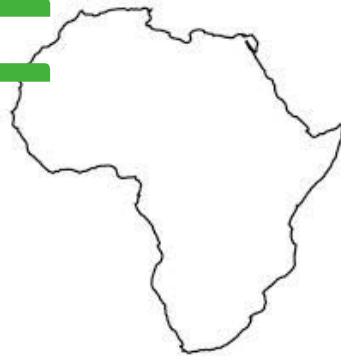
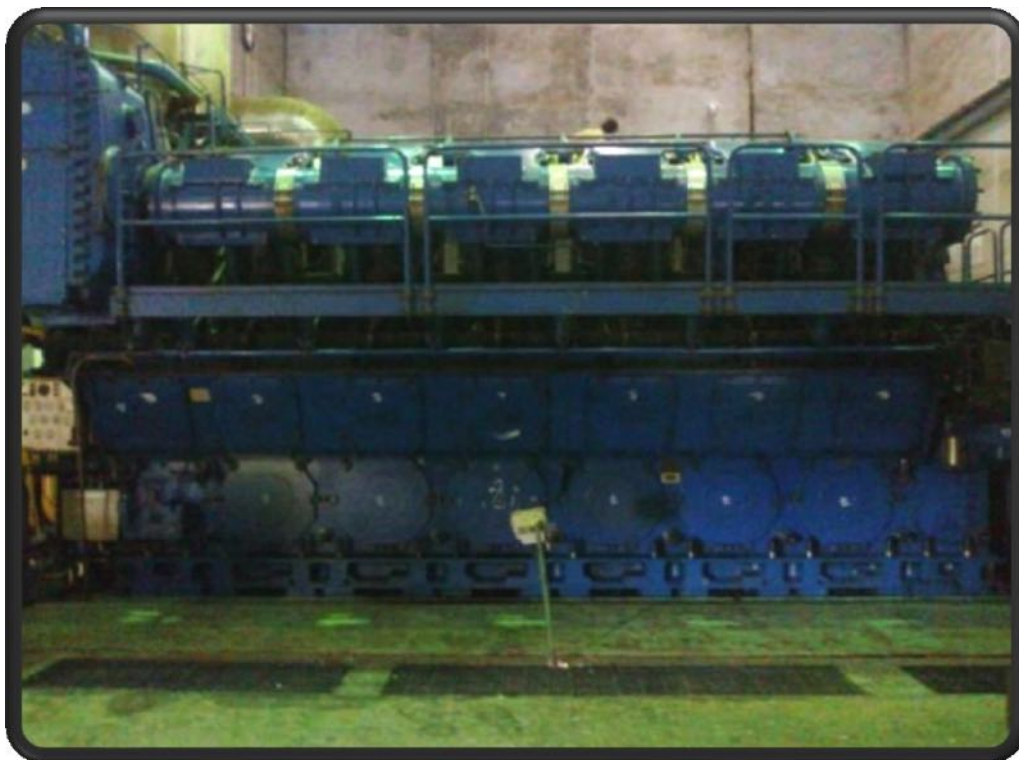


USP&E



37MW HFO MAN B&W 12V48/60 Power Plant



Technical Description

No.	Specification	Engine 1	Engine 2	Engine 3
Engine Details				
1	Make	MAN B&W Diesel Augsberg, Germany	MAN B&W Diesel Augsberg, Germany	MAN B&W Diesel Augsberg, Germany
2	Capacity	12,350kW	12,350kW	12,350kW
3	Year of Manufacture	1999	1999	1999
4	Speed	500RPM	500RPM	500RPM
5	Type	12V48/60	12V48/60	12V48/60
6	No. of Cylinder	12	12	12
7	Cylinder Bore Diameter	480mm	480mm	480mm
8	Cylinder Stroke Length	60	60	60
9	Operating Fuel	HFO	HFO	HFO
10	HFO Consumption	225g/kWh	225g/kWh	225g/kWh
11	Lube Oil Consumption	0.7g/kWh	0.7g/kWh	0.7g/kWh
Alternator Details				
1	Make	Siemens	Siemens	Siemens
2	Type	IDK 5143-3BE06-Z	IDK 5143-3BE06-Z	IDK 5143-3BE06-Z
3	Year of Manufacture	1998	1998	1998
4	Capacity	15,340KVA	15,340KVA	15,340KVA
5	Voltage	11,000V	11,000V	11,000V
6	Current	805A	805A	805A
7	Speed	500RPM	500RPM	500RPM
8	Duty Type	S1	S1	S1
9	Power Factor	0.8	0.8	0.8
10	Insulation Class	F	F	F
11	Enclosure	IP 21	IP 21	IP 21
12	Cooling	IC 01	IC 01	IC 01
13	Excitation – V	73V	73V	73V
14	Excitation – A	8.5A	8.5A	8.5A
Operating History				
1	Engine Running Hours	35,432	35,914	35,222
2	Hours at latest overhauling	27,150	27,150	27,150
3	Run Hours after last overhaul	8,282	8,764	8,072

Equipment Details and Scope

Equipment Details	Motor Details
Engines	Alternators
