

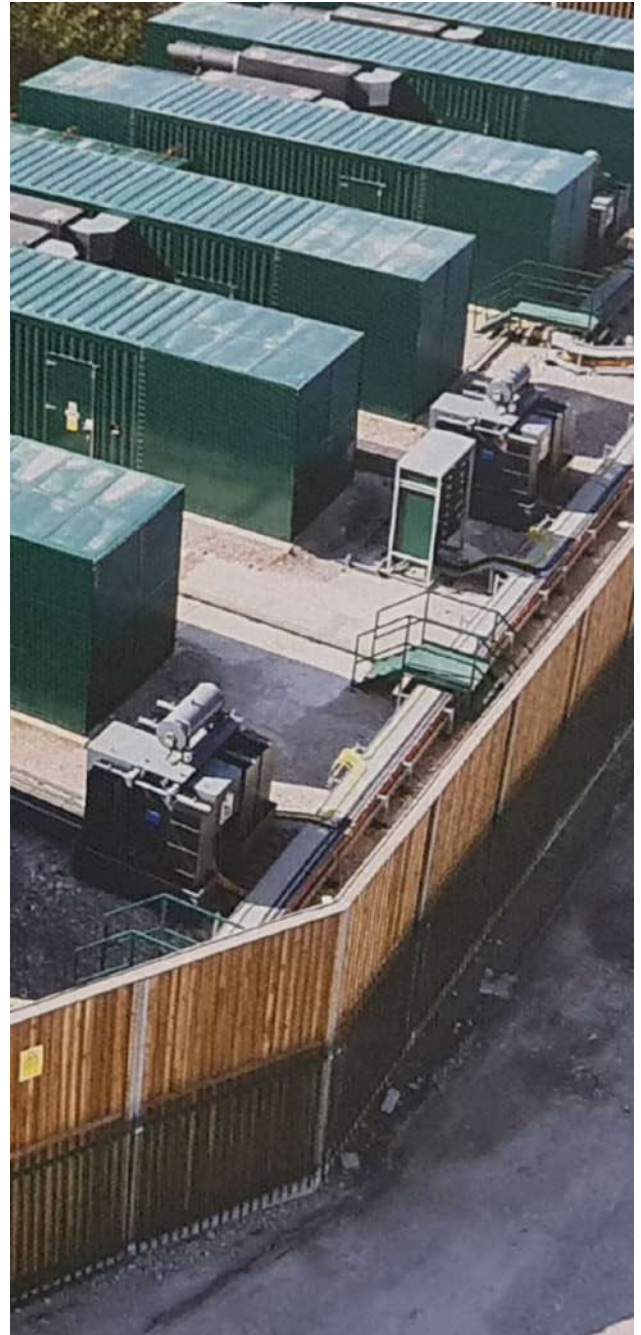
For Sale by

MACGEN[®]
POWER GENERATION LTD.

16MW Power Station

MTU Diesel Engines 16V4000G63

Less than 200 hours
on all 8 generators



For enquiries, please contact
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14 Drumagarner Road
Kilrea
BT51 5TB
United Kingdom

Control System / G59 Mains Protection relay - PCS

1	Remote Communication and Load Summation Control Panel (RCLSP)	
	1 x 800mm x 600mm x 210mm wall mounting enclosure	
	1 x ComAp IM-NTC BB Base Box Controller (site load value monitoring & integration)	
	1 x ComAp IBNT Internet Bridge (Broadband Interface)	
	1 x ComAp ILB+ Local Bridge (SRD Interface)	
	2 x 8 way Ethernet Switch (Local & Remote PC Interface)	
	1 x 230/240VDC PSU	
	1 Set of Control Miniature Circuit Breakers	
	1 Set of Can Bus Interface Terminals	
2	Communication Cabling	
	Belden 3106A Canbus Communication Cabling between all generators and from first generator to RCLSP .	
	CAT 5E Industrial Ethernet Communication Cable from each generator to RCLSP.	
3	Mains Protection Relay	
	ComAp MainsPro G59-3 Protection Relay (Over/Under Volts, Over/Under HZ & Vector Shift	S/N: 15124B06

- (8) Himoina HMW- 2200 T5 containerised generator sets, powered by a MTU 16V4000G63 4 stroke direct injection turbo charged diesel engines;
- (4) 4MVA GBE oil immersed power transformers;
- (2) 40,000L Fuel Tanks with fuel polishers;
- (1) 20,000L Fuel Tank with fuel polishers;
- Purpose Built 40ft Hi-Cube HV Switchgear container including control room and switch room equipment;
- Cabling.

HV Switchgear - ABB

1 off 33kVA ABB Safe Ring HV Switchboard housed within purpose built switchgear container.

1	ABB Switchgear (installed by ABB)	
	C-DNO Connection Board	2016 11811780001
	-M- ONO Connection Board	2016 11818120002
	-V ONO Connection Board	2016 11811790002
	CVVV- Transformer Feeder	2016 11812200001
	-V Transformer Feeder	201611812210002

Auxiliary Board /Cable Schedules/ Cable Tests

External Distribution Board connected to one of the transformers for all auxiliary supplies, and connections from this board to each generator.

1	Auxiliary Board Specification
	1 off 630A External Distribution Board S/No: 1601500/2
Drawing:	Constructed to drawing 1601500 Rev1
RAL	RAL 6005 Moss Green
	<p><u>Section 1 Mains Incomer:</u> 1no 630A 4-Pole MCCB complete with LSI protection, with copper bus-bar connections to vertical bus-bars. Complete with inner cover and overall door affording IP55 Protection.</p> <p><u>Section 2 Outgoing Devices:</u> 8no 40A 3 Pole MCCB + 40A Neutral Bar, connected to vertical bus-bars. Complete with inner covers and individual doors affording IP55 Protection.</p> <p><u>Section 3 Cable Way</u></p> <p><u>Section 4 Outgoing Devices</u> 4no 40A 3 Pole MCCB + 40A Neutral Bar, connected to vertical bus-bars 4no 16A 2 Pole MCB 1no 32A 30ma 4 Pole RCBO - wired to 32A 3P+N+E Panel Socket (IPG7) 1no 16A 30ma 2P "C" RCBO - wired to 15A 1P+N+E Panel Socket (IP67) MCB, s and RCBO housed in a single compartment, positioned behind plastic windows, affording an ingress protection of IP55</p> <p><u>Top and Vertical Bus-bars:</u> 630A TP&N rated air insulated damped Bus-bar system manufactured from plain HDHC copper mounted in substantial supports.</p> <p><u>Connections:</u> Auxiliary Board connection to Transformer 3 Auxiliary Board connections to Generators 1-7</p>
2	Cable Schedules
	Generators 1- 7 Transformers
3	HV Power Cabling
	Tests Completed

