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22999



Sicplant International

ozone depleting substance phase-out

UNIDO PROJECT MP/YEM/01/131

*HYDROCARBON
PROPELLANT*

AT

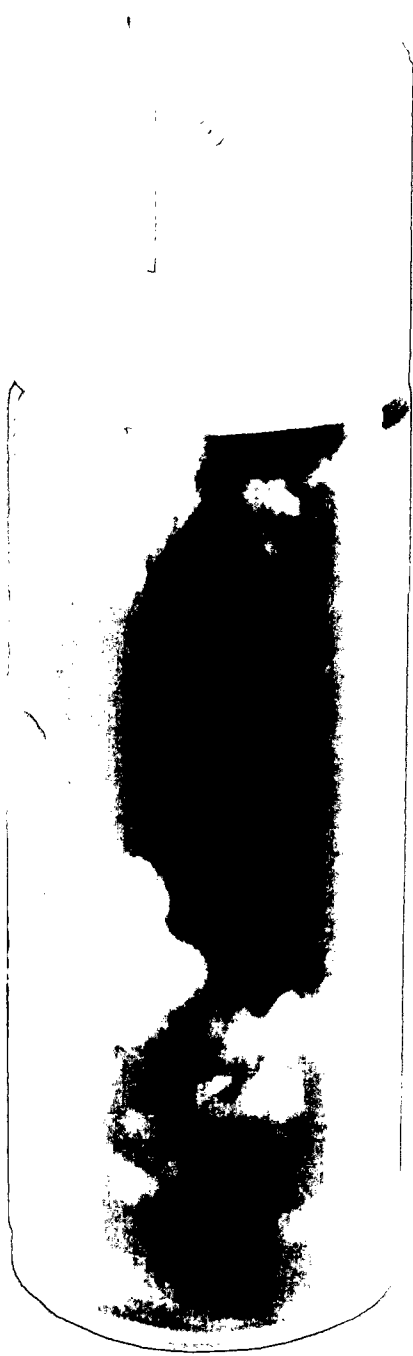
*AL - THOWRA INDUSTRIES
COMPLEX (AIC)*

SANA'A - YEMEN

FINAL REPORT

APRIL 2004

technological turn-key plants



SUMMARY

COMISSIONING REPORT

1. GENERALITIES
2. DEVELOPMENT OF THE PROJECT
3. DESCRIPTION OF THE EQUIPMENT
4. EQUIPMENT DELIVERY
5. ASSEMBLY AND START-UP
6. TRAINING
7. ANNEXES

CONTRACT 2002/094 – PROJECT № MP/YEM/01/131

Between UNIDO / Vienna and Sicplant International / Varese

The BUYER

UNIDO / Vienna – Austria

The CONTRACTOR

Sicplant International / Varese – Italy

The COUNTERPART

AL THOVRA INDUSTRIAL COMPLEX (AIC)
Sana'a / Yemen

COMMISSIONING REPORT

The Commissioning Report of the cans filling plant includes the following parts:

- PART 1: Propane/Butane tank and Distribution plant
- PART 2: Gas Filling Line
- PART 3: Accessories and Spare parts

PART 1
PROPANE / BUTANE STORING TANK AND DISTRIBUTION PLANT

consisting of:

- 1.1 № 1 propane/butane tank, capacity 10.000 l.
- 1.2 № 1 rack of 1 electrical pump.
- 1.3 № 1 rack of 1 pneumatic pump, with deodorizing unit.
- 1.4 Propane/butane distribution piping.

PART 2
GAS FILLING LINE

consisting of:

- 2.1 Conveyor system.
- 2.2 Modular Enclosed External Gassing room.
- 2.3 Automatic indexing gasser (capacity 40 cans/min).
- 2.4 Gas detection/management system.
- 2.5 Electric board (operating and safetyboard).

PART 3
ACCESSORIES AND SPARE PARTS

consisting of:

- 3.1 Fire control equipment including:
 - 50 kg trolley mounted powder fire extinguisher
 - 10 units of 9 kg powder fire extinguishers
- 3.2 Set of quality control gauges (crimp height, crimp diameter, pressure).
- 3.3 Spare parts.

1. GENERALITIES

In the frame of Montreal Protocol, UNIDO of Vienna has financed several projects for the reconversion of existing plants in third countries, with the purposes of phasing out the CFC's chemicals in the production of various items (aerosol, etc.), by replacing the same ones with a different kind of propellant agents, compatible with the natural environment and especially for not damaging the ozone layer.

According to these preliminary remarks on may 2002 UNIDO and Sicplant International / Italy have signed the Contract № 2002/094 – Project MP/YEM/01/131 for the phasing-out at the Aerosol Filling Line Plant of Al Thowra located in Sana'a / Yemen.

The scope of the Contract is the supply of a new plant for the manufacture of Aerosol using propane/butane propellant.

All the activities concerning this project have been developed from May 2002 to March 2004 date of start-up of the above mentioned plant.

2. DEVELOPMENT OF THE PROJECT

The project has been developed as follows:

2.1 January 2002:

Submission to UNIDO – Vienna of Sicplant International offer № 020101

May 2002:

Contract award and Contract signing.
Placing of equipment purchase orders.

2.2 July 2002

Receiving from Al Thovra specimen of № 3 different type of aerosol cans to better adjust, during manufacturing process, the mechanical parts that come in contact with cans, valves etc.
Preparation of the first lay-out.

2.3 From June 2002 to november 2002

Manufacture of aerosol plant equipment.

February 2003

Shipment of equipment.

2.4 July 2003

Finalization and shipment of the following project drawings:

- 1- GLO-01 – General lay-out
- 2- FD-01 Flow diagram
- 3- GE-505-02-RO-1/2 – LPG Storage tank – Dimensions/details
- 4- GE-505-02-RO-2/2 – LPG Storage tank – Connections
- 5- 1002-A – Gas house
- 6- Ge-SKID-01 – Pumps skid

2.5 September 2003

Visit to the Al-Thovra factory of our mr. Galli to define the auxiliary works necessary to commence the erection activities.

2.6 December 2003

Shipment of wooden case with additional equipment decided upon the visit of mr R. Galli.

2.7 March 2004

Commissioning and start-up test.

3. DESCRIPTION OF THE EQUIPMENT

The Aerosol Filling Line at Al Thowra's production department has been carried out by supplying the following machinery and equipment:

3.1 TANK AREA AND PROPANE / BUTANE DISTRIBUTION NETWORK

3.1.1 № 1 tank, 10 m³ capacity, complete with one manhole and equipped with:

- flexible pipe for transfer from truck to tank
- flexible pipe for liquid fill vapor balance
- № 1 motor pump for LPG transferring from truck to tank
- № 1 pneumatic pump for LPG feeding circuit
- three tower destenching column deodorizing unit
- tank equipment, including instrumentation (level gauge, manometer, thermometer) and safety devices (safety valves, pressure switches, earthing unit for truck)
- valves, connections, fittings, including air compressed piping distribution

3.1.2 LPG distribution network, complete with:

- valves, connections, fittings

3.2 FILLING LINE DEPARTMENT

3.2.1 Conveyor system for connecting the existing Aerofill machine to the external gassing room and back to the production area (10 m loop incl. Drive unit and two 90 degrees bent).

3.2.2 Modular Enclosed External Gassing room including extract ventilation system, primary and secondary ventilation, internal hydrocarbon pipe work, automatic shut-off and relief valves.

3.2.3 Automatic indexing gasser (capacity 40 cans/min) with a star wheel suitable for three can diameters, one propellant filler and a no-contact pneumatic sensor for the system operation controls.

3.3 SAFETY DEVICES

3.3.1 Gas detectors network monitors in the critical areas where leaks of gas can likely happen.

3.3.2 Safety control board with alarm system and shut off device.

3.4 VARIOUS EQUIPMENT

3.4.1 Fire control equipment including:

- 50 kg trolley mounted powder fire extinguisher
- 10 units of 9 kg powder fire extinguishers

4. EQUIPMENT DELIVERY

The supply of the equipment has been done by single shipment, complying with the Contract's requirements.

The shipment has been carried out on the basis of DDU plant site delivery, and covered by transport insurance, as requested in the Contract.

The goods, duly packaged into wooden boxes and crates, have been shipped into two containers.

The shipment of the goods has been done on mid February 2003 and the goods have been declared arrived on site on 02 April 2003 in good conditions, without specific remarks about damages or missing materials occurred during the shipment.

5. ASSEMBLY AND START-UP

These activities have been carried out from 26/03/04 to 31/03/04.

The team of technicians made-up by:

- mr. Roberto Galli (team leader);
- mr. Fabrizio Frontini, specialist for Maxi-Kit machine, deodorizing unit, pneumatic pump and conveying system;
- Massimiliano Sogne, specialist of gas-house and safety plant.

The three can diameters namely:

- dia 57 height 230 mm 400 ml content
- dia 52 height 195 mm 310 ml content
- dia 38 height 135 mm 110 gr content

have been successfully tested.

Here below you can read the day by day steps of the activities carried out up to completion of commissioning and start-up operation.

23-03

Arrival at Sana'a of mr. R. Galli

24-03

Checking of idraulic installations. General checking of equipment. First air compressed filling of tank for tightness test. Assessed leaks in the man-hole.

25-03

Removed leak to man-hole and surrounding idraulic circuit. 2nd filling of tank for tightness test at a pressure of 6 bar. Requested to Al Thowra armoured cables of various sections for safety plant feeding.

Arrival at Sana'a of Misters Frontini and Sogne.

26-03

Tightness test of tank OK. Beginning of cable terminations. Checking of conveyors and Maxi-kit. Checking of LPG line feeding tightness. Assessed various leaks.

27-03

Removal of leaks in the LPG line feeding. Final assembly of gas room. Cable terminations work.

28-03

Removal of all leaks in the LPG line feeding. Starting of run-up test with adjustment of dosing unit. From 14:00 to 18:00 filling of cans without significant interruption.

29-03

Changing of can diameter star wheel. Helping Client in adjusting and repairing the aerofill machine for product filling and valve crimping.

30-03

Continuation of cans filling and training of Al Thowra personnel.
Installation of electric board for electric pump.

31-03

Completion of training. Final set-up of equipment.
Departure of commissioning team.

6. TRAINING

The training has been developed on site during commissioning and start-up of the supplied equipments.

The Counterpart's personnel has been trained by SICPLANT INTERNATIONAL's staff on the following items:

- safety procedures and their implementation;
- machinery and equipment operation;
- machinery and equipment maintenance.