Make: MAN B&W Diesel Augsburg, Germany Engine No. 1, 2 and 3 Type: 12V48/60 Power: 12,350 each Pme: 22.7 RPM: 500 Year: 1999	Make: Siemens Type: 1DK 5143-3BE 06-Z-1998 3NGEN No.: D98 603 015 03 11,000V; 805A; 15,340kVA; 0.8P.F.; 500RPM Duty Type: S1 Self-Excitation. 73V, 8.5A Th.CL.F
Lube Oil Pump	Motor
Make: Leistritz Flow: 315m ³ /hr Max Pressure: 10bar Type: LSNT-125/184 IF0GA-0	Make: DUTCHI R.C.E M. No. 141481001 Type: DMI 515 S4 3Ph, 415V, 50Hz, 184A, 1485RPM, 110kW
Cylinder Cooling Water Pump	Motor
Make: Iron Pump Flow: 150m ³ /hr Type: QV 10/300 Head: 44MWC	Make M. No.: 4852903 Type: 16BA-0223-4AA61-Z 225M A. Synchro Motor, 3Ph, 415V, 50Hz, 78.5A 1475RPM, 45/60 kW/HP
Charge Air Cooling Water Pump	Motor
Make: Iron Pump Type: CNLB 150-150/315 Pump No. CNL 2948/1 Q: 170m ³ /hr, H: 26M, N: 1470RPM, P: 17kW	Make: C.E M No. 92055196, Type: VGI 801 LO4 A. Synchro motor, 3Ph, 415V, 50Hz, 39A, 1460RPM, 22kW
Nozzle Cooling Water Module	Motor
Make: Grundfos Type: CH 8-50A-CVBE Model: B4N 508025 P 29908 U. 3X220-240/380/415V P. 1710Watts, Q. 8M ³ /HR, H. 32M	Type CH-8-50A-A-CVBE Model B4N 508025 P 29908 V. 3x220-240/380-415V I1/1,5.8/3.4A, 50Hz
Lube Oil Coolers	
Make: Alfa Laval, Type: M15-MFM8 Manufacture No. 30102-38617 Year 1999, Volume 602.5 Lts Test Pressure: 15bar Max Working Pressure: 10bar Max Working Temp: 100°C Area – A. 1077mm No. of Plates 242 Gasket/plate Spec: 316/0.5/NIT/CLIP-ON	Motor not used.
HT Water Cooler	
Make: Alfa Laval, Type: M15-MFM8 Manufacture No. 30102-38620 Year: 1999, Volume 142.5 Lts Test Pressure: 7.5bar Max Working Pressure: 5.0bar Max Working Temp: 100°C Area – A. 1077mm No. of Plates 242 Gasket/plate Spec: 316/0.5/NIT/CLIP-ON	Motor not used.