3	Control Room
Distribution Board:	Schneider 4way TP N c/w 125 Amp main switch
	6 x Schneider MCB's various fitted
Lighting:	2 x twin Ansell vapour proof fittings (1 emergency)
	One-way light switch
	Emergency key switch
Power:	8 x double socket
Heating:	13A switched fuse spur
	2kW convection heater (wall mounted)
4	Operations Area
Operations Area:	Lockable Key Safe (wall mounted) (Safe Door Key No. 026)
	Lockable Glazed Noticeboard (900x900mm) (door key has black fob no number)
	Wall mounted computer desk, operators chair
PC:	Dell Outlet Optiplex 5040 SFF PC Intel Core i5-6500 Processor, Windows 10. Dell Professional P2414H 24" Display
UPS:	Socomec 6kVA Itys UPS Single Unit, Single Phase 6kVA@ 15 minutes Serial No. 4116250191
Router:	3G/4G 2860LN Router with 3m USB cable, Whisper Box IP Address: 185.101.120.146
CTV:	Avigilon M1300 19" Monitor Avigilon VMA-AS1-8P4-UK HD Video

HV Switchgear Container

Purpose Built 40ft hi-cube HV switchgear container with heating, lighting and power installed.

The container is mounted on a raised frame with access steps. It is lined out with 50mm rock wool insulated panels and accommodates high level louver with fan and low level louver for natural air flow.

The container is split into two sections with dividing wall/door:

Control Room for Grid interface incorporating the consumer unit, desk/chair with PC and UPS installed and single rear entrance door. Single door opens into the Switch Room.

Switch Room to house the 33kV ABB switchgear. Double doors at front and single door opening into the Control Room.

1	Switchgear Container Installation Comprises:-
Drawing:	Container built to approved drawing 40-SGC-001
Dimensions:	12200 L x 3100 W x 3250 H (mm)
RAL:	Container RAL 6005 Moss Green
Container Door Key:	Kason KHC 602
2	Switch Room
Lighting	3 x twin Ansell vapour proof fittings (2 emergency)
	2 x single Ansell vapour proof fittings
	2 x two-way light switches
	Emergency key switch
Power:	RCD protected double socket
Heating:	13A switched fuse spur
	2KW convection heater (wall mounted)
Ventilation:	2 x aluminium weather louvers
	Vent Axia 315mm/4/1 single phase plate fan
	Grasslin volt free variable thermostat (to control Vent Axia fan)

General Site Information

1	Earth System Design
	Completed by CU Technical Services Ltd
2	CCTV/ Security Alarm System
	1 x Avigilon 2.0C-H4PTZ-DP30 2.00MPX 1080P WDR Day/Night, 30X, pendant dome camera
	6 x Avigilon 2.0C-H4SL-B01-IR H4 SL Fixed bullet camera W/L Catcher 2.0mpx
	Pyronix Alarm System including 6 Photoelectric Beam Sensors, Gate Keypad and Control Panel (Executive Alarms)
3	Acoustic and Palisade Fencing
	Noisevac Absorptive barrier to one face with Reflective face to rear
4	Diesel Spill Kits
	240L Superior oil-only Spill Kit 2 wheeled bin 50L Superior Maintenance Spil Kit holdalls (per Generator container)

Transformers

4 off Transformers ilt 400V to 33KV with impedance and extended LV gland box each housed within a purpose built bund tray.

1	Transformer Specification	
	2MVA GBE Transformer 1	
	4MVA GBE Transformer 2	
	4MVA GBE Transformer 3	
	4MVA GBE Transformer 4	
Drawing:	2MVA - GBE Layout drawmg A13658	4MVA- GBE layout drawing A13709
Dims:	2MVA - 2100 x 2200 x 1800mm	4MVA - 2600 x 2600 x 2800mm
Type:	EB3036.2000/EB3036.4000 Oil Immersed, Free breathing UK Std Step Up Transformer with Oil Conservator and Copper Windings	
	Detachable Cooling Radiators	
	Oil site glass, Dehydrating breather, Thermometer Pocket,	
	Air filled MV Cable box with removable steel gland plate,	
	No.3 MV Elastimold Bushings 400A Interface B	
	Air filled LV Cable box with aluminium gland plate	
	Extended Cable Connections and Extended LV Cable Box	
	Buchholz Relay	
RAL:	7031 Blue Grey	
2	Transformer Bund	
Drawing:	2MVA Bund Constructed to drawing TB-2000-000	
	4MVA Bund Constructed to drawing TB-4000-000	

Breaker Key:	See Generator Summary List and Site Key Log
Heater:	Thermostatically controlled 9kW 400V 3 phase water jacket heater with circulating pump
Battery Charger:	Deep-sea DSE9470 10A mains battery charger
	Automatic Engine Pre-lubrication Pump
	Set mounted 2000A neutral earthing contactor with CT
	Fuel return cooler
	Centrifugal oil filter (MTU)
	Primary water separator filter

Generators - Himoinsa

8 off HMW-2200-TS Open Skid Generators built with MTU 16V4000G63 exhaust emission optimised engine with special application

Rated at 2307kVA for Prime Power and 2546kVA for Standby Power.

Set mounted radiator designed for high end temperatures 34°. Mecc Alte ECO 46-2L/4 alternator, oil primer and centrifuge fitted as confirmed by MTU, set mounted 4000A 4P motorised breakers.

