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22249

FINAL REPORT

UNIDO PROJECT : MP / SYR / 97 / 171

UNIDO CONTRACT : 98 / 074 / VK

BWI KP AEROFILL REF : 51685E

LABORATOIRE KOSMETO

CFC REPLACEMENT PROJECT

PREPARED BY : R L RUSSELL
DATE : 1ST DECEMBER 1999
REF : RLR / SD / LABKOS

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1.0 RESUME OF PROJECT KEY DATES

	<u>EVENT</u>	<u>DATE</u>
1.1	Contract award to BWI KP Aerofill	7 August 1998
1.2	Contract signed by BWI KP Aerofill and returned to UNIDO	2 October 1998
1.3	Joint visit to site by Mrs M Sanchez of UNIDO and R L Russell of BWI KP Aerofill. Basic guidelines established	15 October 1998
1.4	Technical Guidelines and proposed layouts for project completed and sent to UNIDO for approval.	19 January 1999
1.5	Equipment despatched to Latakia Syria	End March 1999
1.6	Notification of equipment arrival at site	Early June 1999
1.7	First visit to site by Project Leader to inspect equipment and review general progress in site preparation	23 / 24 June 1999
1.8	Visit to site of Project Manager UNIDO representative and Syrian Government Ozone Officer for start up and continuation of training and acceptance trials.	13-15 Oct 1998

2.0 REPORT ON INSTALLATION, COMMISSIONING AND ACCEPTANCE PHASES

2.1 INSTALLATION VISIT

2.1.1 General

The installation team of Mr R Sidhu - mechanical engineer, Mr P Mitchell - electrical engineer

and Mr D Broadhead - LPG specialised arrived on site on October 11th.

The equipment had been inspected previous by (see "Site Inspection Report") dated July 7th 1999 and all equipment was found to be in good condition

2.1.2 Filling Line and Gas House

2.1.2.1 Kosmeto had prepared a reinforced blockwork gas filling room.
This was ready to receive the gassing machine and conveyors.

2.1.2.2 All the equipment was positioned and installed without major problem.
The only outstanding work was as follows :

- The gas filling room has been made slightly larger than the drawing so the ductwork of the ventilation system needs to be extended in order for it to be fixed at it's inlet point to the A8 gassing machine enclosure.
- A new section has been manufactured by KP Aerofill and despatched to Kosmeto for installation.

2.1.2.3 Kosmeto have yet to move their existing upstream equipment, crimper and product filler to the new filling line.

2.1.3 Tank Farm and LPG Pipework

2.1.3.1 *The concept of the LPG storage facility included a fixed 5M³ vessel and a transportable 2M³ skid mounted vessel designed for use as a 'mini' tanker to be able to go to the gas supplier and fetch supplier to site.*

On arrival the vessel would be unloaded as quickly as possible and then stored on site.

The vessels pumps and pipework were all installed and tested to 11 bar air pressure by the installation team and local labour.

There were no faults or leaks identified in the system which was then purged to 6 bar including the transportable vessel with inert gas (Nitrogen).

It was not possible to commission the system at that time because of the non-availability of LPG.

This was deferred until the next visit.

continued..

2.1.4 Plant Safety and Gas Detection

2.1.4.1 The ventilation system for the gassing room was installed and functioning. The air flow sensors was calibrated and the system was operational. The previously mentioned inlet section which has to be replaced is the only outstanding item to be dealt with. When the replacement section is fitted the efficiency of the system will be enhanced.

2.1.4.2 The Test Bath ventilation system was installed and commissioned.

2.1.4.3 The gassing room and LPG storage area gas detection system was installed and the detectors calibrated for butane / propane duty.

2.1.5 Deluge System / Fire Protection

2.1.5.1 This issue has still to be addressed by the Project Counterpart and the options reviewed.

2.1.6 Initial Testing

2.1.6.1 A temporary compressor was connected to the air network piping and pneumatically powered plant was cycled and was found to be working correctly.

2.1.6.2. It was not possible to commission the LPG storage area because of the non-availability of gas.

The pressure of inert gas on the 5M³ LPG storage vessel and distribution pipework was reduced to a slight positive pressure in readiness for the commissioning phase.