7. ANNEXES

In annex we enclose the following documents:

- Acceptance Certificate
- A set of as built drawings
 - 1- GLO-01 – General lay-out
 - 2- FD-01 Flow diagram
 - 3- GE-505-02-RO-1/2 – LPG Storage tank – Dimensions/details
 - 4- GE-505-02-RO-2/2 – LPG Storage tank – Connections
 - 5- 1002-A – Gas house
 - 6- Ge-SKID-01 – Pumps skid

This documentation is completed by a set of photos with details of the supplied and assembled equipment.

CONTRACT №: 2002/094 - PROJECT №: MP/YEM/01/131

Between UNIDO/Vienna and SICPLANT INTERNATIONAL S.r.l./Varese

The BUYER

The CONTRACTOR

UNIDO / Vienna – Austria

SICPLANT INTERNATIONAL / Varese - Italy

The COUNTERPART

AL THOWRA INDUSTRIAL COMPLEX (AIC)
Sana`a / Yemen

ACCEPTANCE CERTIFICATE

Machines and equipments delivered in accordance with the contractual requirements have been satisfactorily tested.

THE COUNTERPART:

THE CONTRACTOR

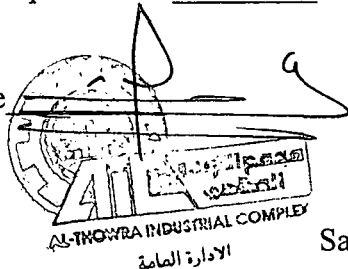
AL THOWRA INDUSTRIAL COMPLEX (AIC)

SICPLANT INTERNATIONAL

Name in capital letters FAISAL AL TAHIR

Name in capital letters ROBERTO GALLI

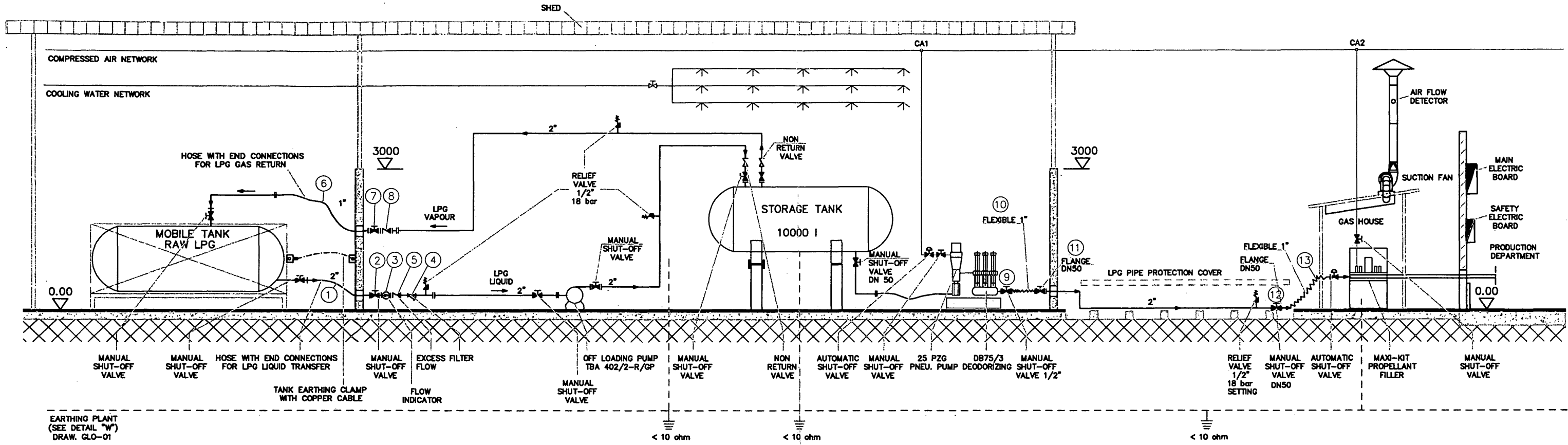
Signature



Signature





Sana`a 31/03/2004

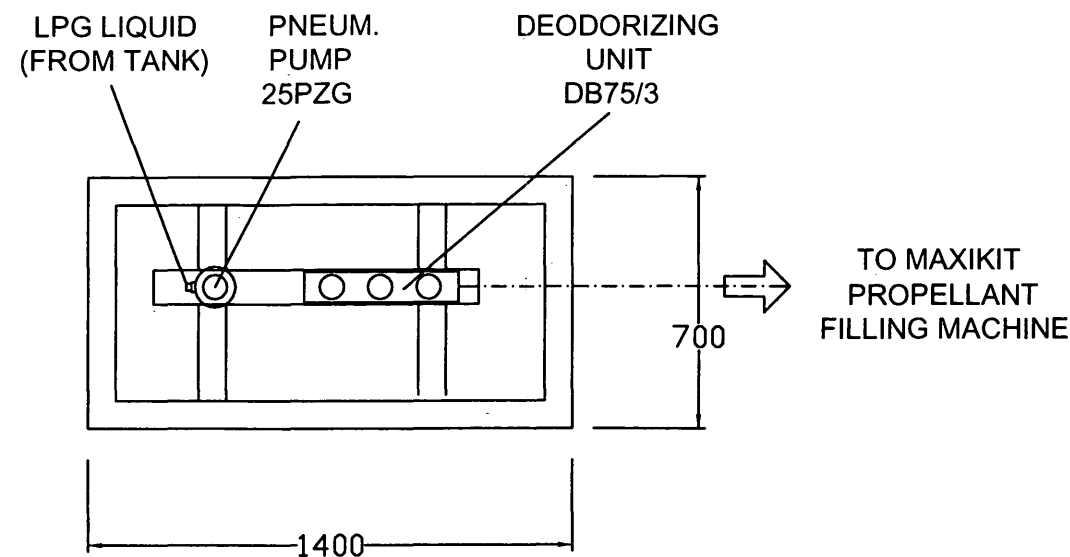
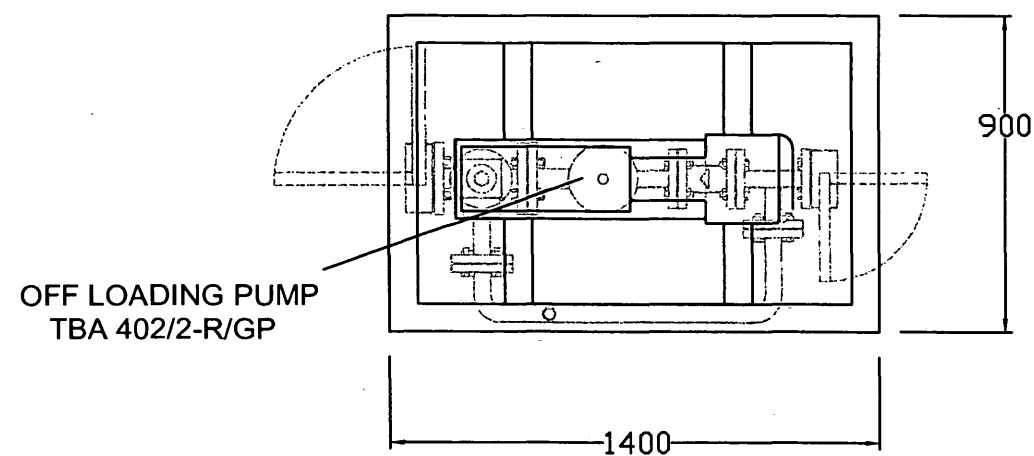
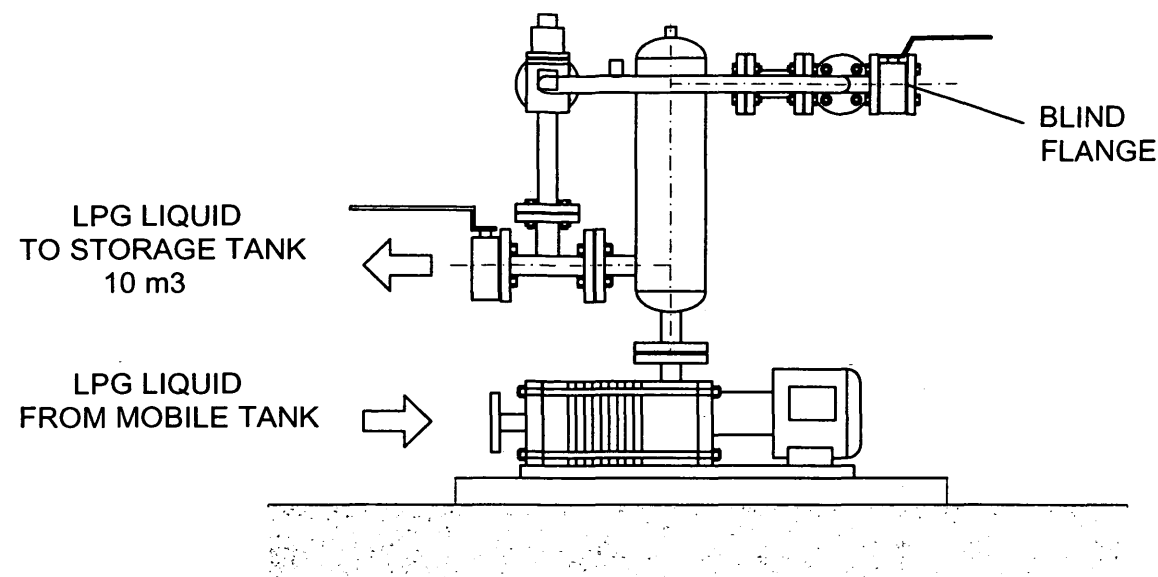




