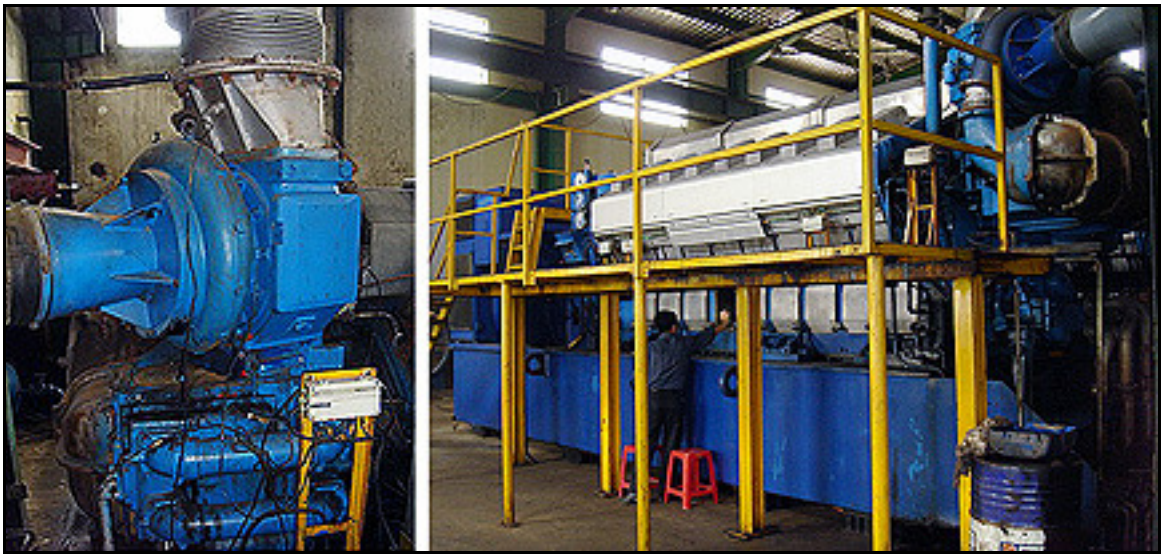
2 X 1996 Wartsila 18V26 5.125mw Each 50hz HFO Generator Sets

The responsibility for any and all additional charges is the purchasers.

2 x WARTSILA 5 MW Power plant
2 Units of Wartsila 18V26 @ 5 MW each, Total 10 MW< HFO power Plant
Designed By Stork Wartsila Diesel, Holland.
Manufactured By ABB Holland
Power rating: 6,150 kva
Output: 6,300 v
RPM: 1,000 rpm
Hertz: 50 Hz
Weight: 70000 Kg Skid mounted sets.
Aux: As supplied from the factory
Cooling: Plate type coolers from Cooling towers
Switch gear: As you see in the photos.
Complete as supplied by Wartsila and all manuals, drawings and records are at site or stored at warehouse outside of plant and are available at inspection.



Engine Manufacturer:	Wartsila
Years;	1996
S/N:	4553083-20,000 hrs since new
S/N:	4553084-24,000 hrs since new
Model:	18V26
Year of Manufacture:	1996
Total Hours No. 1:	20,000
Total Hours No. 2:	24,000
Rated Output in KW:	5,125
RPM:	1000
Generator Manufacturer:	ABB
Model	
Year of Manufacture:	1996
Total Hours No. 1:	20,000
Total Hours No. 2:	24,000
Output in Kw:	5,125
Output Voltage:	6300
Frequency:	50