2.1.7 Conclusions to the Visit

2.1.7.1 A replacement ductwork section was ordered from KP Aerofill Hayes.

2.1.71 The requirements for the acceptance visit were agreed with the Project Counterpart.

These were as follows :

LPG - initial load of 2M³ (approx 1 tonne)

Aerosol cans filled with correct product weight and with the valves pre-crimped in position.

Because of the logistics problem in preparing these on one site and transporting them to another, the quantity was limited to 300.

continued..

2.2 COMMISSIONING AND ACCEPTANCE PHASES

2.2.1 Acceptance Visit

The acceptance visit took place on October 28th.

Present were Mrs M Sanchez Osuna - representing UNIDO as the Project Officer, Mr K Klaly the Syrian Ministry of the Environment Ozone Officer and R L Russell representing KP Aerofill as Project Leader.

2.2.2 LPG Storage Area

2.2.2.1 The first task was to commission the LPG storage facility. The 2M³ transportable vessel had been filled with LPG and positioned adjacent to the off-load pumpset but outside the compound.

The bulk of the LPG (approximately 0.9 tonne) was transferred via the off-load pump into the 5M³ main storage vessel.

this initial transfer was made slowly to avoid any risk of flash vaporisation and freezing of the vessel shell.

Hereafter the rest of the system including the molecular sieve was charged with LPG.

2.2.2.2 The quality of the gas after sieving was considered to be very good by Mrs Sanchez Osuna.

2.2.2.3 The next stage was to test the A8 propellant filler using prepared cans containing product and having pre-cripped valves in position, Kosmeto had prepared some 300 such cans as had been agreed during the previous visit.

Adjustments were made to the filling volume and the propellant injection pressure and fills stabilised and were consistent at within +/- 1,5.grms of target weight.

The machine was cycling at approximately 30 cans per minute.

Due to the constraints of supplying the gassing machine with filled/valved cans it was not possible to run the machine once the 300 pre-prepared cans were used up but the plant was performing consistently and no problems were experienced thus far.

2.2.3 Conclusion to the Visit

2.2.3.1 The actual running time was limited but the equipment was performing in excess of the requirements of the UNIDO T.O.R.'s.

The A8 is a simple well proven unit and no fundamental problems are expected to arise.

2.2.3.2 Outstanding items to be addressed are supply and fitting of a replacement section of ventilation ductwork.

(Responsibility KP Aerofill / Kosmeto).

The installation of a fire-fighting deluge system.

KP Aerofill has recommended a fixed sprinkler arrangement to be positioned over the 5M³ LPG tank and hose reel conveniently located to be able to cover the LPG storage and off-load areas and the gassing room area.

This system should be pump fed and sufficient water storage for at least one hours discharge.

Finally there is the question of operator training.

Dr Idilbir of Kosmeto expressed a wish to visit KP Aerofill for in depth training in the operation and maintenance of the plant.

KP Aerofill are very pleased to be able to undertake such training and a mutually acceptable date will be arranged with a target for completion in January 2000.

3.0.APPENDICES

3.1.PRESSURE TEST CERTIFICATES LPG INSTALLATION



Old Park Engineering Services Limited

Oak House
Royal Oakway North
Daventry NN11 5PQ
Tel: +44 (0) 1327 706677
Fax: +44 (0) 1327 300112

KP AEROFILL
33-35 Clayton Road
Hayes
Middlesex
England
UB3 1RU

For the attention of: Mr R Russell
Date 28.11.99

Dear Sir,

Re: Kosmeto L.P.G Plant

Our engineer arrived on site and unpacked the cases; items were then positioned in the compound.

The 5 cubic metre vessel had been positioned the wrong way round on its plinths.
(The customer repositioned as required)

The 5 cubic meter vessel was then fitted out with the valves and equipment and tested with air to 90 psig the joints were tested with soapy water solution to prove there soundness all the joints were found to be sound

The air test was left on for five hours and witnessed by the customer. The air was released and the vessel purged with one volume of nitrogen, the nitrogen was released leaving a positive pressure in the vessel ready to accept L.P.G. The above procedure was repeated on the 2 cubic metre vessel.

The pipe work was installed and connected to the vessel, pumps and column using a local welder to weld the final make up pieces.