Equipment Details	Motor Details
LT Water Cooler	
Make: Alfa Laval, Type: M10-BFM Manufacture No. 3 Year: 1999, Volume 74.6 Lts Test Pressure: 7.5bar Max Working Pressure: 5.0bar Max Working Temp: 100°C Area – A. 348mm No. of Plates 114 Gasket/plate Spec: 316/0.5/NIT/CLIP-ON	Motor not used.
FO Booster Module Pump and Viscosity Pump	Motor
Make: LEISTRZ Machine No. 87700002 Type: L3NG-45/17 A POU1-Z Make SCHERZINGER, Type: EVM-2 FAB No. 994373NUTZWHAL/LTR-1 Max. Pressure: 16bar Max. Temp: 200°C	1. Make: ROTOR-C,E M. No.: 9052173 A. Synchro motor: 4AP 901-4 Type: M310 TROP C 411 3Ph, 240/415V, 50Hz, 1420RPM, 6.3/3.6A, 1.5kW 2. Make: EG7150-1 AY-RL M. No.: 06/98-53834053 230V, 50/60Hz, 0.45A, 34Watts, 1300/1400RPM
Starting Air Compressor	Motor
Make: INGERSOLL RAND Size: 5.5 & 3 & 1-5 / 8X4 Model No. 15T2	Make: SIEMENS M. No.: N8/405705, Frame: 160m 3Ph, 50Hz, 415V, 21A, 1445RPM, 11kW Delta Connection
Working Air Compressor	Motor
Make: INGERSOLL RAND Model No. 15T Sr. 7061484	
Condensate Water Pump	Motor
Make: K.S.B Vertical Pump Type: NG3/8-1B Sr. 930760735 Q. 3m ³ /hr; H. 48.5m; N. 2180RPM; Year. 1999	Make. NGEF, M. No.: 69000137 Type: AMW90SFZ2, 3Ph, 50Hz, 415V, 3.2A 2180RPM, 1.5/2.0 kW/HP Star Connection
Cooling Water Collecting Tank Pump	Motor
Make: K.S.B Vertical Pump Type: NG5/8-1R Sr. 930700733 Q. 5m ³ /hr; H. 54m; N. 2800RPM; Year. 1999	Make. NGEF, M. No.: 69035401 Type: AMW71NF2, 3Ph, 50Hz, 415V, 1.45A 2725RPM, 0.55/0.75 kW/HP Star Connection
HFO Leak Oil Pump	Motor
Make: RICKMEIER R25/16 FL-Z-DB, 3515996-6, 501930/1, Year. 5/99	Make: BOCKWOLILT. Sr. No.: 10293256, Type: CBSF 350-90L/D 1.1kW, 415V, 3.4A, 0.78A
Leak Lube Tank	
Make: DEL ENGG Pvt Ltd Size: ½ Inch *1/2 Inch BS 10 Table H. Modal. RDN J-050-SML Capacity: 0.6/1.0/1.5 M/hr Speed: 1440 RPM, Sr. No. P.995437	Make: C&G Motor No. BEA1F4, 0.75/1 kW/HP, Class: F 415V, 50Hz, 2.1A, 1400RPM
Lube Oil Separator	Motor

Equipment Details	Motor Details