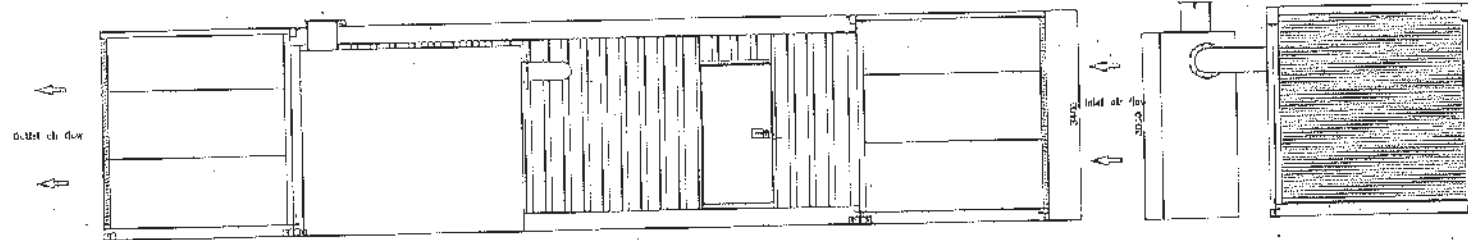
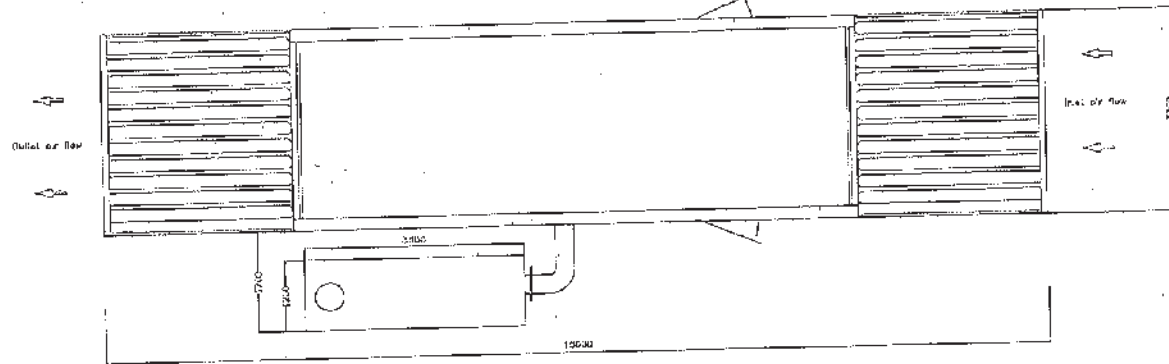
	Generator Specification
Model:	Open Generating Set - HMW-2200-TS STD 2200KVA V400/50HZ AS20
Drawing:	Left hand breaker- built to drawing code: HMW-2200-IZ Rev 02
	Right hand breaker - built to drawing code: HMW-2200 Rev 03
Power:	Standby Power 2541kVA / 2033kw (MTU 3D STOR APPLICATION)
	Prime Power 2303kVA/ 1842kw
Voltage:	400V 3Ph 50Hz
Engine:	MTU 16V4000G63 Exhaust Emission Optimised Engine
Engine Speed:	1500rpm
Starting System:	24V Electric with Optima yellow top maintenance free batteries and battery isolator
Engine Governor	ADEC
Alternator:	Mecc Alte EC046 2L/4A with MAUX excitation
Control Panel:	ASS with Free Issue ComAp IG-NTC-BB + IntelliVision 5 components
Radiator:	Tecno Group TG00094AA UK ambient 30m3/s reduced airflow radiator with electric powered cooling fan
Power Box:	CP6
Air Circuit Breaker Panel:	4 Pole 4000A Schnieder model NW04 motorised H2 100kA breaking capacity with Micrologic 6.0A trip unit