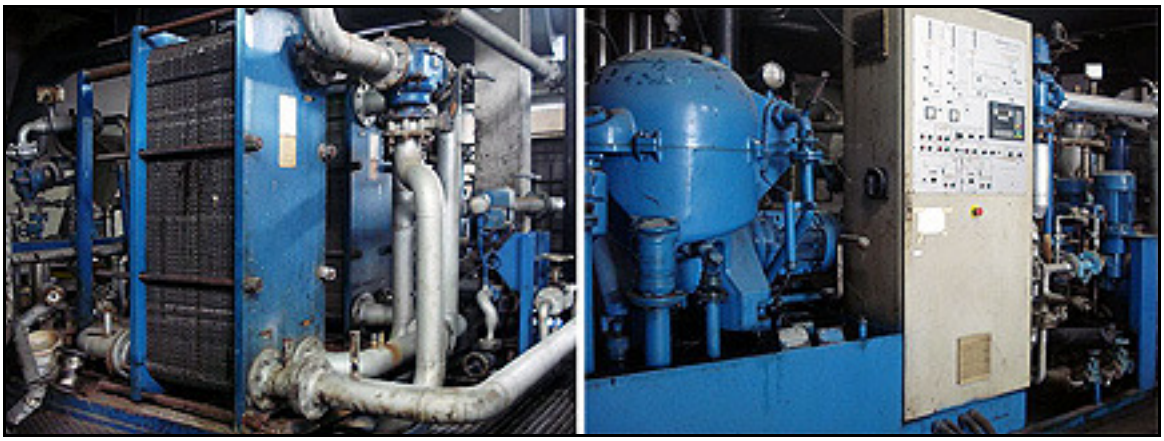
Power Factor:	0.8
RPM:	1000

Weight: & Dimension

L = 9200 mm
H = 3100 mm
R = 2200 mm
Net weight 70000kgs

No	Quantity	Weight	Description
1	2		Skid mounted Wartsila 18V26 @ 1000 rpm & ABB Alternator, 6150KVA, 50 HZ, 6,300 Volts
2	2		Walkways for engine skids
3	2		Exhaust System to Waste boilers
4	2		Waste heat boilers for steam supply for HFO heating
5	2		Silencers for exhaust
6	4		Plate heat exchangers for engine cooling
7	2		HFO Centrafuges for treatment of HFO fuel
8	Qty		Fuel transfer Pumps
9	1		HFO heating tank for Viscosity Control centre
10	1		HFO Viscosity control Skid
11	1		All associated Pipe work
12	1		Air intake pipe work System to Ar cleaners and Air Cleaners
13	2		Water treatment for Boilers
14	1		Starter System Air Reciever
15	1		Air Compressor for Air start System
16	1		Engine top up Oil Storage tank and piping and valves and pump
17	1		Gen Sync comtrol board
18	3		Auxiliary Switch control boards
19	2		HFO Day heated, insulated tanks & ass. pipe work, Pumps & valves
20	1		Complete Fuel Delivery pump Station and all pumping and valve equipment
21	2		Cooling Towers and all Pumping and piping and valves
22	1		Overhead crane for maintaince
23	Qty		Manuals, Installation Manual & operating manuals& spare parts manuals
24	Qty		Aprox US 150,000 worth of NEW spare operational Spares

COMPLETE OPERATIONAL POWER PLANT FROM FUEL DELIVERY TO SYNC BOARD



A.0 GENERAL MAIN DATA

A.0.0 General:
The power plant was designed, engineered and delivered by Stork Wartsila diesel.

A.0.1 Type of power plant:
The diesel generating sets were designed for heavy fuel oil operation.

A.0.2 Main data, conditions:
The total electrical output is generated by two (2) diesel generating sets of type 18V26, at 1000RPM, with the following electrical characteristics.

Station nominal output (ISO)	10,210 kWe at generators terminals
Generator nominal output:	12,760 kVA
Voltage:	6,300 Volts
Frequency:	50 Hz
Auxiliary voltage:	400 volts AC, 24 volts DC
Station actual output at site:	9,640 kWe 12,050 kVA

A.1 DIESEL GENERATING SET
A.1.1 Diesel engine:

Technical data:

Engine type:	W26
Number of cylinders	18 in Vee
Bore:	260mm
Stroke:	320 mm
Maximum continuous rating	5,310kWm
Speed:	1,000 RPM
Direction of rotation facing flywheel side:	Clock wise

Fuel consumption. Based on fuels having a calorific value of 42,700 kJ/kG at 100% load 186g/kWh

A.1.2 Generator: (Design and construction) Two (2) three-phase, brushless self-regulating rotating field synchronous generator with AC-exciter and rectifier dics in line incorporated electronic voltage regulator and equipped with damper wading, suitable for mutual parallel operation.