Make: Alfa Laval Type: LOPX709SED34 Product No. 881243-02.03	Make: ABB M. No.: 993052 3Ph, 50Hz, 415V, 21.5A, 1140RPM, 11kW
Lube Oil Feed Pump	Motor
Type: ACP038 N1 NVBP Sr. No. 415083, 479095, 479023 Alfa Laval-1762164-01, IMO AB	Make: CE, M. No.: 7024732 Type: 14A24A0901 3Ph, 50Hz, 415V, 3.2A, 1110RPM, 11kW
Lube Oil Auto Filter Pump	Motor
	Make: CE-BROOK-HANSEN, M. No.: 356277/024 Type: GCFC 4C 250-11 DA63SF-H, Ind Motor 3Ph, 50Hz, 415V, 2.4A, 1420RPM, 0.9kW
Turning Gear Motor	Motor
Make: ABGA112 MB-04M Sr. No. 2159784 1430RPM	Make: LOHER Type: ABGA-112MB-04M, 3Ph, 50Hz, 415V, 8.6A, 1430RPM, 4.0kW
Alternator Bearing Oil Pump	Motor
Make: LINM-PUMPEN Type: FLM310 15.99 Q. 7.4l/M IN, 1450RPM	Make: SIEMENS Type: EN60034 1LA 7073-4AA10 32142 6001, 3Ph, 50Hz, 230/415V, 1.78/1.03A, 1400RPM, 0.37kW
Cylinder Lubrication Pump	Motor
	Make: CE-VEM MOTORS GMBH, M. No.: 159167872H, IMV18090 Type: K2IR71C8-4RWE/3315F, I, 3Ph, 415V, 50Hz 0.090mps, 1420RPM, 0.15kW
Valve Seat Lubrication Pump	Motor
	Make: CE, Type & M. No.: DOMA63S*4-S183-1 DT01/99, 3Ph, 380/415V, 50Hz, 0.69A, 1500RPM, 0.18kW
11kV Gen. Circuit Breaker	
Make: Siemens, Design Code: 1G Type: 3AH 116-2, MOY: 1999 No.S: 3AH/00006676, IR: 1250A, UR: 12kV, 50/60Hz, TK: 35, ISE: 40.0K M: 125kG, UP: 28.0kV, Rated operated security 0-3min-co-3min-co	Quantity x3
Mains Feeder Circuit Breaker	Quantity x1
S.S.T Circuit Breaker	Quantity x1
Low Voltage Circuit Breaker	Quantity x1
Ventilation Fan (Quantity x6)	Motor
	Make: ABB, Type: HX180ML B6 Squirrel Cage, IM, 3Ph, 50Hz, 415V, 29.0A, 950RPM, 15/20 kW/HP, Delta Connection, IP-55, Duty-S1, Insulation class "F", A.T 40°C, N89%, Duty-S1
Exhaust Fan (Quantity x4)	Motor
	Make: ABB, Type: HX132SM B4 Squirrel Cage, IM, 3Ph, 50Hz, 415V, 11.2A, 1440RPM, 5.5/7.5 kW/HP, Delta Connection, IP-55, Duty-S1,

Equipment Details	Motor Details
HFO Auto Filter (Quantity x1)	Insulation class "F", A.T 45°C, N89%, Duty-S1