GENERAL ARRANGEMENT

SPECIFICATION

NOTES





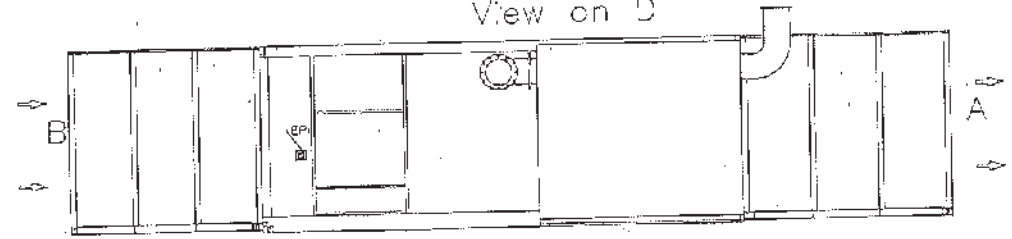
GENERAL ARRANGEMENT

SPECIFICATION

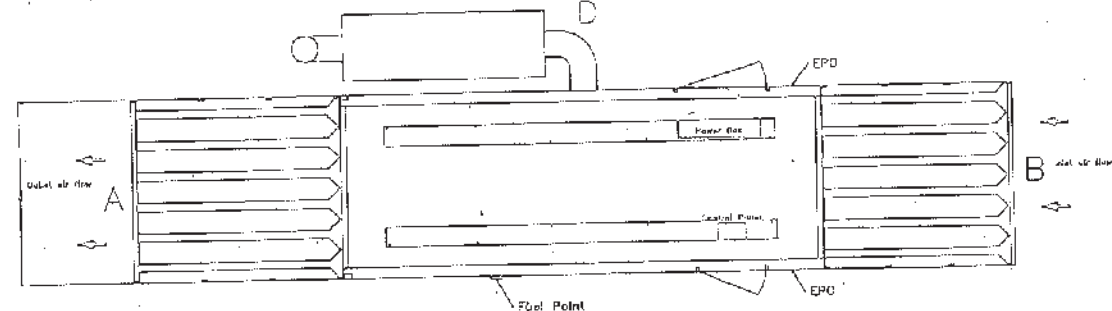
NOTES:-

Drawing for approval
R/H Generator container

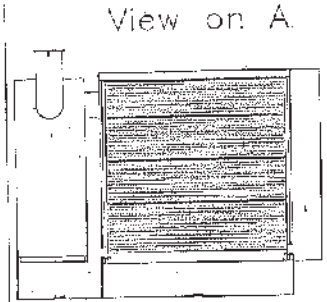
View on D



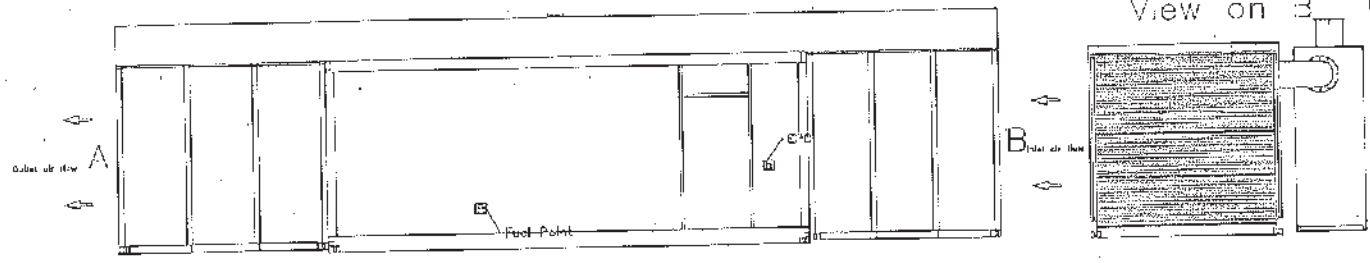
View on C



View on A



View on B





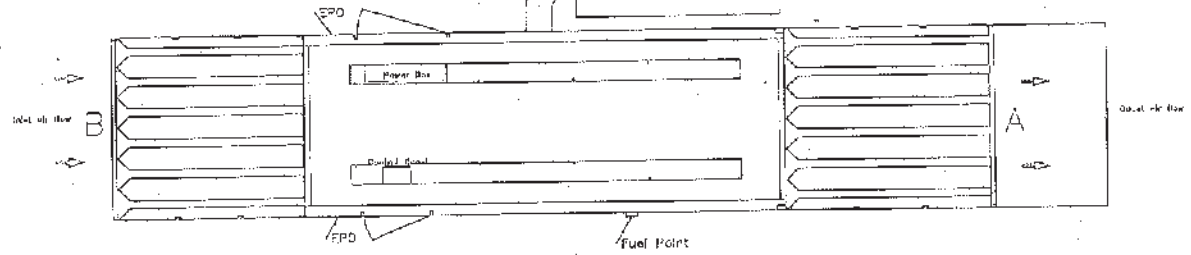
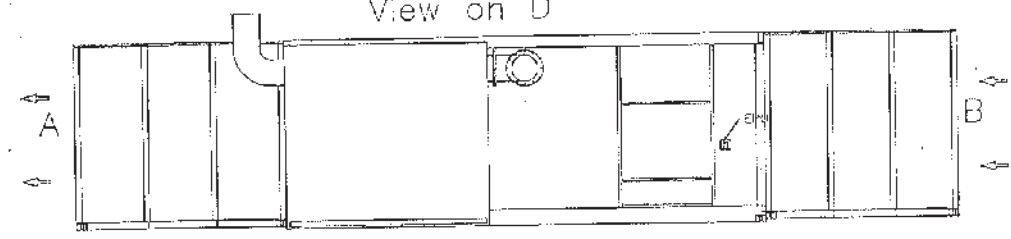
GENERAL ARRANGEMENT

SPECIFICATION

Drawing for approval

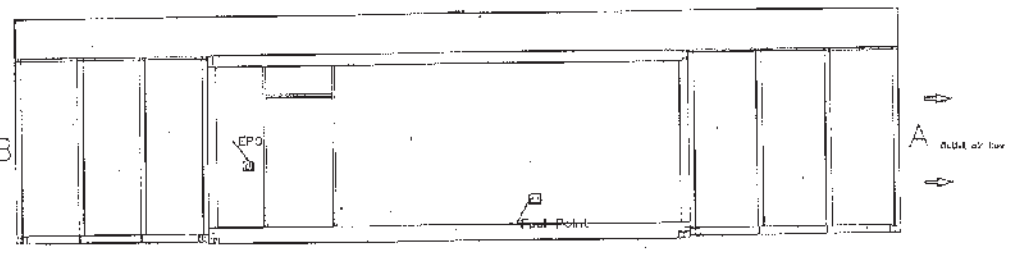
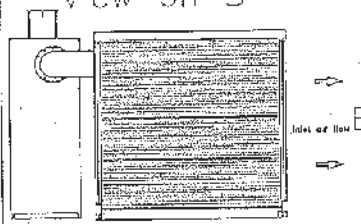
L/H Generator Container

