ±15%.
- 6) Tolerance ±5%.
- 7) Tolerance ±10°C.
- 8) Delivered inlet flange Gas Regulating Unit (GRU)
- 9) Natural gas LHV 980 BTU/scf LHV
- 10) For information, with lubricating oil specific gravity = 0.830.
- 11) Conversion to g/bhp-hr: multiply given data by 0.72.
- 12) Flow rate is rated at maximum pump capacity, and includes internal recirculation.

#### Derating

If service conditions differ from the reference conditions, the engine may be derated.

Engineering data subject to change without prior notice and are not contract values.