On completion the system was pressure tested to 12.5 bar all the joints were soapy solution tested and were found to be sound. The test was left on for five hours there was no pressure drop. The nitrogen pressure was reduced in the column to 90 psig ready to be commissioned on arrival of L.P.G

The Gas had not arrived at this stage and after consultation with KP Aerofill our engineer left site and returned to the UK.

Yours faithfully

Old Park Engineering Services Ltd

David Birkhead

Old Park Engineering Services Limited

Oak House – Royal Oakway North – Daventry – NN115PQ

Tel:- 01327 706677 Fax:-01327 300112

Pressure Test Certificate

Site Location: Kosmeto Syria

Certificate No: P2331/1

Customer Ref:51156E

Customer: BWI KP AEROFILL
33-35 Clayton Road
Hayes
Middlesex
England
UB3 1RU

Vessel Details: 1 – off 5 cubic meter & 1 – off 2 cubic meter

Gas Details: Propane

New or Existing: New

Installation Size: 5 cubic meter

Permitted Leak Rate: None

Pressure Gauge Type: 0 - 300

Pressure Test Medium: Compressed Air

Test Pressure: 90 psi

Stabilization Period: 15 mins

Soundness Test Period: 5 Hours

Any Existing Potential Hazards ? NO

Maximum Pressure Drop Allowed: None

RESULTS

Actual Pressure Drop (If Any) None

Calculated Leakage Rate (If any) None

PASS: YES

SIGNED:  POSITION: Engineer

COMPANY: Old Park Engineering Services Limited

DATE: 16- 10 -1999

Old Park Engineering Services Limited

Oak House – Royal Oakway North – Daventry – NN115PQ

Tel:- 01327 706677 Fax:-01327 300112

Pressure Test Certificate

Site Location: Kosmeto - Syria

Certificate No: P2331/1

Customer Ref: 51156E

Customer: BWI KP AEROFILL
33-35 Clayton Road
Hayes
Middlesex
England
UB3 1RU

Vessel Details: Destenching Column & Pipework

Gas Details: Nitrogen

New or Existing: Existing

Installation Size: 5 Cubic meter

Permitted Leak Rate: None

Pressure Gauge Type: 0-300psi

Pressure Test Medium: Nitrogen

Test Pressure: 12.5 Bar

Stabilization Period: 15mins

Soundness Test Period: 5 Hours

Any Existing Potential Hazards: NO

Maximum Pressure Drop Allowed: None

RESULTS

Actual Pressure Drop (If Any) None

Calculated Leakage Rate (If any) None

PASS: YES

SIGNED:



POSITION: Engineer

COMPANY: Old Park Engineering Services Ltd

DATE: 17 - 10 - 1999

3.2.CERTIFICATES OF ACCEPTANCE.

DEC. 24. 1999 11:16AM P 1
PHONE NO. : 963 11 3314393

FROM : GCEA
20-DEC-1999 09:44

BWI KP AEROFILL

2101 561 2001 P. 02/02

CERTIFICATE OF ACCEPTANCE

UNIDO CONTRACT : 98/074/VK

KP Aerofill Reference: 51685E

LABORATOIRE KOSMETO

We, the undersigned, certify herewith that the Equipment and Services detailed in the above Contract and the Appendices have been Supplied, Installed and Tested in accordance with the UNIDO 'Terms of Reference'.

**FOR/
LAB. KOSMETO**

Name :

M. IDILBI

Signature :

[Handwritten Signature]

Date :

23.12.99

**FOR/
BWI K.P. AEROFILL**

Name :

R. LAUSISAKK

Signature :

[Handwritten Signature]

Date :

23.12.99

TOTAL P. 02

CERTIFICATE OF ACCEPTANCE

UNIDO CONTRACT : 98/074/VK

KP Aerofill Reference: 51685E

LABORATOIRE KOSMETO

We, the undersigned, certify herewith that the Equipment and Services detailed in the above Contract and the Appendices have been Supplied, Installed and Tested in accordance with the UNIDO 'Terms of Reference'.