View on D



View on C

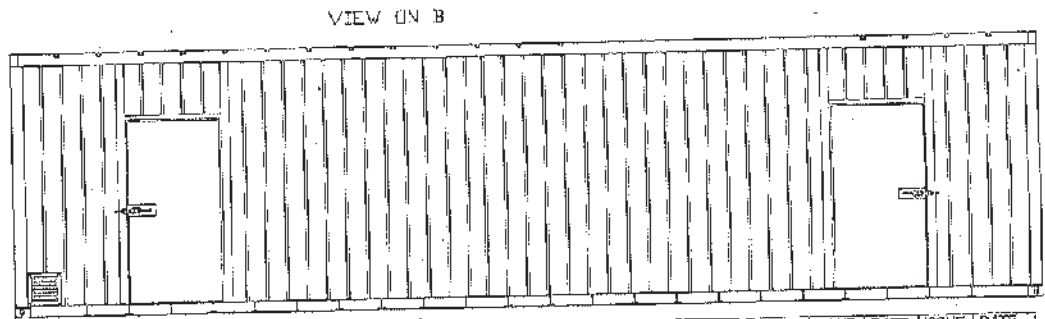
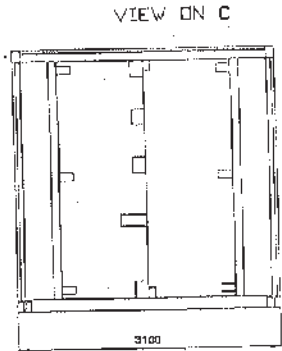
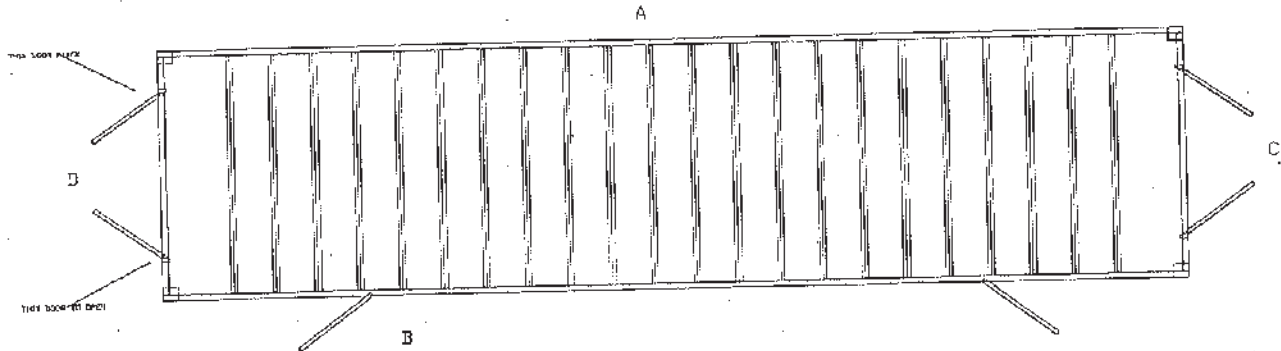
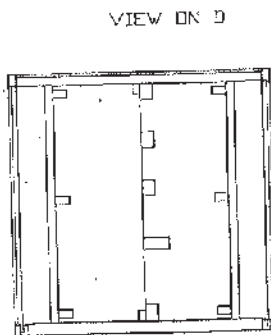
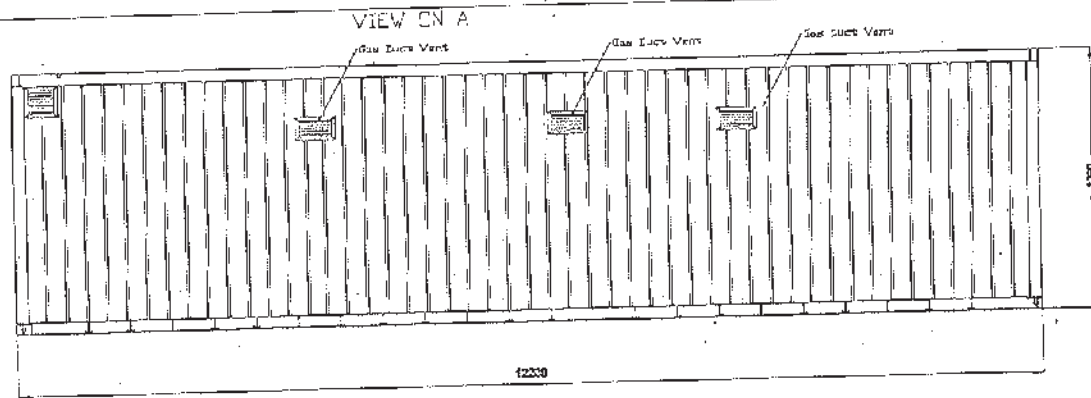
View on B



View on A

NOTES-

REV	DATE	DESCRIPTION



ISSUE	DATE	ISSUE	DATE	ISSUE	DATE	ISSUE	DATE	ISSUE	DATE

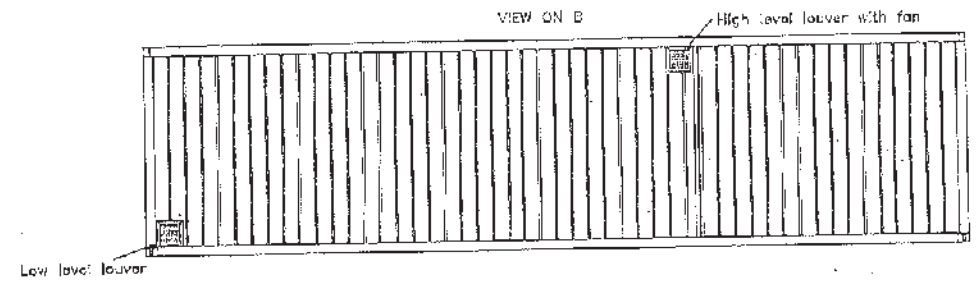
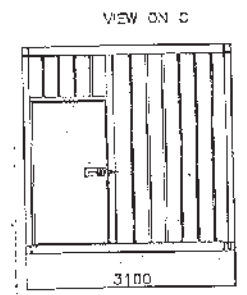
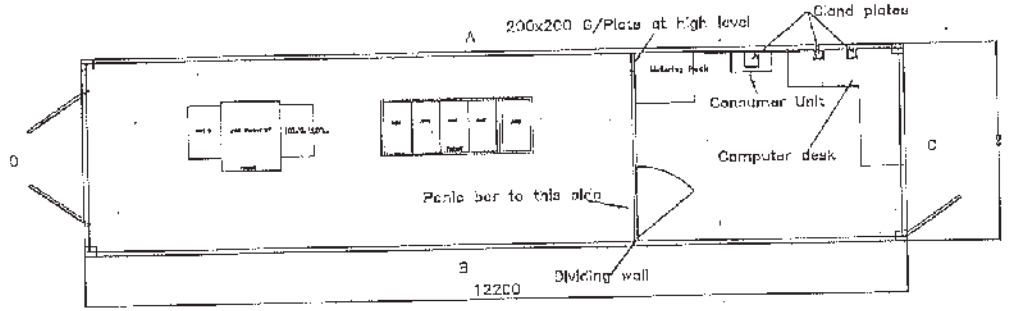
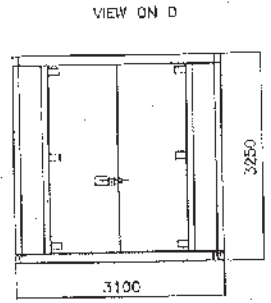
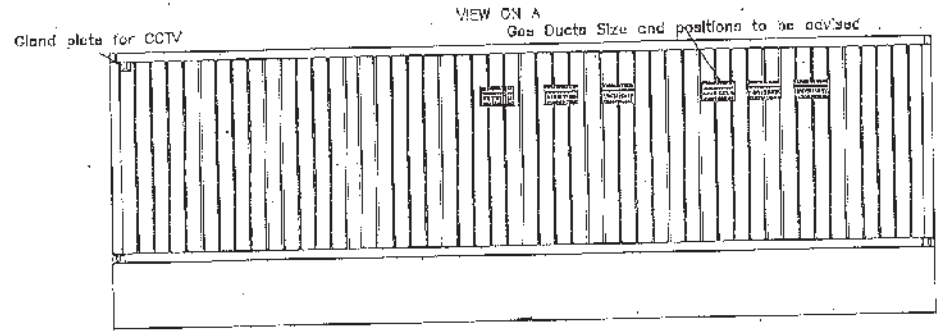
APPROVED: _____