Make: BOLL & KIRCH Filter bou gmbh Type: 6.61GR 10 FAB: 3685545/04/1999, F.34 Microns Working Pressure: 10bar Temp: 100°C	Motor 1. Make: C E – BROOK-HANSEN, M No. 361164/080, P220896 Type: GCFC 4C250-11-DA63SF-H Induction Motor 0.09kW ARTNO: MO 6210, IP-55, 3Ph, 50Hz, 0.54-0.59/0.31-0.34A 220-240Δ/380-420Y Volts 1390/5061RPM, Cosθ 0.66
Pre-Heater Pump (Quantity x1)	Motor
Type: LF 65-125/128A-F-BUEE Model: C48060032-P1-9913 Q. 37m ³ /hr, H. 18m, Speed 2900 P/T-10/140-16/100 bar/C Max Made in Germany	1. Make: C G, M No. 85815810/9907 Type: MG100L B2, 2SFT 130°C, 3kW, IP-55, 3Ph, 50Hz, 380-415V Δ Connection, I1/6.25A, η 86%, IM 6.85, 2880/2910RPM, Cosθ 0.88-0.82
Raw Water to DM Plant	Motor
K.S.B Water Pump, Type: MEGA-GB 40/250 Sr. No. 990700670 Speed 1440RPM P. 3.7kW, H. 21m, Cap. 20m ³ /hr	1. Make: NGEF, M. No. 691053054 & 691053062 Type: ANW 112 MZ4 3Ph, IM, 50Hz, 415V, 7.3A, 1440RPM, 3.7/5.0 kW/HP, Delta Connection IP 55, Duty-S1, Insulation class "F"
Raw Water to Softener Plant	Motor
K.S.B Water Pump, Type: MEGA-GB 80-315 Sr. No. 9957100-751-1999 Speed 1460RPM H. 30m, Cap. 75m ³ /hr	1. Make: NGEF, M. No. 192008115 & 19200800 Type: ANW 160 MZ4 3Ph, IM, 50Hz, 415V, 21.0A, 1445RPM, 11/15.0 kW/HP, Delta Connection IP 55, Duty-S1, Insulation class "F"
Softener Plant to Cooling Tower	Motor
K.S.B Water Pump, Type: MEGA-GB 80-315 Sr. No. 9957101-751-1999 Speed 1460RPM H. 30m, Cap. 75m ³ /hr	1. Make: NGEF, M. No. 192008115 & 19200800 Type: ANW 160 MZ4 3Ph, IM, 50Hz, 415V, 21.0A, 1445RPM, 11/15.0 kW/HP, Delta Connection IP 55, Duty-S1, Insulation class "F"
Brain Measuring Tank	Motor
ANTICO Pump Model. EXP 170CT H. 20m; Q. 45m ³ /hr; P. 7.5HP; 2900RPM	1. Make: NGEF, M. No. 69102441 Type: ANW 132 SZ2 3Ph, IM, 50Hz, 415V, 10.5A, 2875RPM, 5.5/7.5 kW/HP, Delta Connection IP 55, Duty-S1, Insulation class "F"
HCL Unloading Pump	Motor
ANTICO Pump Model. EXP 170CT H. 20m; Q. 45m ³ /hr; P. 7.5HP; 2900RPM	1. Make: NGEF, M. No. 69101064 Type: ANW 132 SZ2 3Ph, IM, 50Hz, 415V, 10.5A, 2875RPM, 5.5/7.5 kW/HP, Delta Connection IP 55, Duty-S1, Insulation class "F"
Castaic Unloading Pump	Motor