EARTHING PLANT
(SEE DETAIL "W")
DRAW. GLO-01

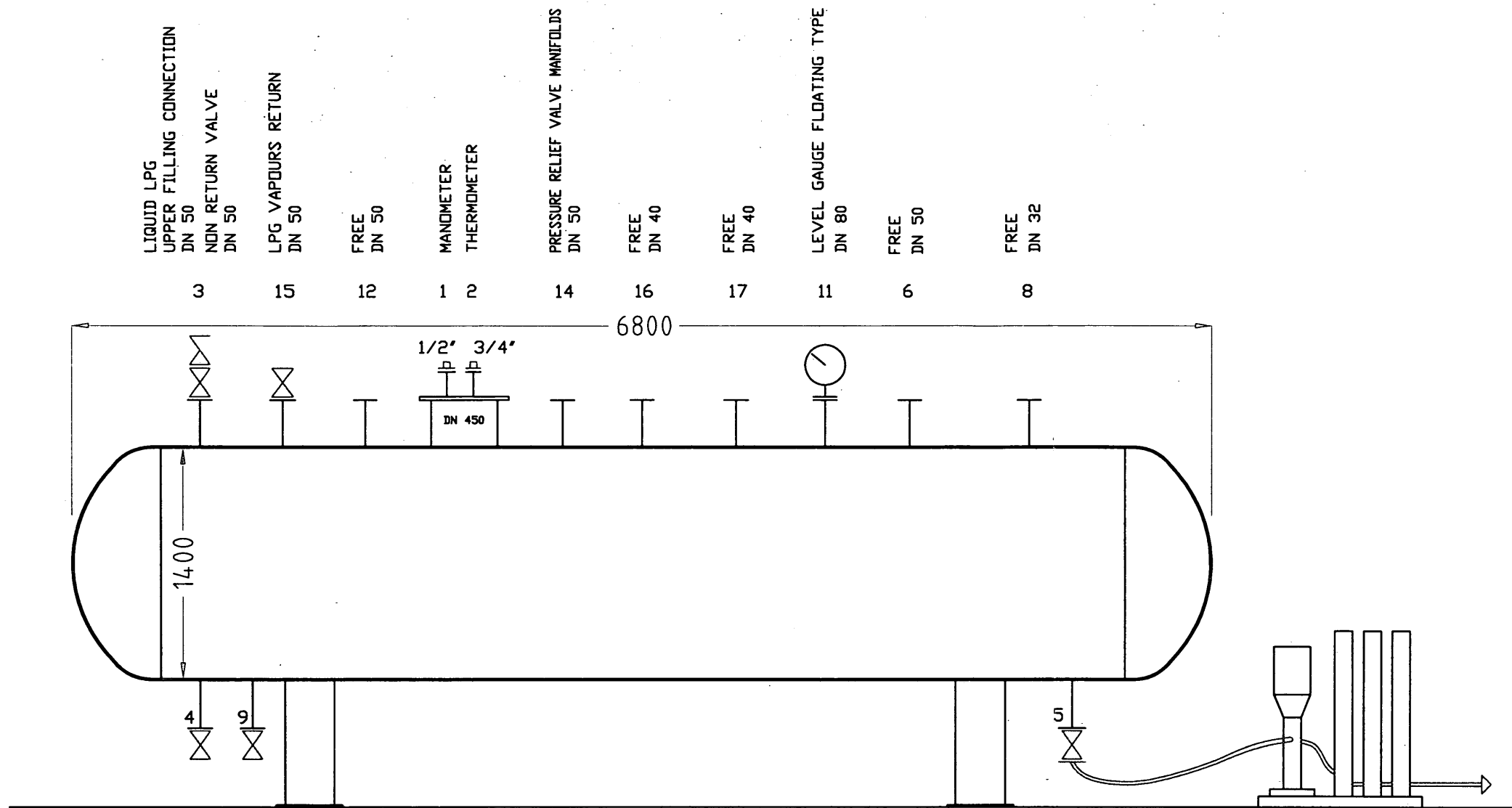
(X) = AUXILIARY EQUIPMENT LOCATION

- FOR MORE DETAILS SEE DRAWINGS N°:
- 1 - GLO-01 : General Lay-Out
 - 2 - GE-505-02-R0-1/2 : LPG Storage Tank - Dimensions
 - 3 - GE-505-02-R0-2/2 : LPG Storage Tank - Connections
 - 4 - 1002/A : Gas House
 - 5 - GE-SKID-01 : Pump Skid

FINAL	AS BUILT	02-04-04
REVIS.	DESCRIPTION	DATE
 UNIDO - VIENNA UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION		
UNIDO PROJECT	DESCRIPTION	
NP/YEM/01/131	CONVERSION TO PHASE OUT THE USE OF CFC'S IN AEROSOL CANS FILLING	
UNIDO CONTRACT		
E002/094		
Project counterpart:	AL-THOWRA INDUSTRIAL COMPLEX SANA'A - YEMEN	
Contractor:	 sicplant international s.r.l. PLANTS ENGINEERING AND CONSTRUCTION WORLDWIDE <small>21100 VARESE/VA STALFENDI 37/TEL. +39-0332-380104/FAX +39-0332-337177/e-mail: sicplant@sicplant.it</small>	
DRAWN	TITLE	SCALE
APP'D	AEROSOL FILLING LINE BY HYDROCARBON PROPELLANT	DATE
DRAWN	FLOW DIAGRAM	FILE
FD-01		020101
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REVIS.	DESCRIPTION	DATE
CUSTOMER:		
 UNIDO - VIENNA UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION		
UNIDO PROJECT:	DESCRIPTION:	
MP/YEM/01/131	CONVERSION TO PHASE OUT THE USE OF CFC'S IN AERSOL CANS FILLING	
UNIDO CONTRACT:		
2002/094		
Project counterpart:		
AL-THOWRA INDUSTRIAL COMPLEX SANA'A - YEMEN		
Contractor:		
 sicplant international s.r.l. PLANTS ENGINEERING AND CONSTRUCTION WORLDWIDE		
20123 MILANO/VA BOCCACCIO, 34/TEL +39-02-4981756/FAX +39-0332-237177/e-mail: sicplant@sicplant.it 21100 VARESE/VA STAURENGHI, 37/TEL +39-0332-280184/FAX +39-0332-237177/e-mail: sicplant@sicplant.it		
DRAWN	TITLE:	SCALE
APP.D	AEROSOL FILLING LINE TRAVAINIPUMP SKID PNEUM. PUMP+DEOD. SKID	—
DRG.NO.		DATE
GE-SKID-01		FILE
		020101
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25PZG
PNEUM.
PUMP

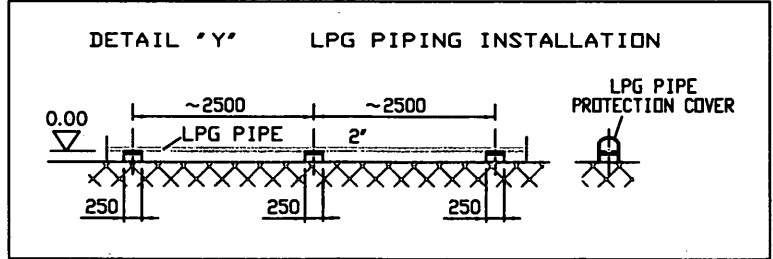
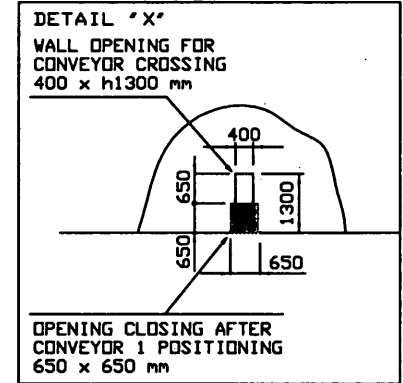
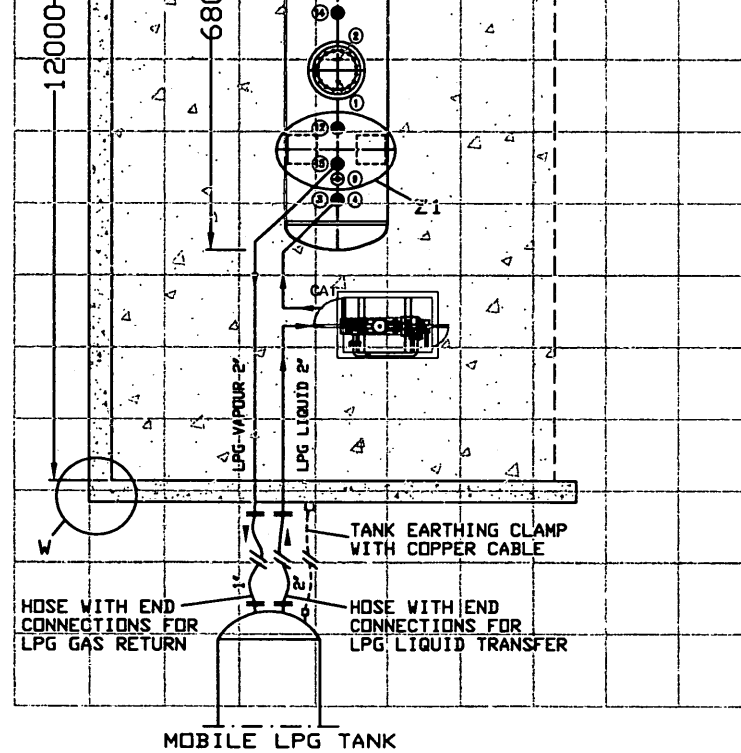
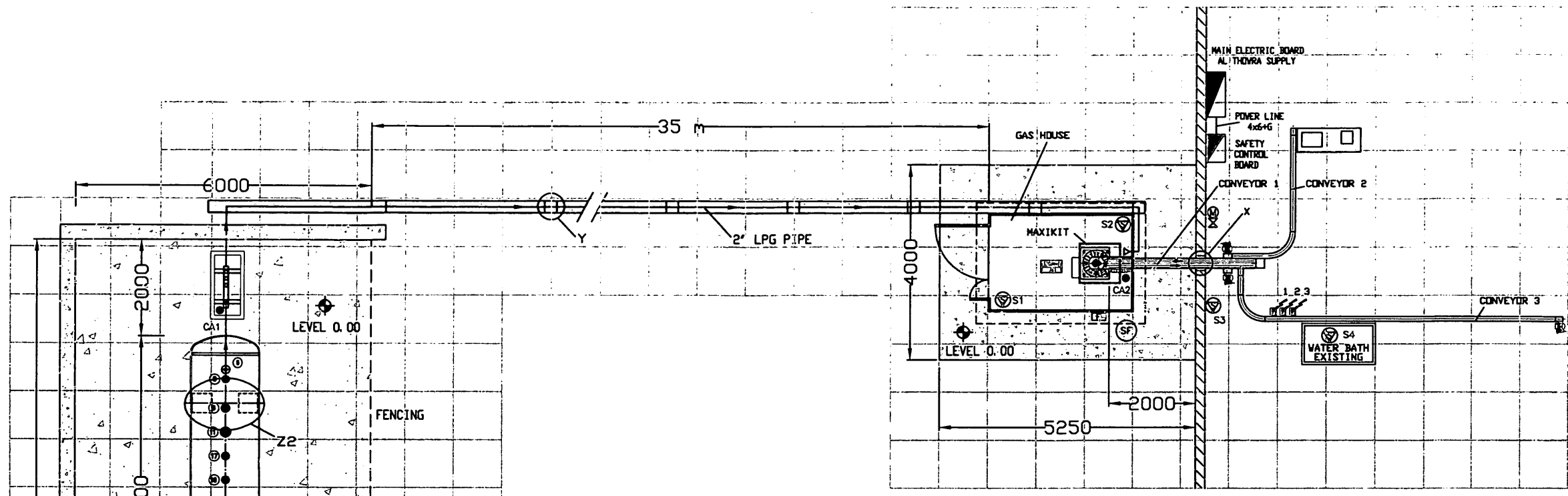
DB75/3
DEODORIZING
UNIT