Technical data:

Rating (at site conditions):	6,150 kVA
Output:	4,920 kW
Efficiency:	97.0%
Power factor:	0.8
Voltage: frequency.	6,300 Volts/50 Hz
Speed :	1,000 RPM

A.2 AUXILIARY SYSTEMS

A.2.1 Fuel system

A.2.1.0 Type of fuel: Heavy fuel oil 380 cst (50^0C)

A.2.1.1 Heavy fuel oil system:

The heavy fuel oil is transferred from a storage tank by the transfer pumps to the settling tank. From the settling tank the fuel oil is pumped to the separator unit where it is purified. After purification the fuel is transferred to day tank and then supply to engine for operation.

SYSTEM COMPOSITION.

A.2.1.1.0 heavy fuel oil unloading module(U691), including

Electrical motor driven pump:	2 set
Flow rate:	25.9M^3/h
Electrical motor, each:	11kW
Pressure head:	4bar
Control panel:	1 set
Common base frame of steel:	1 set
Valve and connection pipe:	1 set

A.2.1.1.1 H.F.O. transfer module (U692), including

Electrical motor driven pump:	2 set
Flow rate:	4.05M^3/h
Electrical motor, each:	1.5kW
Pressure head:	4bar
Control Panel:	1 set
Common base frame of steel:	1 set

Valve and connection pipe:	1 set

A.2.1.1.2 H.F.O. buffer tank (V 673), including:

Capacity:	20 M3
High and low level alarm:	1 set
Locally mounted level indicator:	1 set
Steam heater 7 bars	1 set
Type of tank:	Horizontal

A.2.1.1.3 H.F.O. service tank (V 671), including:

Capacity:	20M3
High and low level alarm:	1 set
Locally mounted level indicator:	1 set
Steam heater 7 bars	1 set
Type of tank:	Horizontal

A.2.1.2 Light fuel oil system:

The light fuel oil is unloaded from the truck to storage tank and suply to the engine for cold starting condition

SYSTEM COMPOSITION.

A.2.1.2.0 light fuel oil unloading module(U631), including

Electrical motor driven pump:	2 set
Flow rate:	23.2M^3/h
Electrical motor, each:	5.5kW
Pressure head:	4bar
Control panel:	1 set
Common base frame of steel:	1 set
Valve and connection pipe:	1 set

A.2.1.2.1 L.F.O. transfer module (U632), including

Electrical motor driven pump:	2 set
Flow rate:	3.27M^3/h
Electrical motor, each:	1.5kW
Pressure head:	4bar
Control panel:	1 set
Common base frame of steel:	1 set
Valve and connection pipe:	1 set

A.2.2 LUBRICATING OIL SYSTEM

SYSTEM COMPOSITION.

A.2.2.0 Lubricating oil storage tank (V731), including:

Capacity:	16 M3
High and low level alarm:	1 set

Locally mounted level indicator:	1 set
Steam heater 7 bars	1set
Type of tank:	Horizontal

A.2.2.1 Dirty lubricating oil storage tank (V734), including:

Capacity:	10 M3
High and low level alarm:	1 set
Locally mounted level indicator:	1 set
Steam heater 7 bars	1 set
Type of tank:	Horizontal

A.2.2.2 Combined HFO and lub-oil separator and booster module (U690):

A.2.2.2.0 HFO separator system:

- Automatic fuel oil separator suitable for cleaning heavy fuel oil (max s.g: 0.991). Separator equipped with a built-on supply pump and built-in centripetal discharge pump. Change over valve system, futher complete with electric motor.
- One steam heater, complete with safety valve and temperature regulator.
- Capacity 4,000 lits/hr at 380 cSt.

A.2.2.2.1 Lubricating oil separator system:

- Automatic lubricating oil separator suitable for cleaning lubricating oil (max s.g: 0.991). Separator equipped with a built-on supply pump and built-in centripetal discharge pump. Change over valve system, futher complete with electric motor.
- One steam heater, complete with safety valve and temperature regulator.
- Capacity 4,800 lits/hr.

A.2.2.2.2 Heavy fuel oil booster module:

Automatic filter.