FOR/
LAB. KOSMETO

Name :

Signature :

Date :

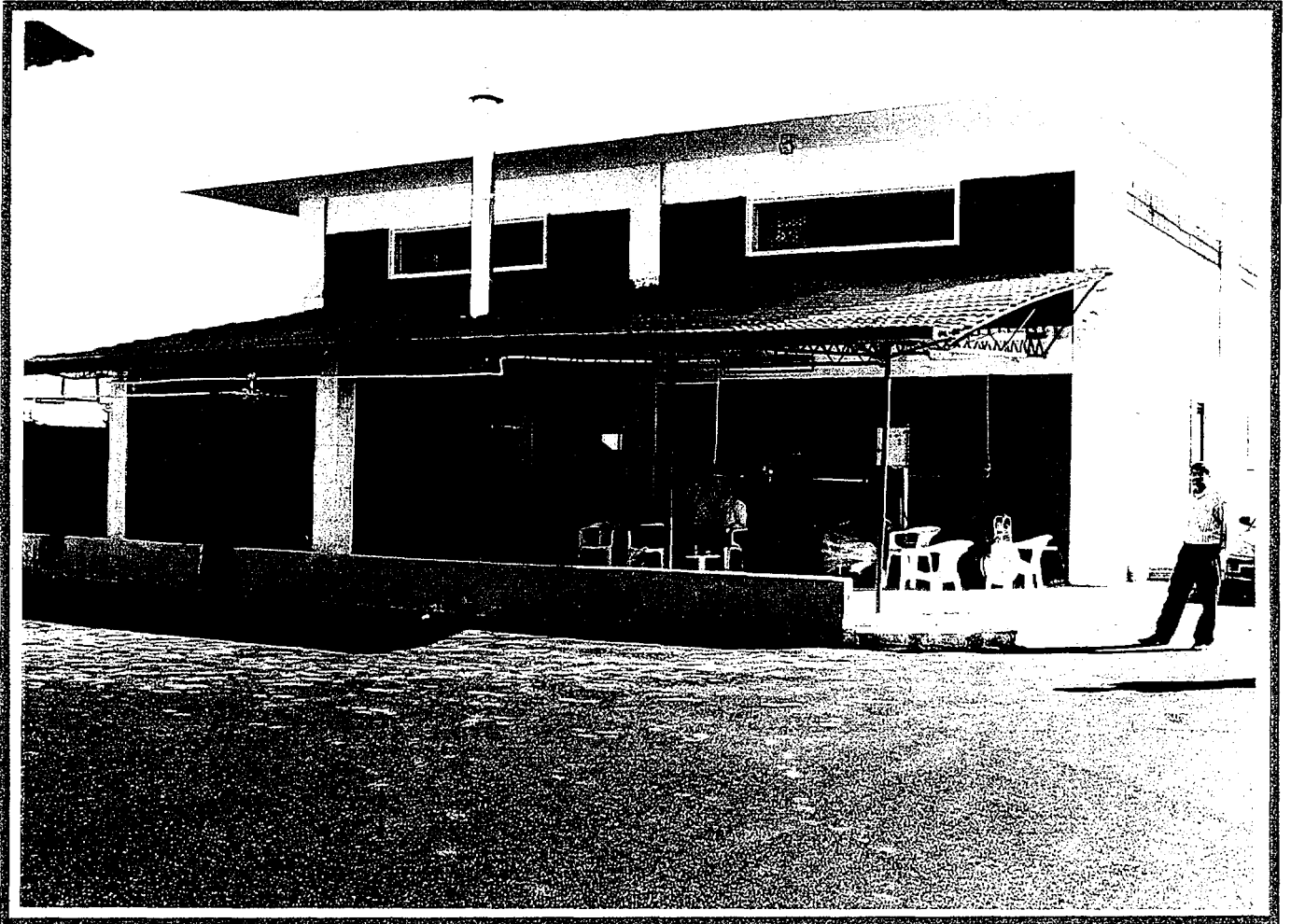
FOR/
BWI K.P. AEROFILL

Name : *R.L. RUSSELL*