LPG OUTLET CONNECTION
DN 50

LOWER FILLING CONNECTION
DN 50

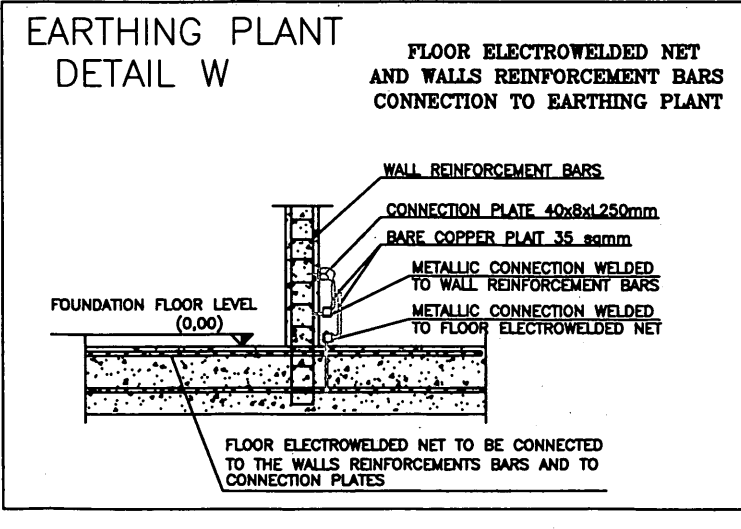
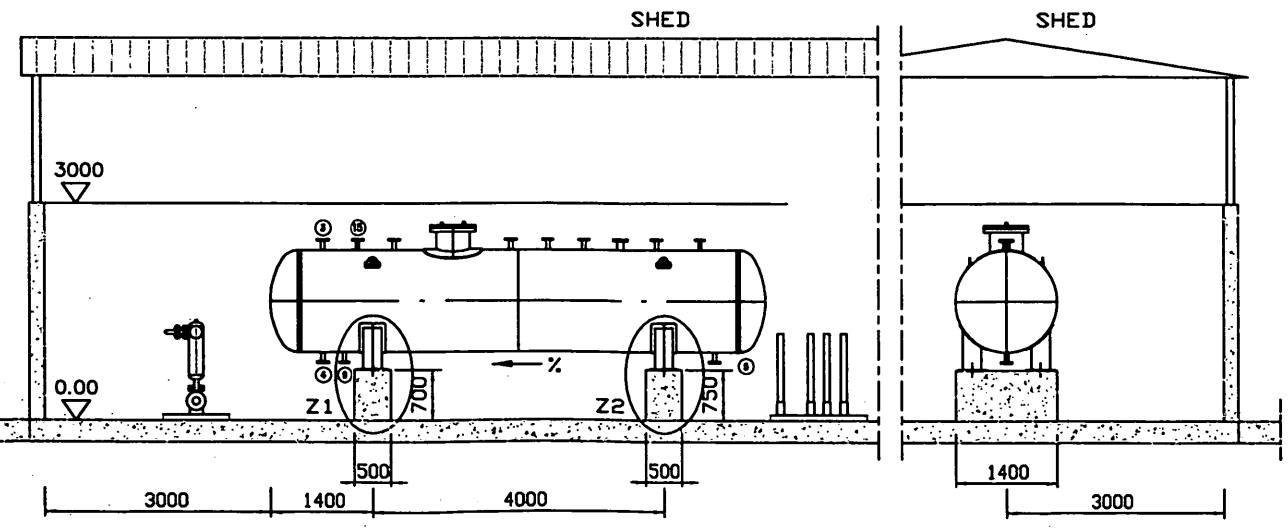
TANK EMPTYING CONNECTION
DN 40

FINAL	AS BUILT	02-04-04
REVIS.	DESCRIPTION	DATE
CUSTOMER:		
 UNIDO - VIENNA UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION		
UNIDO PROJECT:	DESCRIPTION:	
MP/YEM/01/131	CONVERSION TO PHASE OUT THE USE OF CFC'S IN AERSOL CANS FILLING	
UNIDO CONTRACT:		
2002/094		
Project counterpart:		
AL-THOWRA INDUSTRIAL COMPLEX SANA'A - YEMEN		
Contractor:		
 sicplant international s.r.l. PLANTS ENGINEERING AND CONSTRUCTION WORLDWIDE 21100 VARESE/VA STAURENGH,37/TEL +39-0332-280184/FAX +39-0332-237177/e-mail: sicplant@sicplant.it		
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DRG.NO.		DATE
GE-505-02-R0-2/2		FILE
		020101
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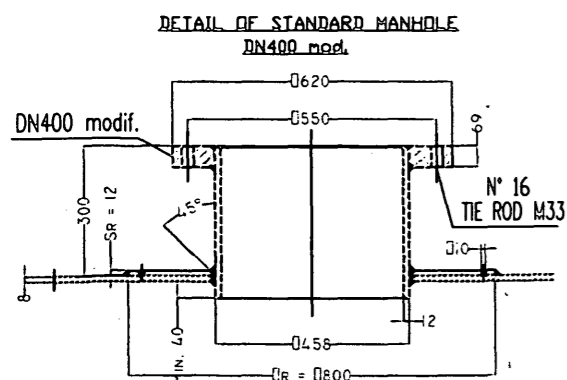
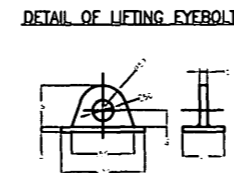
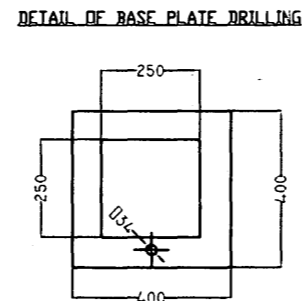
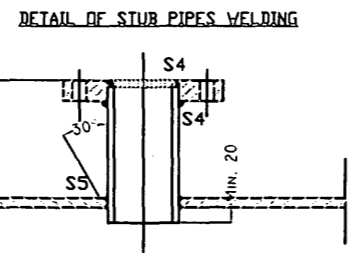
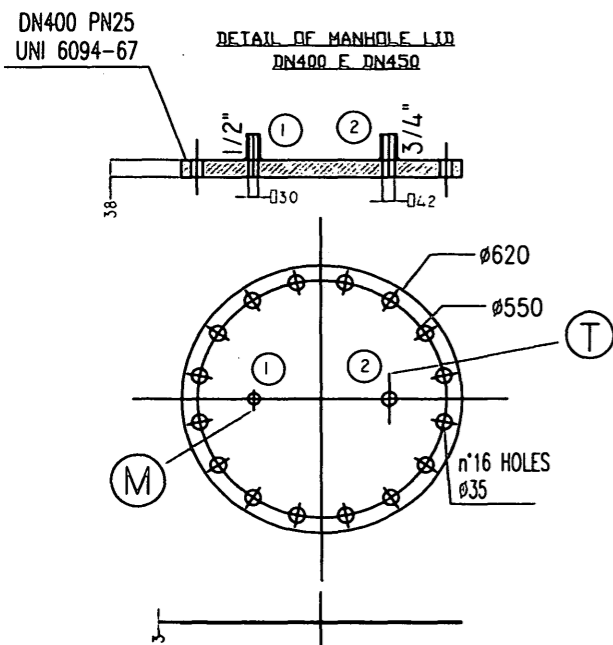
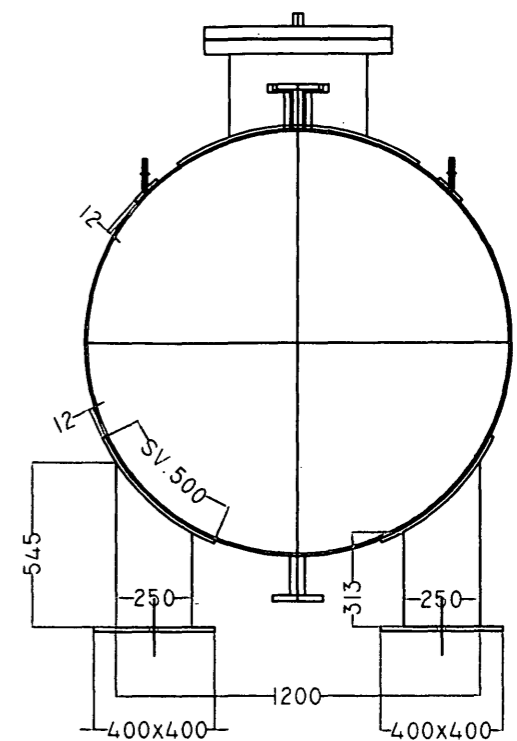
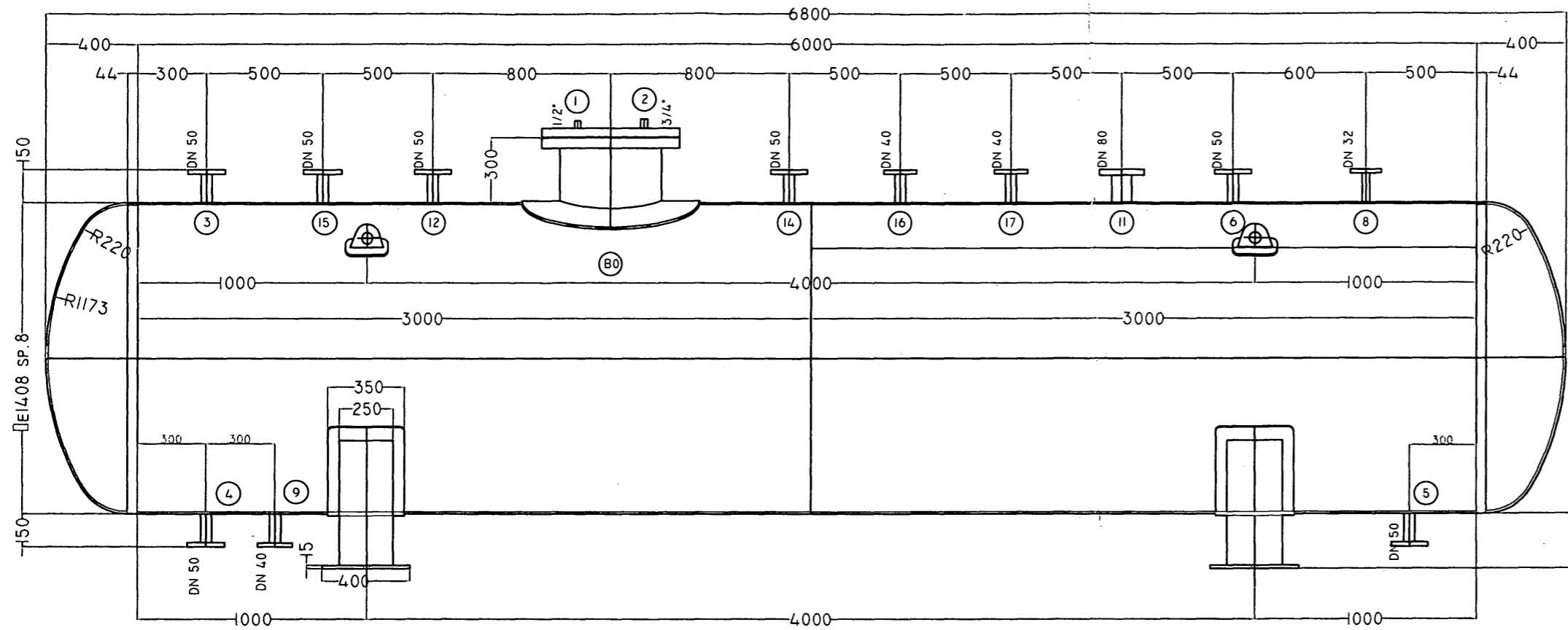
	Safety Control Board
	Suction Fan
	Air flow control
	Conveyor Board
	Gas Detector
	Machine standby Valve
	Lamp Ex