- Bypass filter (stand by).
- Mixing tank.
- Two circulation pumps.
- Two steam heaters.
- Viscosity control unit.
- Control panel complete with main switch and all control functions. Including relays, switches and lamps

A.2.3 COOLING SYSTEM:

SYSTEM COMPOSITION
A.2.3.0 Cooling tower system, including:

Cooling tower with centrifugal fans:	2 set
Capacity	10,500 cal
Wet bulb temperature	29^0C
Water outlet temperature	34^0C

Max water inlet temperature	51.5^0C
Electrical power, each	37kW
Water pump unit with electrical motor Driven	3 set
Flow rate	$160M^3$/h
Electrical motor	18.5kW
Control cabinet	2 set

A.2.3.1 Pre-heating module:
The pre-heating unit is used for the heating of H.T cooling water when starting the engine in cold condition. Complete with electric driven pump.

A.2.3.2 HT cooling water heat exchanger: HT cooling water heat exchanger for recooling of the high temperature water.

A.2.3.3 LT cooling water heat exchanger: LT cooling water heat exchanger for re-cooling of the low temperature water.

A.2.3.4 Heat exchangers: the heat exchanger is used to transfer the heat available from the engine high temperature system to the hot water system.

A.2.4 Starting air system: Compressed air is delivered by the air compressor and is supplied from the starting air unit to the combined starting air vessel

Air compressor electric driven 11 kW.
Capacity $34M^3$/h
Working pressure 30 bars.
Compressed air vessel. Capacity 1,500 lits working pressure 30bar complete with.

- inlet outlet valves.
- Safety valve.
- Pressure gauge.
- Drain valve.

A.2.5 Charge air system:
A.2.5.0 Charge air filter: Air intake filter of the oil bath type. Intended to prevent the entering of sand, dust etc. into the engine air intake.

A.2.5.1 Charge air silencer: air intake silencer, noise reduction 25 dB (A)

A.2.6 Exhaust gas system:
A.2.6.0 Exhaust gas silencer: the exhaust gas silencer without spark arrestor, noise reduction 25 dB(A). Complete with counter flange

A.2.6.1 Exhaust gas ducting bellows: Corrosion resistant bellows for fitting between the ducting and exhaust gas silencer.

A.2.6.2 Exhaust gas boiler: The exhaust gas boiler can produce the maximum amount of steam possible

- Saturated steam production 3,600 kg/hr at 10 bar
- Steam generation at 170 ^{0}C
- The exhaust gas boiler system include the following:

- Exhaust gas boiler for mounting in the exhaust gas ducting.
- Evaporator coils with flanges.
- Soot blowing equipment.
- Standard assortment of valves, safety valves.
- Steam drum module including:
    - Blow down drains
    - Accumulator
    - Circulating pump
    - Safety valve and control valves
    - Control board.

Feed water module, including:

- Feed water pump
- Feed water tank
- Chemical treatment dosing unit
- Local control board

A.2.7 Electric system:

A.2.7.0 Main switchgear:

- 1 common part:

+ Three-phase busbar system

- Operating voltage: 6.3kV
- Rated current: 1,600 Amps.
- Rated voltage: 12 kV
- Rated short time current: 25kV/1sec.

+2 Generator Cubicles:

1 triple-pole circuit breaker: vacuum draw out type

- Operating volt: 6.3 kV
- Rated current: 630 Amps

1 station transformer cubicle (only high voltage):

- One triple-pole loadbreaker switch
- Operating voltage: 6.3 kV
- Three high volt fuses: 100 Amps

Outgoing feeder cubicle:

One triple-pole circuit breaker: vacuum draw out type

Operating voltage: 6.3 kV.