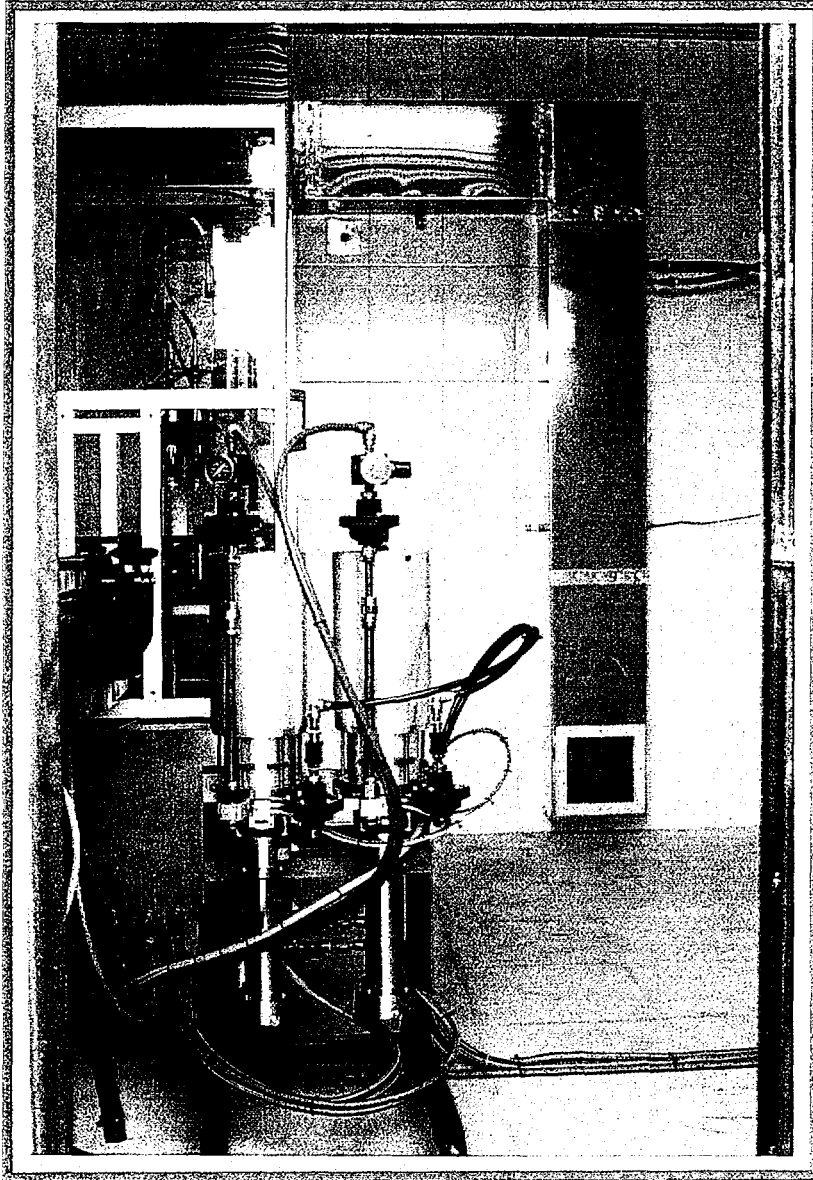
Signature : *RL Russell*

Date : *22.12.99*

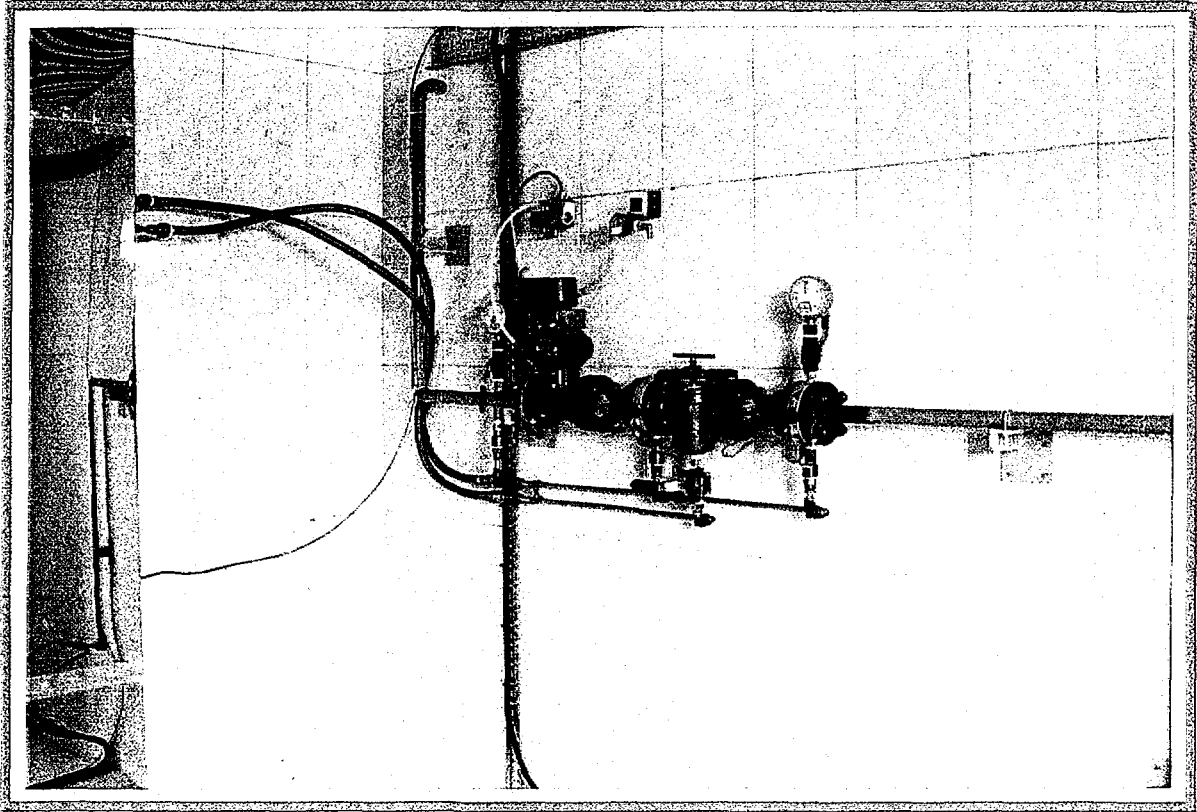