CA1	AIR 1/2" Bsp 350 NI/min 3-8 bar
CA2	AIR 1" Bsp 1800 NI/min 6-10 bar
▽	LPG P=5+Pv P=Vapor pressure 3/4" Bsp Q=20 l/min
1	CONVEYOR 1-MAXIKIT 3/4" Bsp 0.75 kW 380 Volt 50 Hz + ground + neutral
2	CONVEYOR 2 3/4" Bsp 0.37 kW 380 Volt 50 Hz + ground
3	CONVEYOR 3 3/4" Bsp 0.37 kW 380 Volt 50 Hz + ground




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MP/YEM/01/121	CONVERSION TO PHASE OUT THE USE OF CFC'S IN AEROSOL CANS FILLING	
UNIDO CONTRACT		
2002/094		
Project counterpart AL-THOWRA INDUSTRIAL COMPLEX SANA'A - YEMEN		
 sicplant international s.r.l. PLANTS ENGINEERING AND CONSTRUCTION WORLDWIDE		
<small>20123 MILANO/VA BICCACCI, 24/TEL. +39-02-88788/FAX +39-02-837177/e-mail: althowra@sicplant.it 8110 UDINE/VA STURMBAUM/TEL. +39-0432-802084/FAX +39-0432-831771/e-mail: althowra@sicplant.it</small>		
DRIVER	TITLE	SCALE
APP. 2	AEROSOL FILLING LINE	1:50
DRAMA	BY HYDROCARBON PROPELLANT	DATE
GL0-01	GENERAL LAY-OUT	FILE
		020101

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PROJECT DATA	Fluid	Type	LPG	
		Physical state	Liquid + gas	
		Specific weight	0,55	kg/l
	Capacity		10'000	l
	Hydraulic pressure test	2,52	MPa	
	Overpressure from liquid head	Negligible	MPa	
	Working temperature	< 50 °	°C	
	Project temperature	-20° / +50 °	°C	
	Working pressure	< 1,765	MPa	
	Project pressure	1,765	MPa	

FINAL	AS BUILT	02-04-04
REVIS.	DESCRIPTION	DATE

CUSTOMER:

UNIDO - VIENNA
 UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO PROJECT: MP/YEM/01/131
 UNIDO CONTRACT: 2002/094
 DESCRIPTION: CONVERSION TO PHASE OUT THE USE OF CFC'S IN AEROSOL CANS FILLING

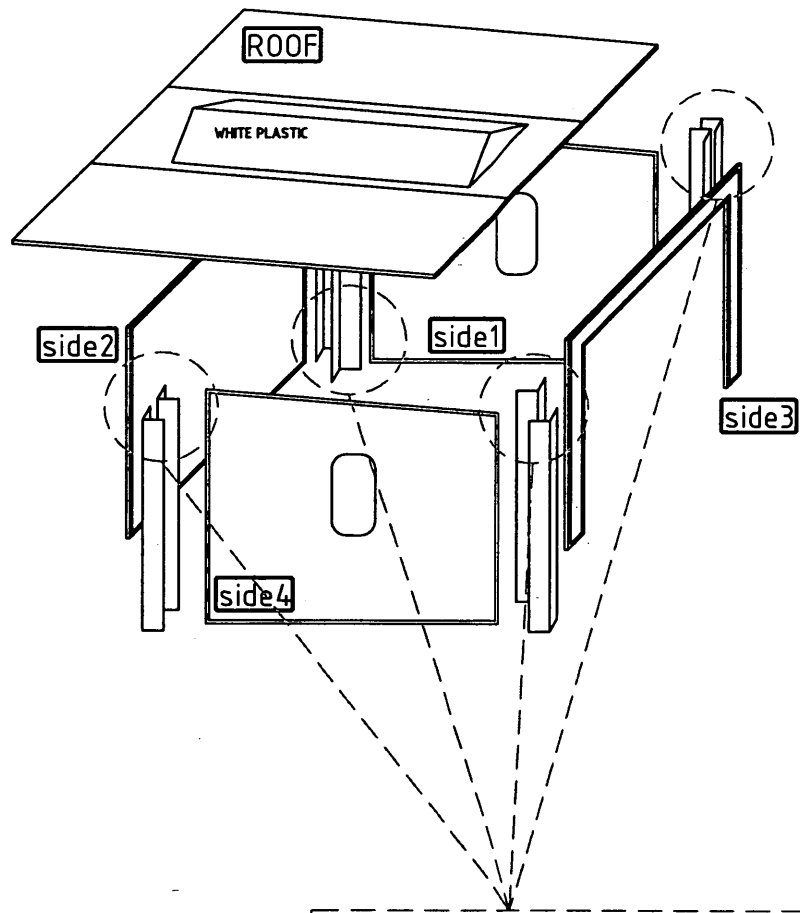
Project counterpart:
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 SANA'A - YEMEN

Contractor:

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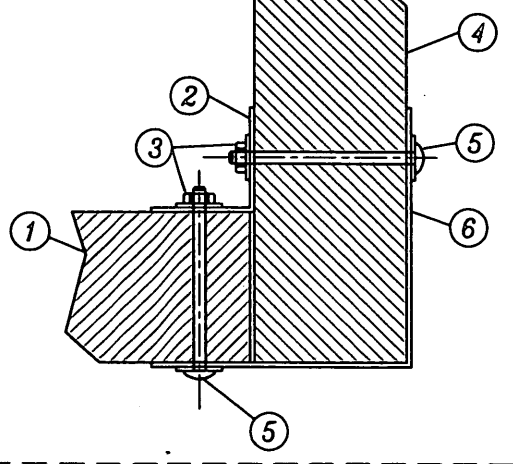
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APP.D	AEROSOL FILLING LINE	1:25
DRG.NO.	LPG STORAGE TANK 10 m3	DATE
GE-505-02-R0-1/2	DIMENSIONS-DETAILS	FILE
		020101