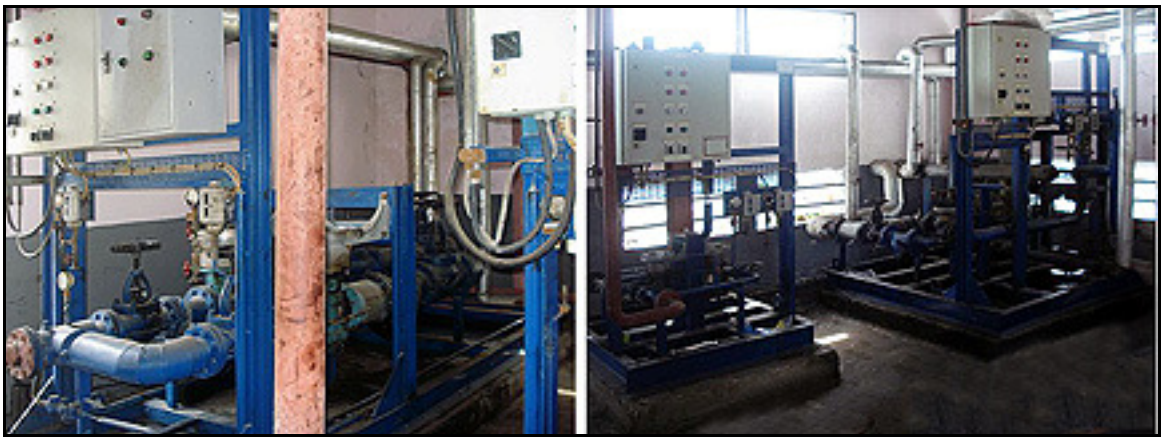
Rated current: 1,600 Amps.

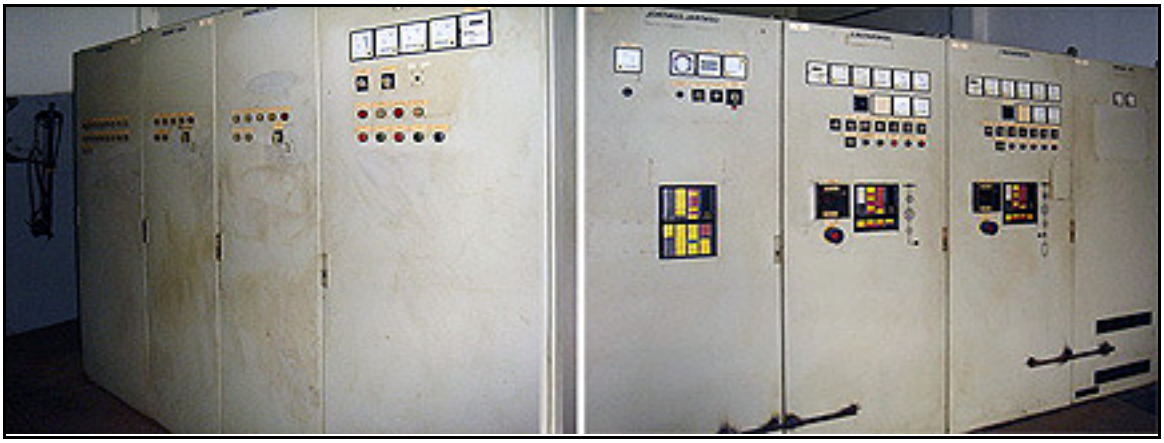
A.2.7.1 Neutral earthing board:

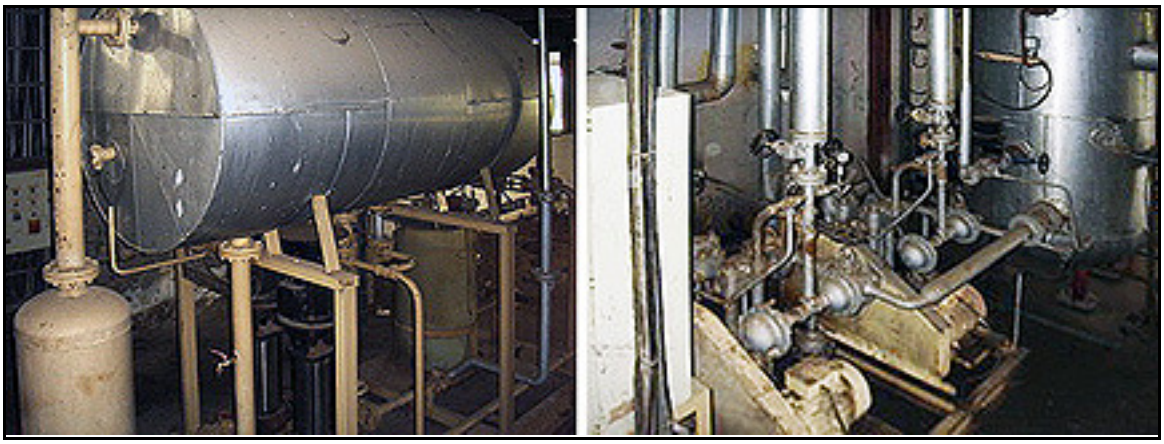
-1 neutral earthing boards, each consisting of:

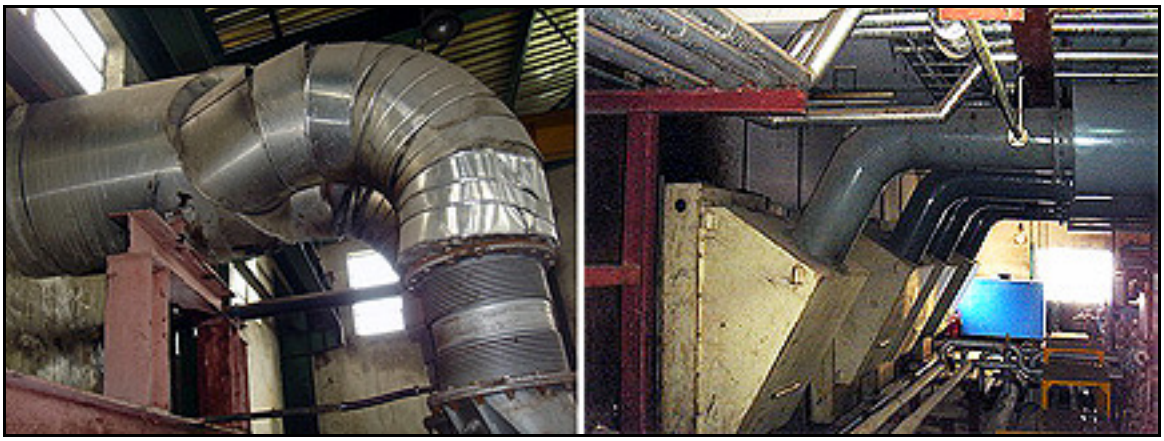
+Isolating switch, single pole, load break type, with mechanical interlock.

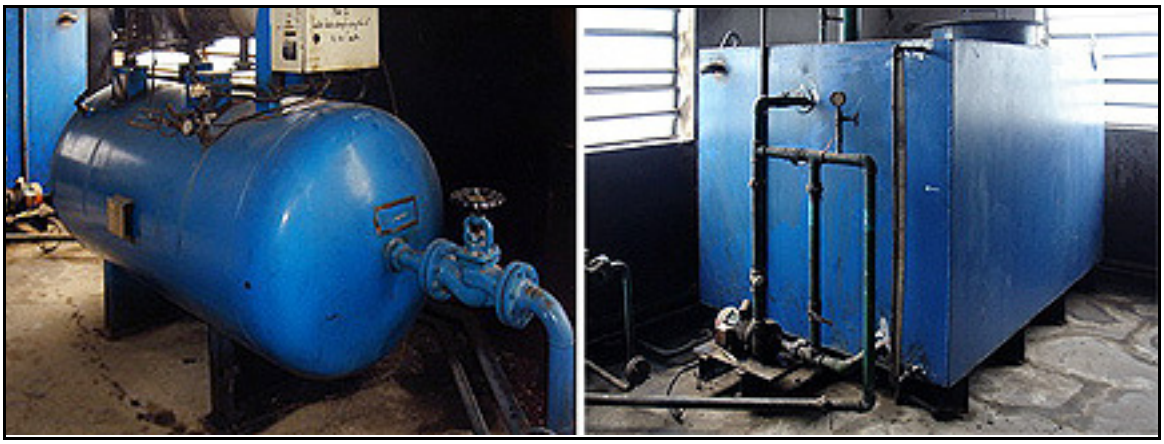
+ One neutral earthing resistor, non-corrosive