3.3 GENERAL VIEWS OF THE INSTALLATION



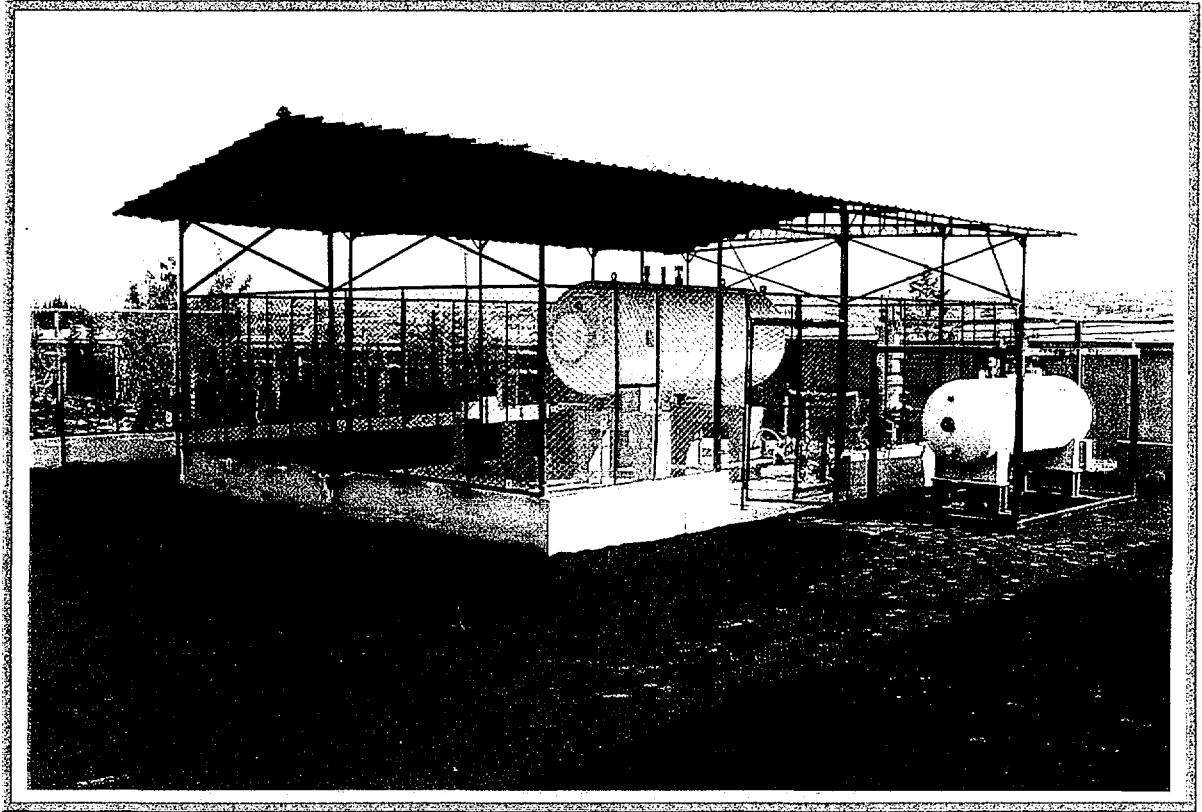
**GENERAL VIEW OF THE PROPELLENT FILLING