ANTICO PUMP Model.EXP.170CT H. 20m, Q. 45m ³ /hr, P. 7.5HP, N. 2900RPM	1. Make: NGEF, M. No.: 68101406 Type: ANW 132 SZ2 3Ph, IM, 50Hz, 415V, 10.5A, 2875RPM, 5.5/7.5

Equipment Details	Motor Details
	kW/HP, Δ Connection, IP-55, Duty-S1, Insulation class "F"
De Gassified Pump	Motor
K.S.B PUMP Type: MEGA-CHM C50-315 Sr. No.: 19957085-751-1999 Q.20 m ³ /HR, H. 34m, N. 1440RPM	1. Make: NGEF, M. No.: 69103289 Type: ANW 132 SZ4 3Ph, IM, 50Hz, 415V, 10.5A, 1440RPM, 5.5/7.5 kW/HP, Δ Connection, IP-55, Duty-S1, Insulation class "F"
Effluent Pump	Motor
ANTICO PUMP Model.EXP.170CT H. 20m, Q. 45m ³ /hr, P. 7.5HP, N. 2900RPM	1. Make: NGEF, M. No.: 69102440 Type: ANW 132 SZ2 3Ph, IM, 50Hz, 415V, 10.5A, 2875RPM, 5.5/7.5 kW/HP, Δ Connection, IP-55, Duty-S1, Insulation class "F"
Charge Pump for Lube Oil Service Tank	Motor
Make: ROTODEL Size: 1 ½"X1 ½" BS Model: RDNXJ-150-SML Q. 5.0/6.0 m ³ /hr, Pressure: 17kg/cm ² Speed: 1440, Sr No.: 995449	1. Make: CG, Frame: E 90L Type: REC 2F4J/YF 3486 3Ph, AC IM, 50Hz, 415V±10%, 3.4A, 1405RPM, 1.5/2.0 kW/HP, Y Connection, IP-55, Duty-S1, Insulation class "F"
Dirty Oil Storage Pump	Motor
Make: ROTODEL Size: 1 ½"X1 ½" BS Model: RDNXJ-150-SML Q. 5.0/6.0 m ³ /hr, Pressure: 17kg/cm ² Speed: 1440, Sr No.: 995449	1. Make: CG, Frame: E 90L Type: REC 2F4J/YF 3479 3Ph, AC IM, 50Hz, 415V±10%, 3.4A, 1405RPM, 1.5/2.0 kW/HP, Y Connection, IP-55, Duty-S1, Insulation class "F"
Sludge Tank Pump	Motor
Make: ROTODEL Size: 1 ½"X1 ½" BS Model: RDNXJ-150-SML Q. 5.0/6.0 m ³ /hr, Pressure: 17kg/ cm ² , Speed: 1440, Sr No.: 995449	1. Make: CG, Frame: E 90L Type: REC 2F4J/YF 3489 3Ph, AC IM, 50Hz, 415V±10%, 3.4A, 1405RPM, 1.5/2.0 kW/HP, Y Connection
DM Water Storage Tank to Boiler Area Pump	Motor
K.S.B MULTI STAGE PUMP Type: MCN 9/7 G977-1 Sr. No.: 930701890 Q. 12m ³ /hr, H. 48m, N. 2860RPM	1. Make: KIRLOSKAR, Frame: PM 1325 MNO: KAA 13/XN-220&216 3Ph, AC IM, 50Hz, 415V, 10.0A, 2900RPM, 5.5/7.5 kW/HP
Lube Oil Unloading Pump	Motor