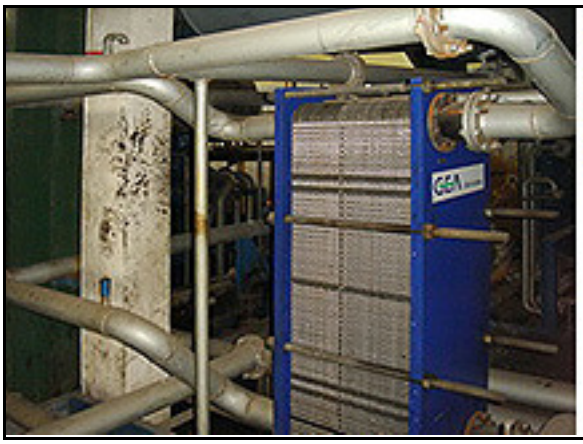
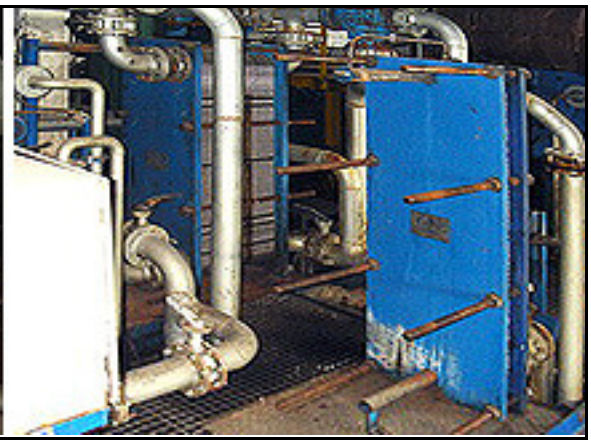