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GAS-HOUSE EXPLODED VIEW



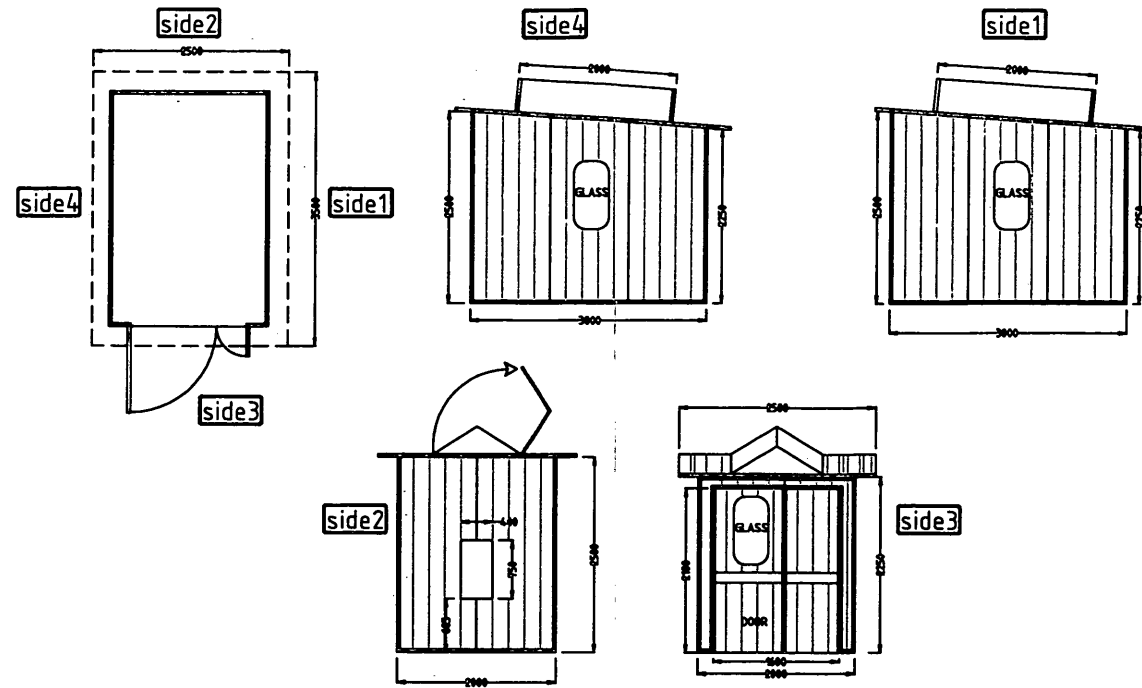
DETAIL OF PANELS CONNECTION



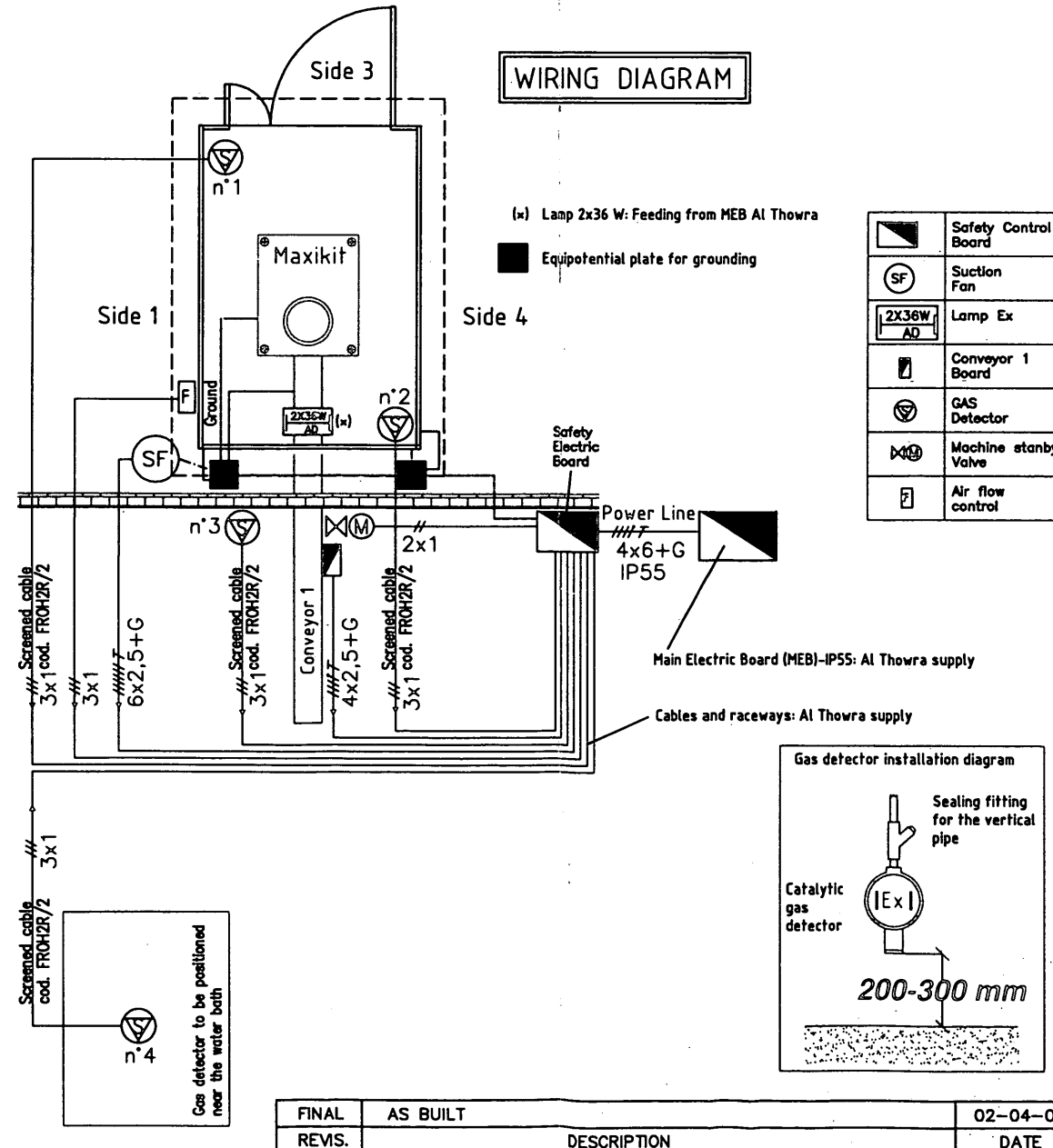
LEGEND

1	SANDWICH PANEL
2	INWARD ANGLE
3	STUD NUT 8 MA
4	SANDWICH PANEL
5	BOLT 8x45
6	OUTWARD ANGLE

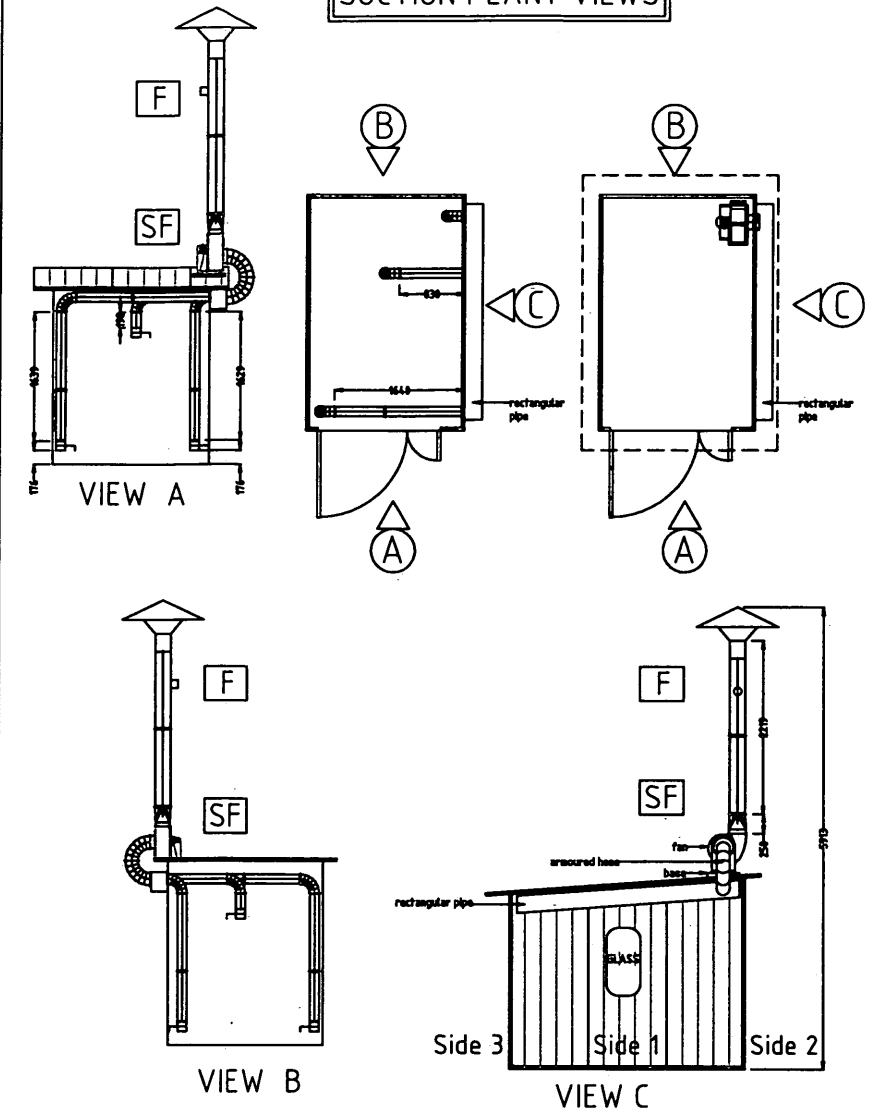
SIDE PANELS VIEW



WIRING DIAGRAM



SUCTION PLANT VIEWS



SUCTION FAN SPECIFICATIONS

PARAMETER	1' Speed	2' Speed
air delivery (m ³ /h)	1000	1600
air speed (m/s)	12	18
air head (Pa)	600	980
shaft speed (rpm)	900	1400
electric power (kW)	0,55	1,1
delivery duct orientation	LGO	

CUSTOMER: UNIDO - VIENNA
UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

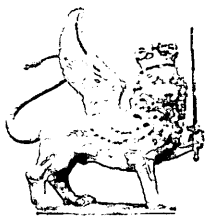
UNIDO PROJECT: MP/YEM/01/131
DESCRIPTION: CONVERSION TO PHASE OUT THE USE OF CFC'S IN AEROSOL CANS FILLING

UNIDO CONTRACT: 2002/094
Project counterpart: AL-THOWRA INDUSTRIAL COMPLEX
SANA'A - YEMEN

Contractor: sicplant international s.r.l. PLANTS ENGINEERING AND CONSTRUCTION WORLDWIDE
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21100 VARESE/VA STAUERENGH, 37/TEL. +39-0332-280164/FAX +39-0332-237177/e-mail: sicplant@sicplant.it

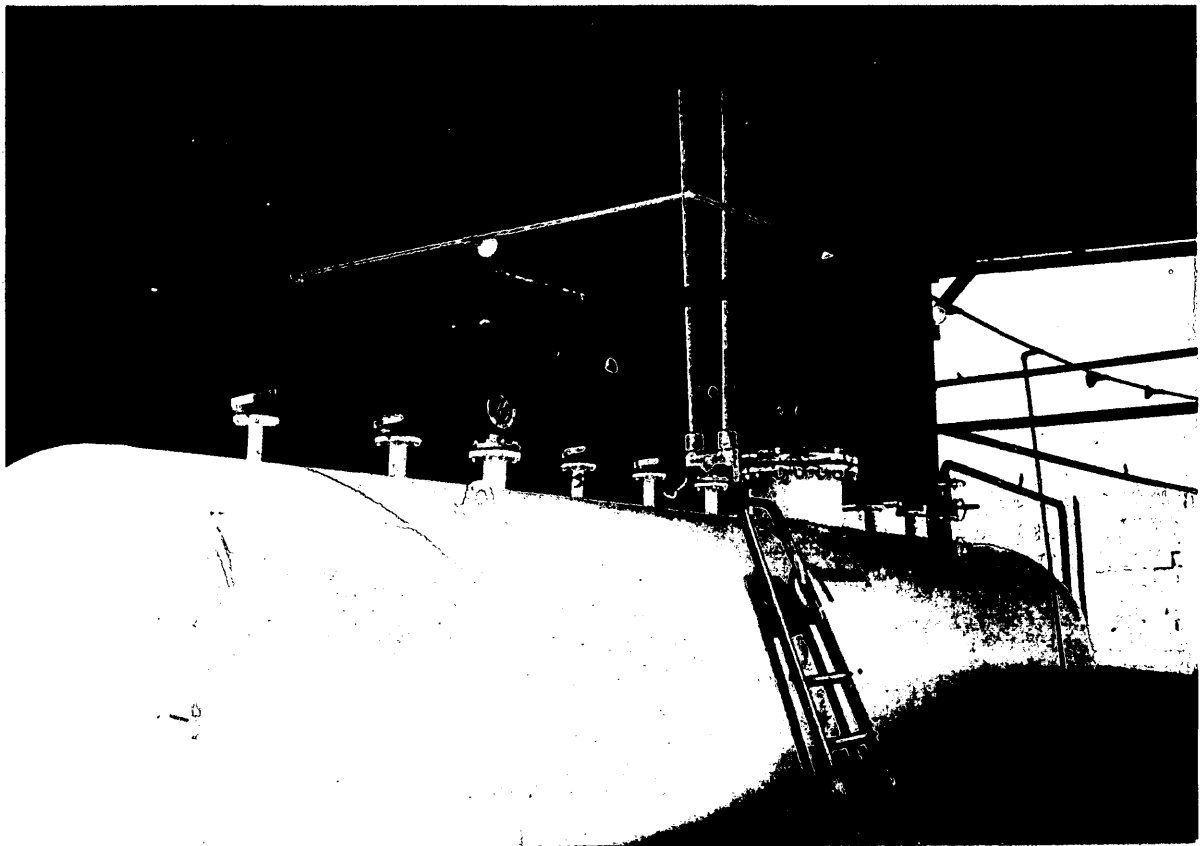
DRAWN	TITLE: AEROSOL FILLING LINE BY HYDROCARBON PROPELLANT	SCALE
APP.D	GAS HOUSE	DATE
DRG.NO. 1002-A		FILE 020101