Make: ROTODEL Size: 2 ½"X2 ½" BS-10TABLEH Model: RDNXJ-250-SL Q. 15/20 m ³ /hr, Pressure: 17kg/cm ² , Speed: 1440, Pump No.: 99-5490	1. Make: CG, Frame: E 112M FLAME PROOF MNO: BEE 5F4 RJ/YF 4495 & 4498 3Ph, AC IM, 50Hz, 415V±10%, 8.0A, 1430RPM, 3.7/5.0 kW/HP
Diesel Oil Unloading Pump	Motor
KSB PUMP LTD Type: MEGA-GB50/250 S No. 990700675 Q. 36m ³ /hr, H. 22m, P. 5.5kW, N. 1440RPM	1. Make: CG, Frame: E 112M FLAME PROOF MNO: BEE 5F4 RJ/YF 7895 & 7158 3Ph, AC IM, 50Hz, 415V±10%, 8.0A, 1430RPM, 3.7/5.0 kW/HP
HFO Unloading Pump	Motor

Equipment Details	Motor Details
ROTODEL Size: 5"X5 BS-10TABLE H Model: RDNXJ-500-SL Q. 60.0/70.0 m ³ /hr Max. Pressure: 17kg / CM2 N. 960RPM Pump No. 99-5466. 1999	1. Make: CG, Frame: E 200L FLAME PROOF ENCLOSME, MNO: AEM 92134/S 3Ph, 50Hz, 415V±10%, 34.0A, 1430RPM, 18.5/25.0 kW/HP, Δ Connection
HFO Oil Separator	Motor
Make: Alfa Laval Type: LOPX709SED34 Product No. 881243-02.03	Make: ABB, M. No. 993053/5/0 Type: M ₂ AA 160M4 3Ph, 50Hz, 415V, 21.5A, 1440RPM, 11.5kW, Δ Connection, Cos Θ 0.85
HFO Feed Pump	Motor
IMO SCREW PUMP Type Designation ACP038 NI NVBP, Sr. No.: 415083 Alfa Laval 1762164-01	Make: ABB, M. No. 7024779/80/81 Type: M2AA100LA 3Ph, 50Hz, 415V, 4.0A, 1430RPM, 2.2 kW, Y Connection, Cos Θ 0.85
Diesel Ring Main Pump	Motor
Make: KRAL SCREW PUMP Type: KV 450 2A1A NR. D2251S Liters/Min 370 N. 1450RPM Pressure 5 bar Rate of flow: 10mm ² /sec	Make ACE, M. No.: 06910016H/06910017H Type: AM160 MZ A404 3Ph, 50Hz, Δ/Y400/690±10% Volts, 11kW, 22.5/12.9A, IP-55, 1460RPM, CosΘ 0.82, Th clf(B) 60Hz, Δ460±10%, 12.5kW, 21.5A, 1760RPM Cos Θ 0.84 50Hz – 380--655 --725V 60Hz – 440--480V Protector type: PTC 160 Release Temp: 155°C Ready Temp: 145°C
HFO Ring Main Pump	Motor
Make: KRAL SCREW PUMP Type: KV-370-BAC, 0077776 Sr No. 215423/2008 TMTN-10 Max C – 180C Pressure 5 bar	Make ACE, M. No.: 06910024H/08912009H Type: AM160 MZ A404 3Ph, 50Hz, Δ/Y400/690±10% Volts, 11kW, 22.5/12.9A, IP-55, 1460RPM, CosΘ 0.82, Th clf(B) 60Hz, Δ460±10%, 12.5kW, 21.5A, 1760RPM Cos Θ 0.84