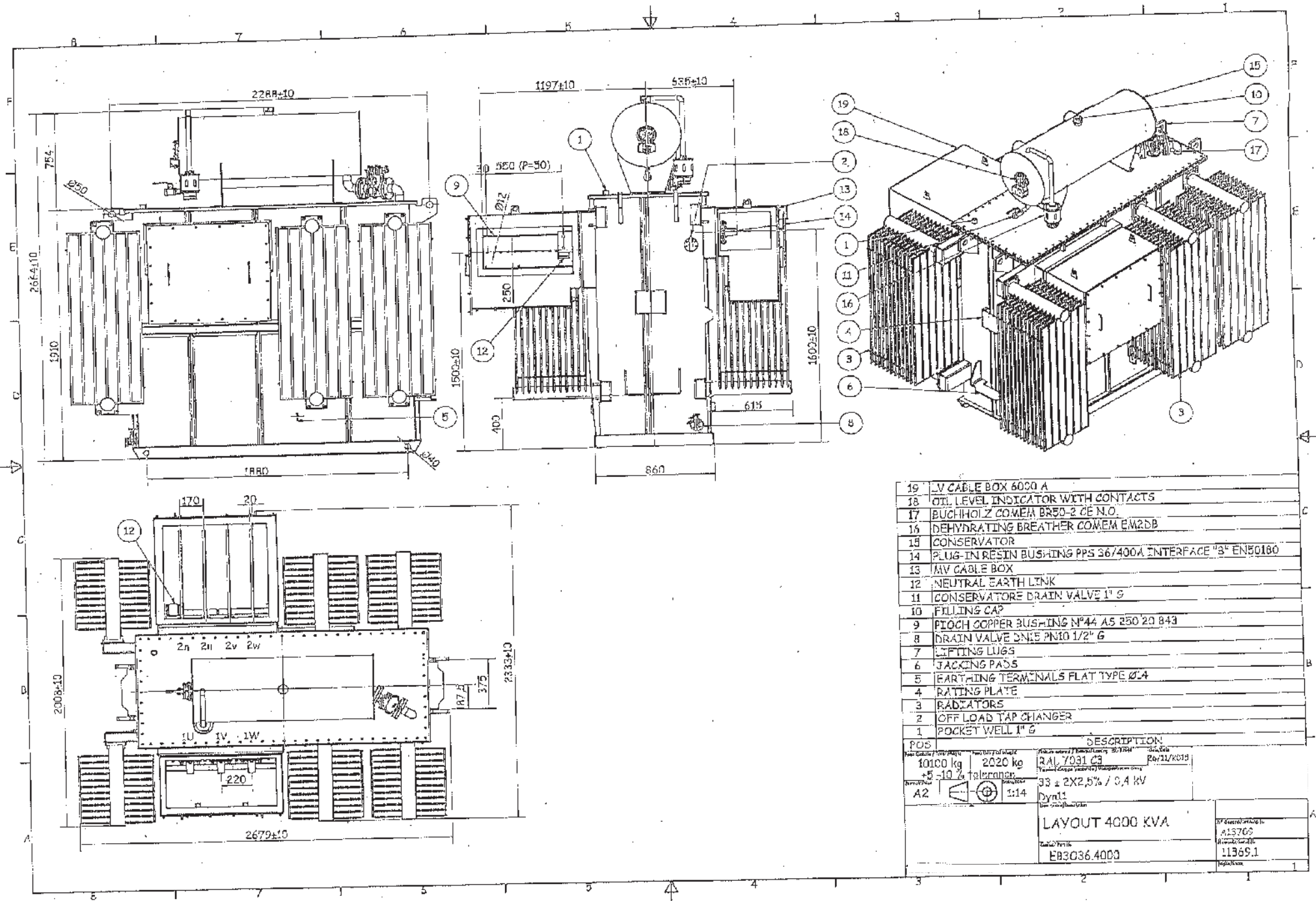


GENERAL ARRANGEMENT

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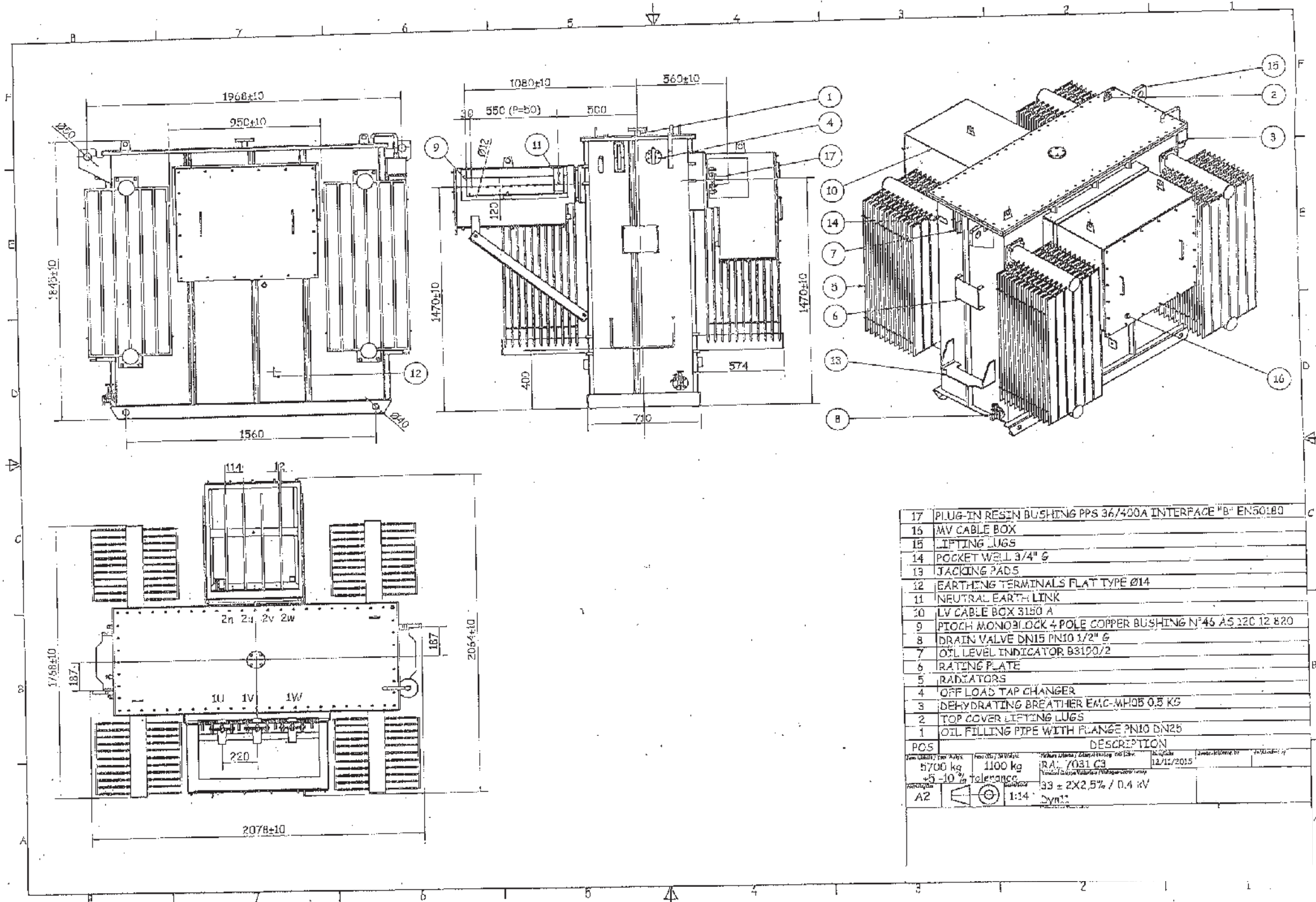
Drawing for approval