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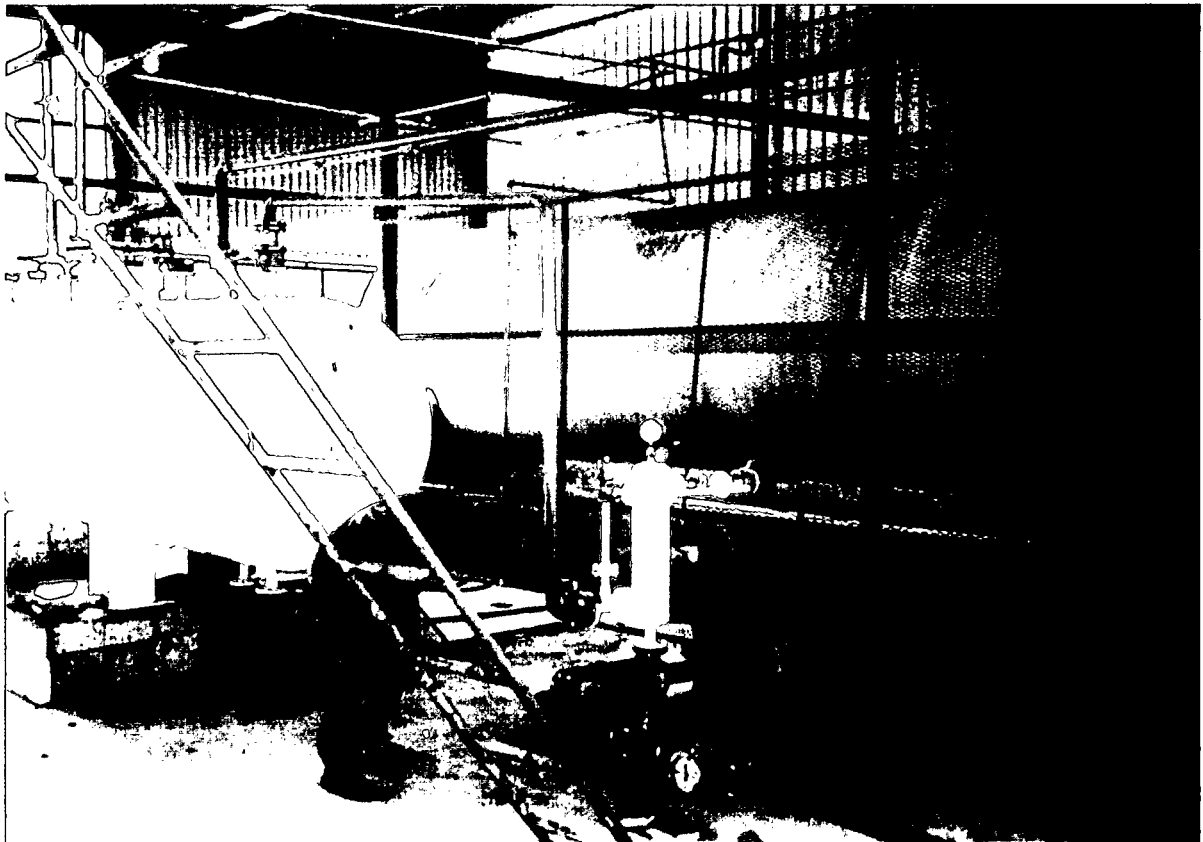
10 m³ TANK - GENERAL VIEW



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10 m³ TANK - ELECTRIC PUMP & LIQUID GAS SEPARATOR DEVICE



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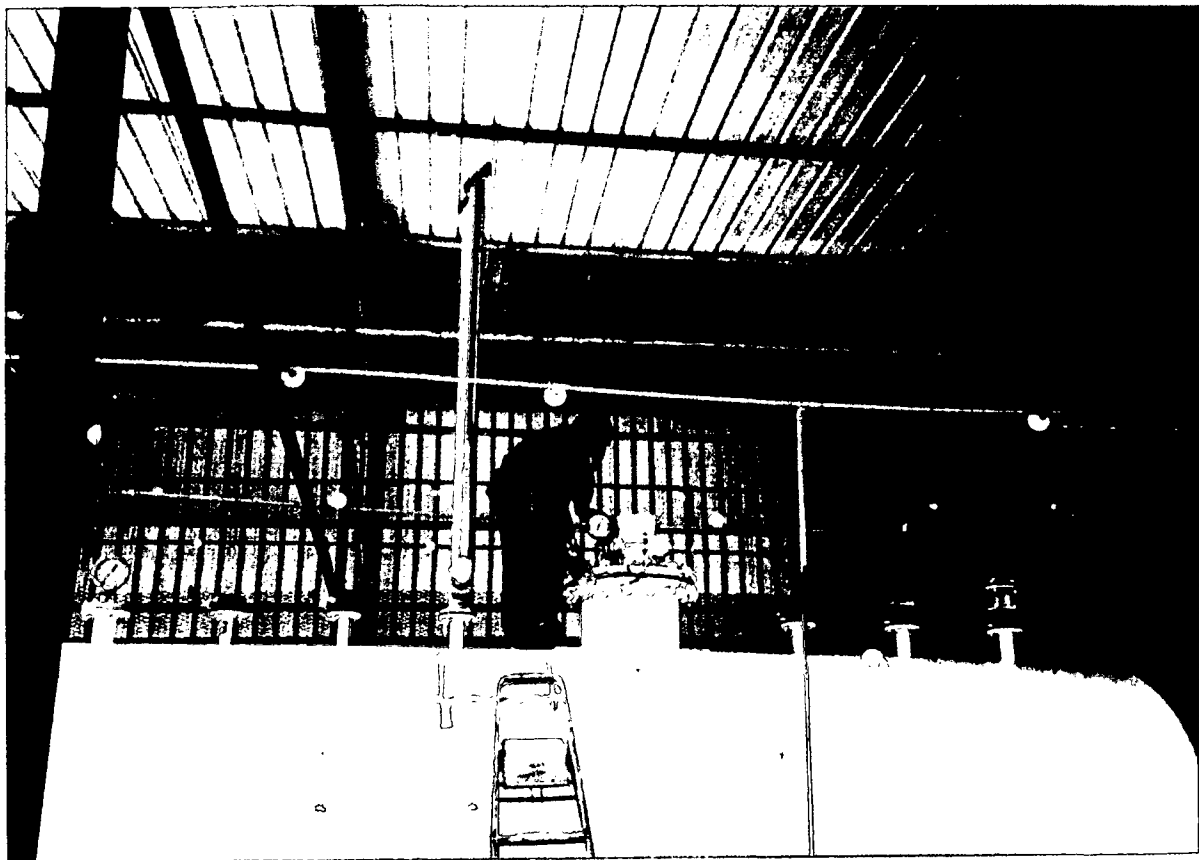
10 m³ TANK - LPG OUTLET - DEODORIZER AND PNEUMATIC PUMP



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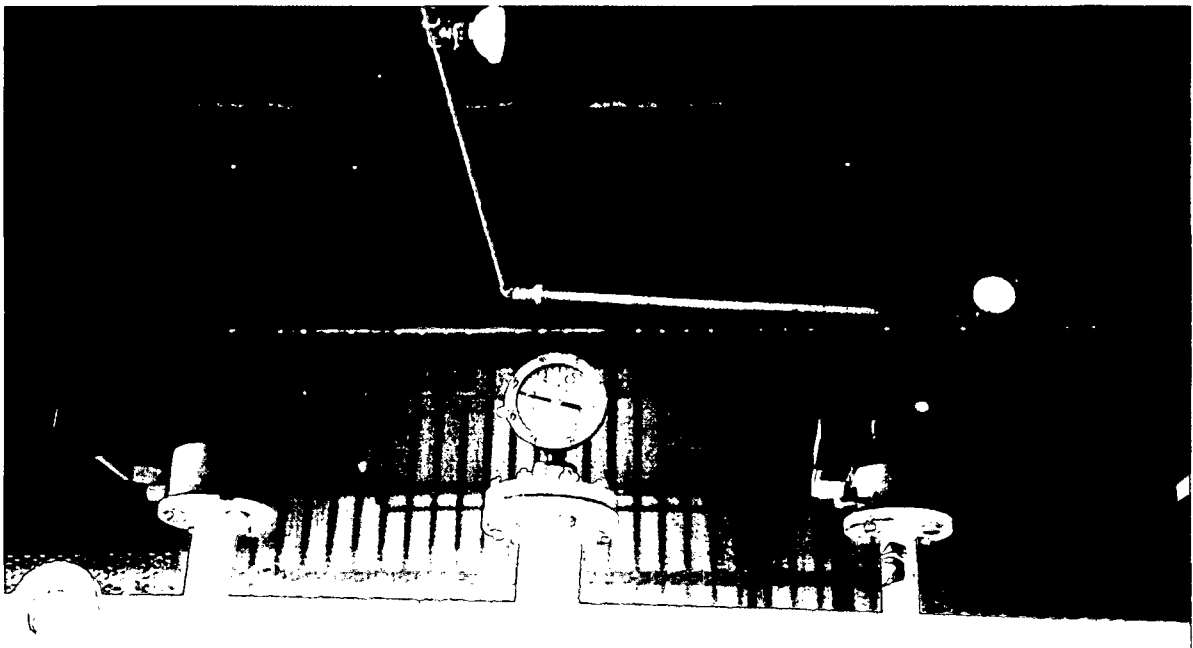