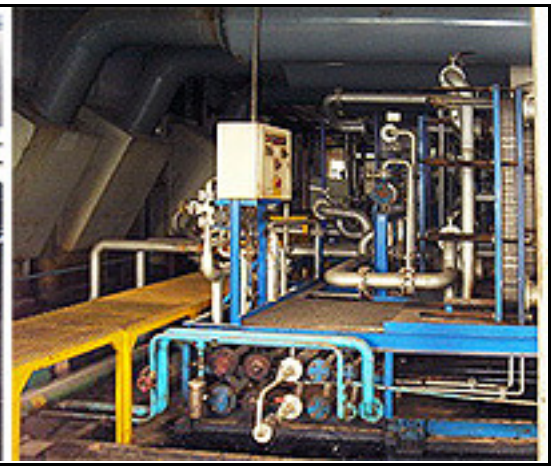


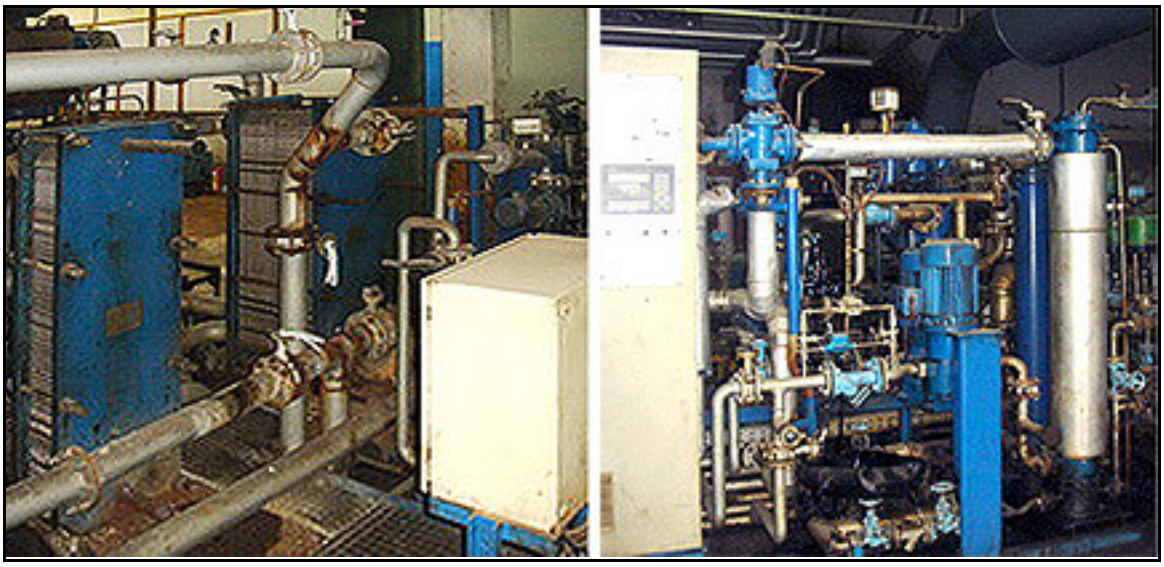


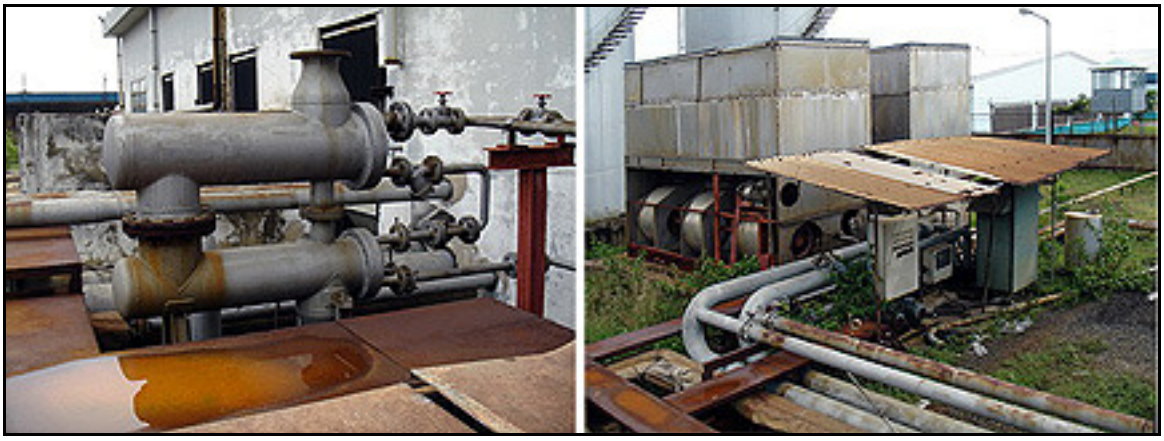


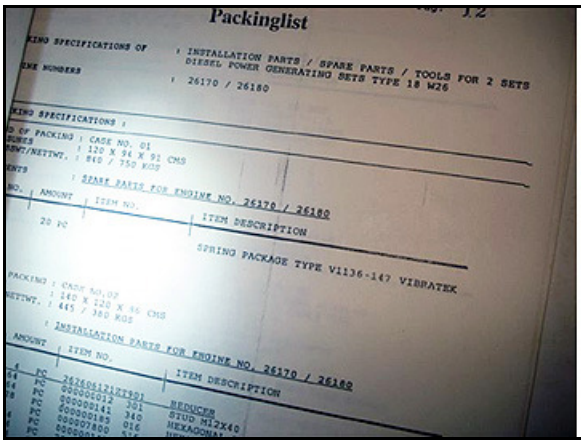









Packinglist

INSTALLATION PARTS / SPARE PARTS / TOOLS FOR 2 SETS
DIESEL POWER GENERATING SETS TYPE 18 W26

26170 / 26180

CASE NO. 01
120 X 94 X 91 CMS
840 / 750 KGS

SPARE PARTS FOR ENGINE NO. 26170 / 26180

AMOUNT	ITEM NO.	ITEM DESCRIPTION
20 PC		SPRING PACKAGE TYPE V1136-147 VIBRATEK

CASE NO.02
140 X 120 X 86 CMS
445 / 380 KGS

INSTALLATION PARTS FOR ENGINE NO. 26170 / 26180

AMOUNT	ITEM NO.	ITEM DESCRIPTION
4 PC	26260412RT901	
24 PC	000001012 301	REDUCER
2 PC	000000185 340	STUD M12X40
2 PC	000007400 016	HEXAGONAL


ABB Industry
SYNCHRONOUS GENERATOR
PF
IC
r/min
IM
V
A
IP23


Regulateurs Europa
TYPE No
2221-16
MODE
SERIAL No
9819947
CUS No
RPM
300-1000
DROOP
%
PRES SPEED
BAR
MOTOR
V
PRES REF
BAR
STOP
V
COLCHESTER ENGLAND & RODEN NETHERLANDS