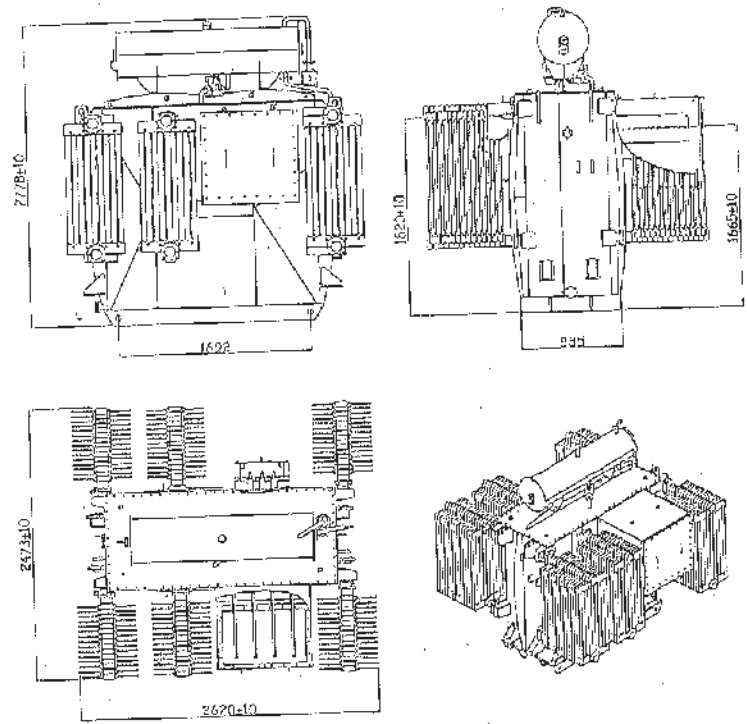
19	LV CABLE BOX 6000 A
18	OTL LEVEL INDICATOR WITH CONTACTS
17	BÜCHHOLZ COMEM BR50-3 CE N.O.
16	DEHYDRATING BREATHER COMEM EM2DB
15	CONSERVATOR
14	PLUG-IN RESIN BUSHING PPS 36/400A INTERFACE "B" EN50160
13	HV CABLE BOX
12	NEUTRAL EARTH LINK
11	CONSERVATOR DRAIN VALVE 1" G
10	FILLING CAP
9	PITCH COPPER BUSHING N°44 AS 250 20 B43
8	DRAIN VALVE DN15 PN10 1/2" G
7	LIFTING LUGS
6	JACKING PADS
5	EARTHING TERMINALS FLAT TYPE Ø24
4	RATING PLATE
3	RADIATORS
2	OFF LOAD TAP CHANGER
1	POCKET WELL 1" G

POS	DESCRIPTION
10100 kg	2020 kg
+5 -10 % tolerance	
A2	1:14
	RAL 7031 C3 33 ± 2X2,5% / 0,4 KV Dyn11
LAYOUT 4000 KVA	
EB3036.4003	