10 m³ TANK - MANHOLE AND ANCILLARY EQUIPMENT



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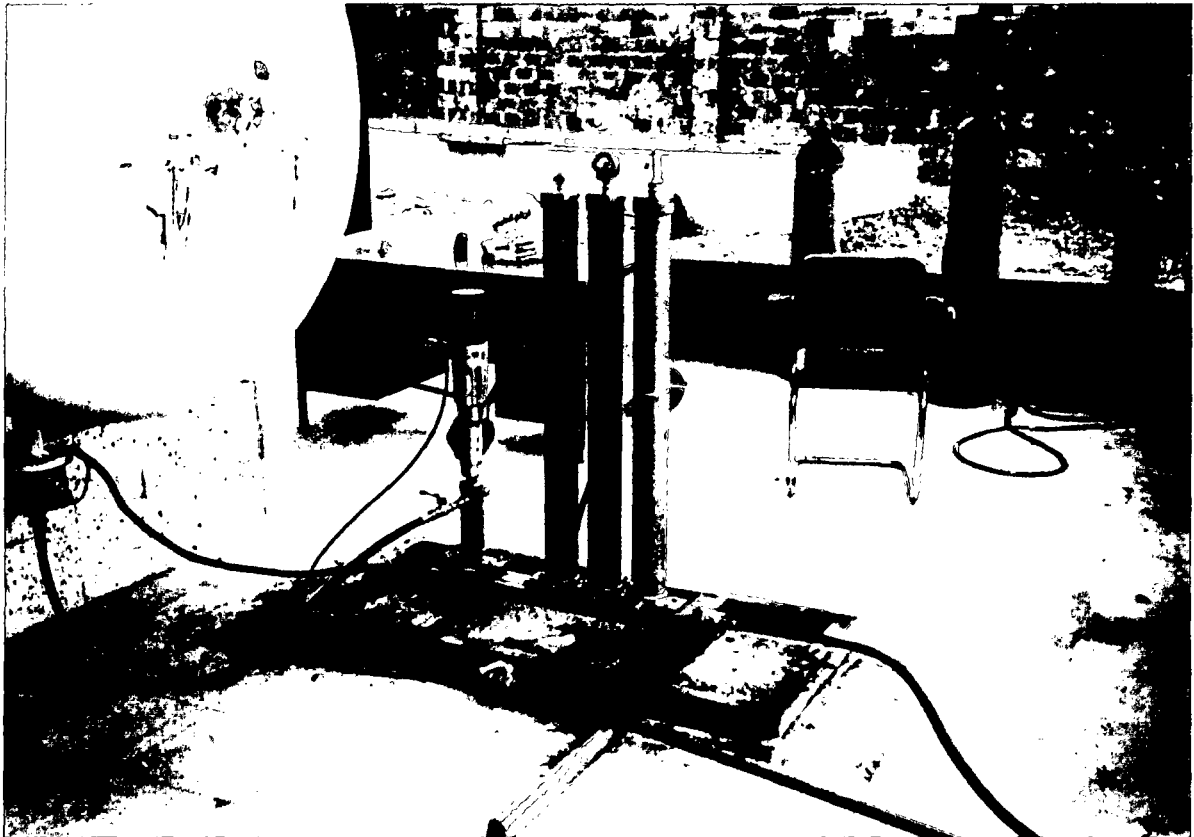


10 m³ TANK - LEVEL INDICATOR



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10 m³ TANK - DEODORIZER & PNEUMATIC PUMP VIEW



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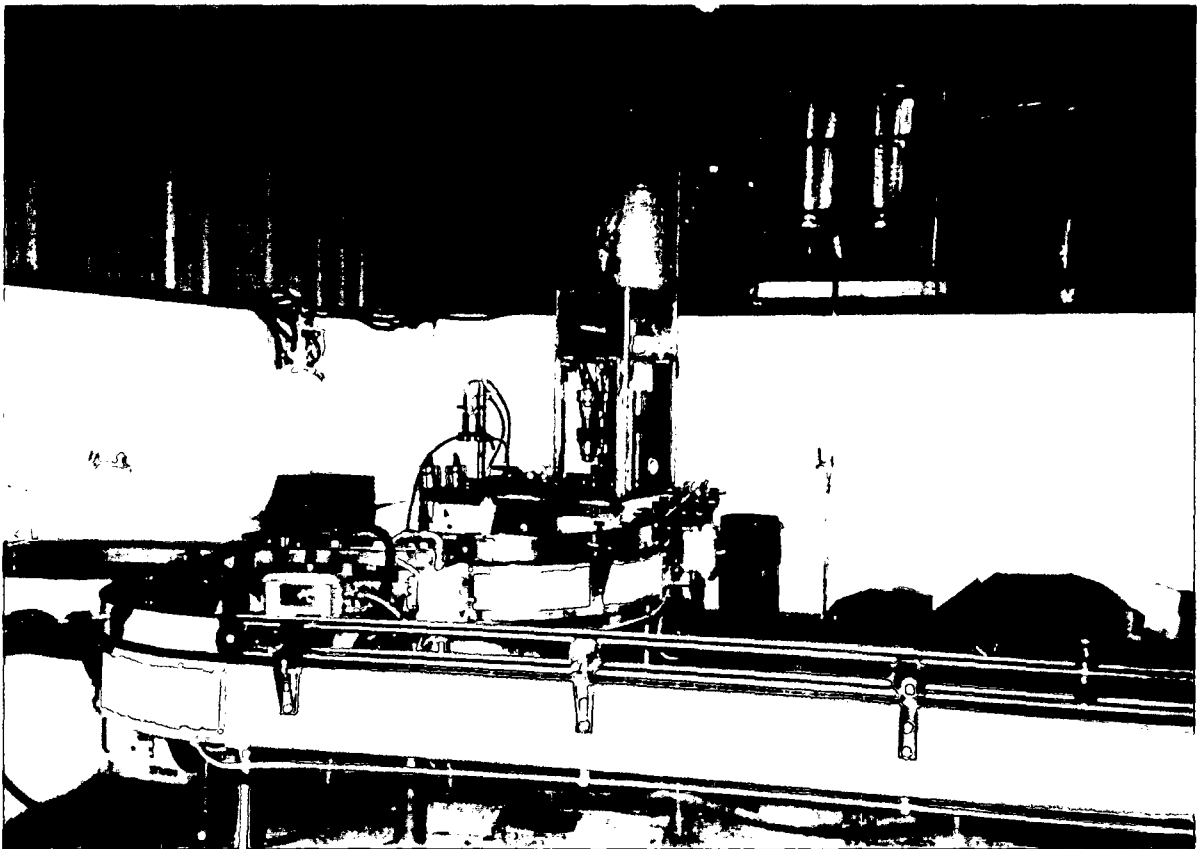
10 m³ TANK - MAN - HOLE DETAILS



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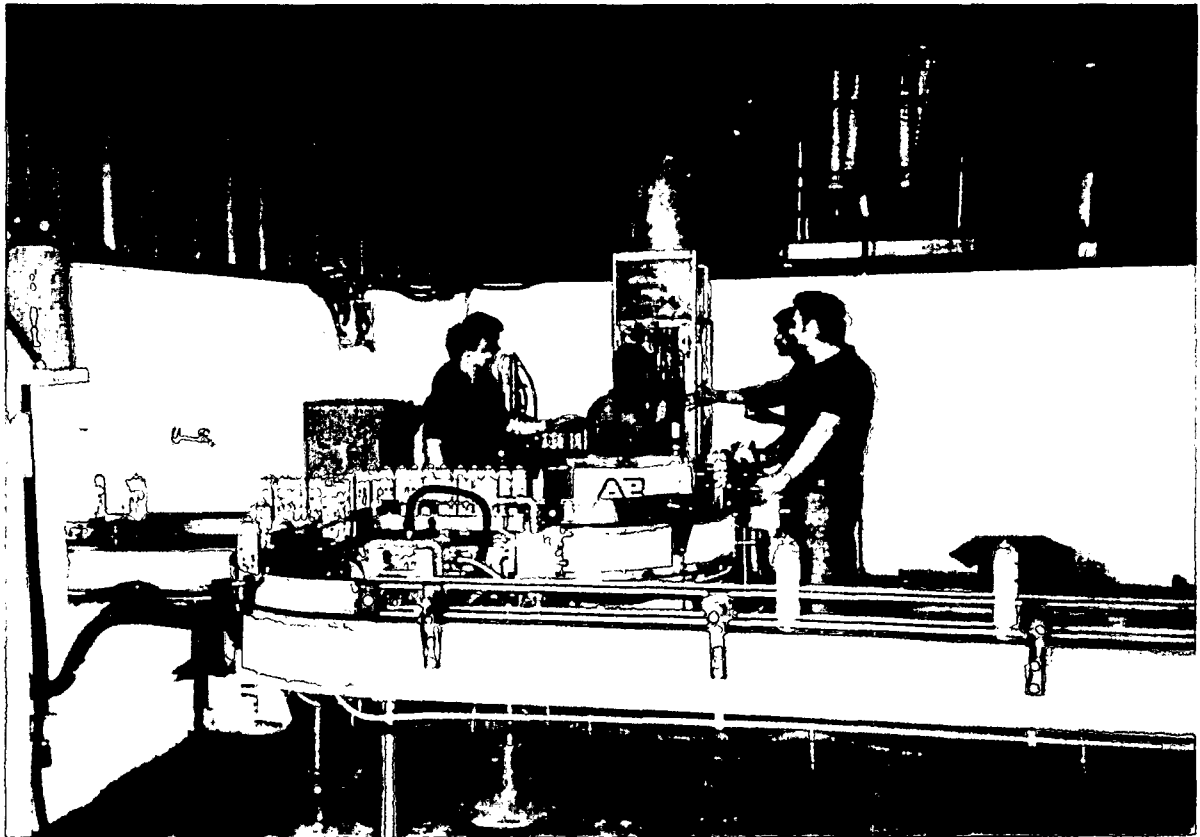
CONVEYORING SYSTEM



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PRODUCTION ONGOING



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PRODUCTION ONGOING VIEW



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LPG TRENCH AND GASSING ROOM VIEW



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GASSING ROOM VIEW



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