Make: KRAL SCREW PUMP Type: KV-370-3A-2A, No. 2249S Q. 356 L/Min N. 1450RPM Max C – 180C Pressure 5 bar Rate of flow: 380mm ² /sec	Make: ABB, M. No.: 993053/5/0 Type: M ₂ AA 160M4, 3Ph, 50Hz, 415V, 21.5A, 1440RPM, 11.5kW, Δ Connection, Cos Θ 0.85 50Hz – 380--655 --725V 60Hz – 440--480V Protector type: PTC 160 Release Temp: 155°C Ready Temp: 145°C
Re-Circulation Pump Boiler 1 & 2	Motor
Pump Type: 180X50 UCWM-16 Sr. No. 971353/354/355/356 W/O No. KEPL/IND 647	Make: KIRLOSKAR-PRIMO Frame: 132B Type: M2AA 160M4

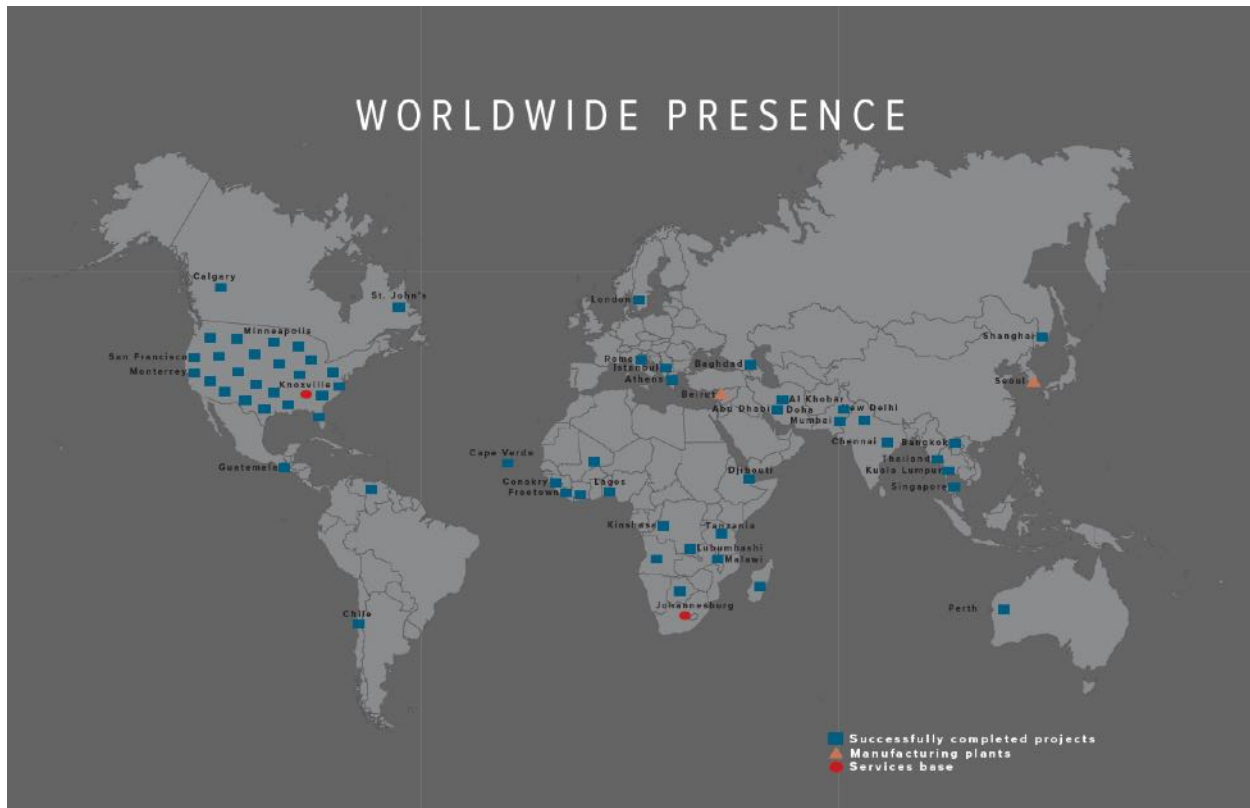
Equipment Details	Motor Details
P. Item No. HJG 3000030 H. 30m, Driver 5.5kW, F: 45m ³ /hr, N. 2900RPM Make: KIROLSKAR EBARA PUMP LTD	3Ph, 50Hz, 415V±10%, 10.2A, 2900RPM, 5.5kW
Feed Pump	Motor
Type: 50X40 SMSS12M Pump No. 971227 IND/616, 971228 IND/616 H. 300m, Drivers 37kW, Speed. 2955RPM Make: KIROLSKAR	Make: KIRLOSKAR-SPECTRUM Frame: SC 200L, REP IS: 325 3Ph, 50Hz, 415V±10%, 62.0A, 2955RPM, 37 kW
LP & HP Agitator	Motor
	Make: BBL, M. No. 9905039/62 Type: 1LA 4026-4 Frame: 71 3Ph, 50Hz, 415V±10%, 1.2A, 1380RPM, 0.37/0.5 kW/HP, Y Connection
LP & HP Dosing Pump	Motor
	Make: CG, M. No. 2242 DUJ YCN3270/3248 Frame: AD71 3Ph, 50Hz, 415V±10%, 1.2A, 1350RPM, 0.37/0.5 kW/HP, Y Connection
Condensate Tank Pump	Motor
KSB PUMPS Type: NG 3/8 – 1R SR No. 930700735 Q. 3m ³ /hr, H. 48.5m, P. 1.1kW, N. 2800RPM	1. Make: NGEF, M. No. 69000137/115 Type: ANW 90SF Z2 3Ph, IM, 50Hz, 415V, 302A, 2180RPM, 1.5/2.0 kW/HP, Y Connection
Sludge Tank Pump	Motor
	1. Make: CG BOCKWORD, MNO. 10293256 Type: 350-90L/4D 3Ph, 50Hz, 415V±10%, 3.4A, 1410RPM, 1.1/1.5 kW/HP, Y Connection, Cosθ 0.78
Cooling Tower Pump	Motor
KSB PUMPS Type: MEGA-GB150-400 SL No. 9957093-75/1999 Cap 500m ³ /hr Head. 48m, N. 1480RPM	1. Make: NGEF, M. No. 18423301 Type: ANW 280 M4A2 3Ph, IM, 50Hz, 415V, 157A, 1475RPM, 90/125 kW/HP, ΔY Connection, IP-55, η 93.8%, Duty-S1, Space Heaters: 160W, 240V.

Power Plant Photos





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