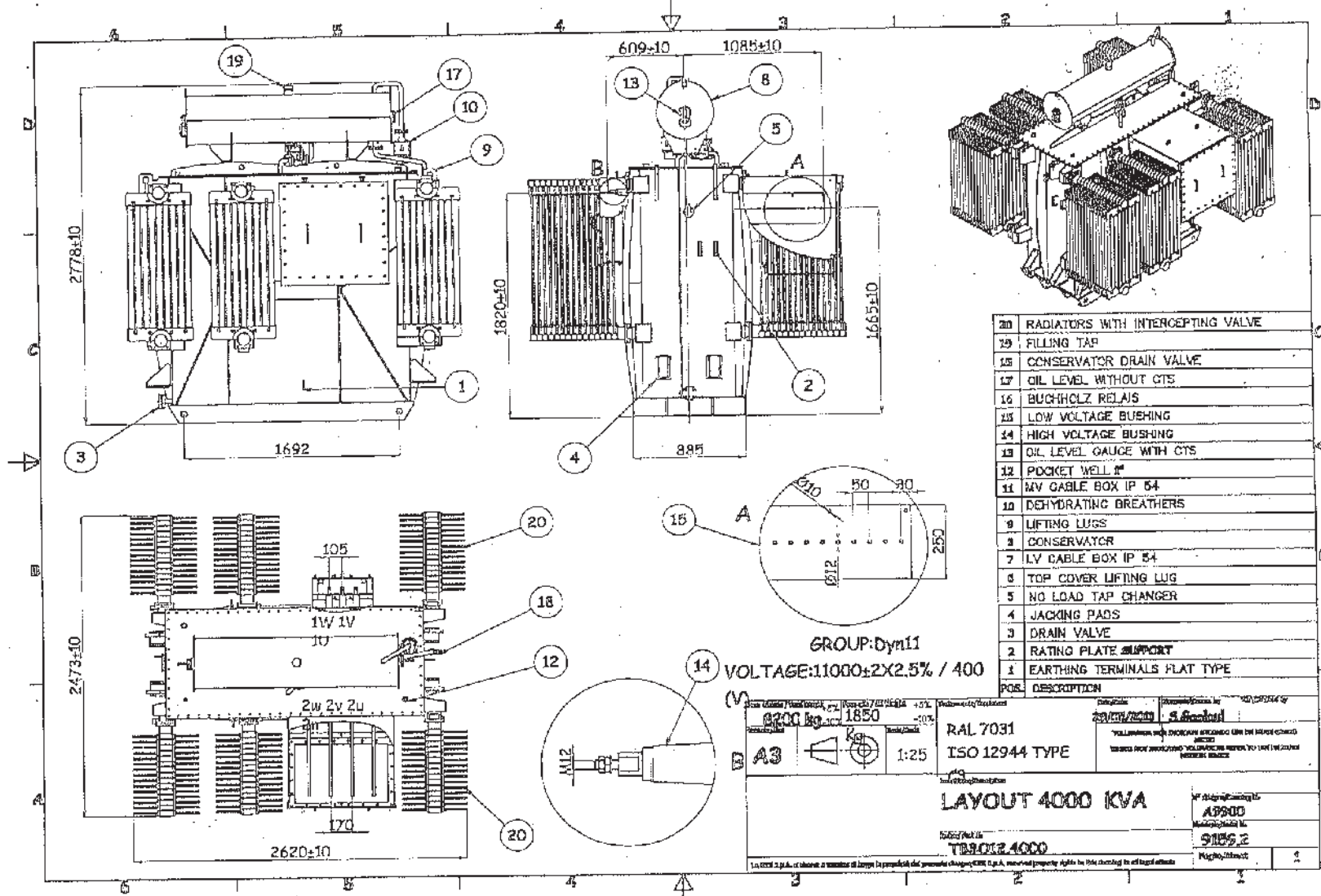
17	PLUG-IN RESIN BUSHING PPS 36/400A INTERFACE "B" EN50180
15	MV CABLE BOX
15	LIFTING LUGS
14	POCKET WELL 3/4" G
13	JACKING PADS
12	EARTHING TERMINALS FLAT TYPE Ø14
11	NEUTRAL EARTH LINK
10	LV CABLE BOX 3150 A
9	PITCH MONOBLOCK 4 POLE COPPER BUSHING N°46 AS 220 12 820
8	DRAIN VALVE DN15 PN10 1/2" G
7	OIL LEVEL INDICATOR B3120/2
6	RATING PLATE
5	RADIATORS
4	OFF LOAD TAP CHANGER
3	DEHYDRATING BREATHER EMC-MH03 0.5 KG
2	TOP COVER LIFTING LUGS
1	OIL FILLING PIPE WITH FLANGE PN10 DN25

PCS	DESCRIPTION			
5700 kg	1100 kg	RA: 7031 C3	12/12/2015	
+5 -10 % tolerance		33 ± 2X2.5% / 0.4 kV		
A2		1:14	Dyn11	



4MVA 33/11 kV Transformer – General Arrangement

DESIGN	A						
SCALE	F						
DATE	15/03/20						
BY	RA						
CHECKED	RA						
APPROVED	RA						



20	RADIATORS WITH INTERCEPTING VALVE
19	FILLING TAP
15	CONSERVATOR DRAIN VALVE
17	OIL LEVEL WITHOUT CTS
16	BUCHHOLZ RELAYS
15	LOW VOLTAGE BUSHING
14	HIGH VOLTAGE BUSHING
13	OIL LEVEL GAUGE WITH CTS
12	POCKET WELL II*
11	MV CABLE BOX IP 54
10	DEHYDRATING BREATHERS
9	LIFTING LUGS
8	CONSERVATOR
7	LV CABLE BOX IP 54
6	TOP COVER LIFTING LUG
5	NO LOAD TAP CHANGER
4	JACKING PADS
3	DRAIN VALVE
2	RATING PLATE SUPPORT
1	EARTHING TERMINALS FLAT TYPE
POS.	DESCRIPTION

GROUP: Dyn11
 VOLTAGE: 11000±2X2.5% / 400

22000 1850
 A3 1:25
 RAL 7031
 ISO 12944 TYPE
 LAYOUT 4000 KVA
 TB9012.4000

1	18-06-14
WE 09	

ISSUE	DATE	ISSUE	DATE	ISSUE	DATE	ISSUE	DATE	ISSUE	DATE
								A	18-06-14
								WE 09	

MTU Engine 16V4000G63
 Complete with 4 GBE transformers
 400V-33kV

Gen No.	Container Plate No.	Generator Serial No.	Generator Himoinsa	Engine MTU	Engine Serial No.	Breaker Key No.	Container Key No.	Fuel Con. Position	Breaker Position	Warranty End Date	Hours
1	BX4	161000936	HMW-2200 TS STD 50 HZ - 400V /230V AS20	16V4000G63	527112505	Ronis N25135	Keya 105	Left	Right	04.02.2019	168
2	BX3	161001096	HMW-2200 TS STD 50 HZ - 400V /230V AS20	16V4000G63	527112459	Ronis N41312	Keya 105	Right	Left	24.01.2019	176
3	BX2	161001097	HMW-2200 TS STD 50 HZ - 400V /230V AS20	16V4000G63	527112475	Ronis N35434	Keya 105	Left	Right	24.01.2019	176
4	BX1	161001095	HMW-2200 TS STD 50 HZ - 400V /230V AS20	16V4000G63	527112497	Ronis N25114	Keya 400 & 105	Right	Left	01.02.2019	180
5	BX8	161000935	HMW-2200 TS STD 50 HZ - 400V /230V AS20	16V4000G63	527112466	Ronis N52255	Keya 400	Left	Right	28.01.2019	183
6	BX7	161001019	HMW-2200 TS STD 50 HZ - 400V /230V AS20	16V4000G63	527112474	Ronis N31512	Keya 400 & 105	Right	Left	21.01.2019	178
7	BX6	161001098	HMW-2200 TS STD 50 HZ - 400V /230V AS20	16V4000G63	527112451	Ronis N23231	Keya 105	Left	Right	24.01.2019	179
8	BX5	161001094	HMW-2200 TS STD 50 HZ - 400V /230V AS20	16V4000G63	527112460	Ronis N32435	Keya 105	Right	Left	28.01.2019	175