ROOM
(EXTERNAL)**



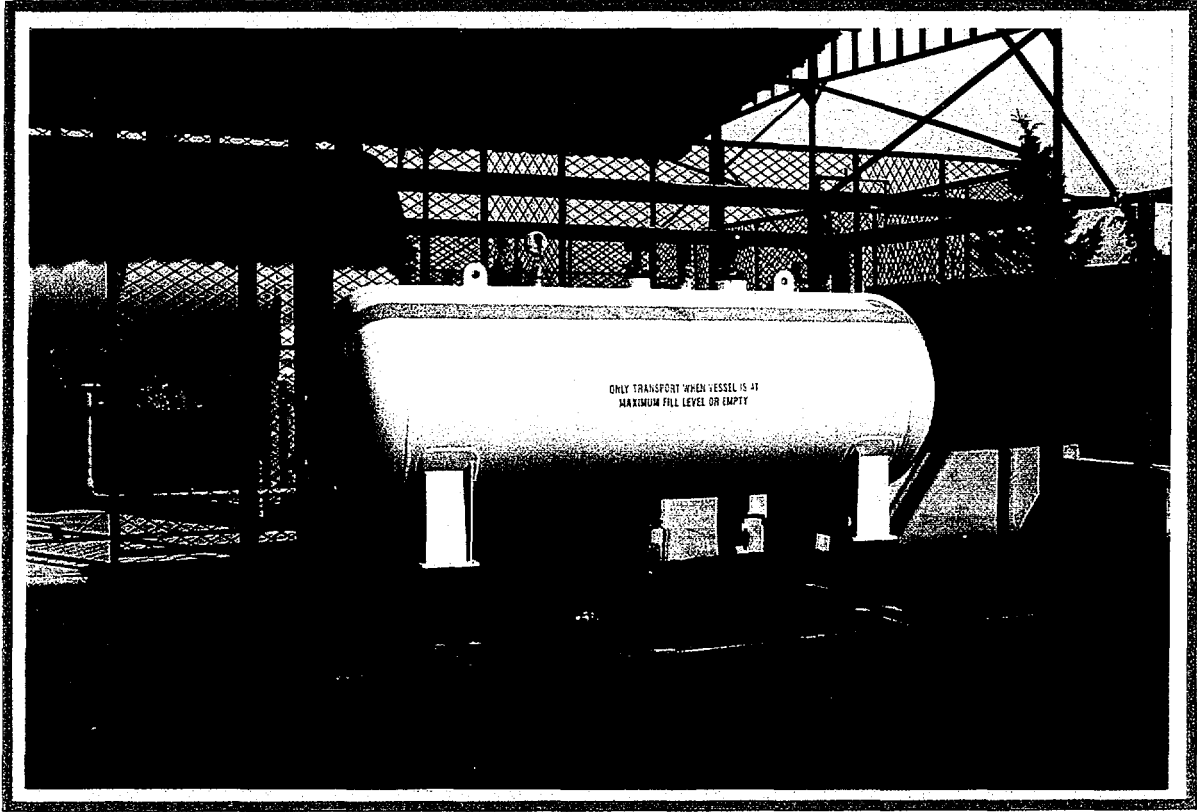
**VIEW OF PROPELLENT FILLING MACHINE
SHOWING METERING UNITS**



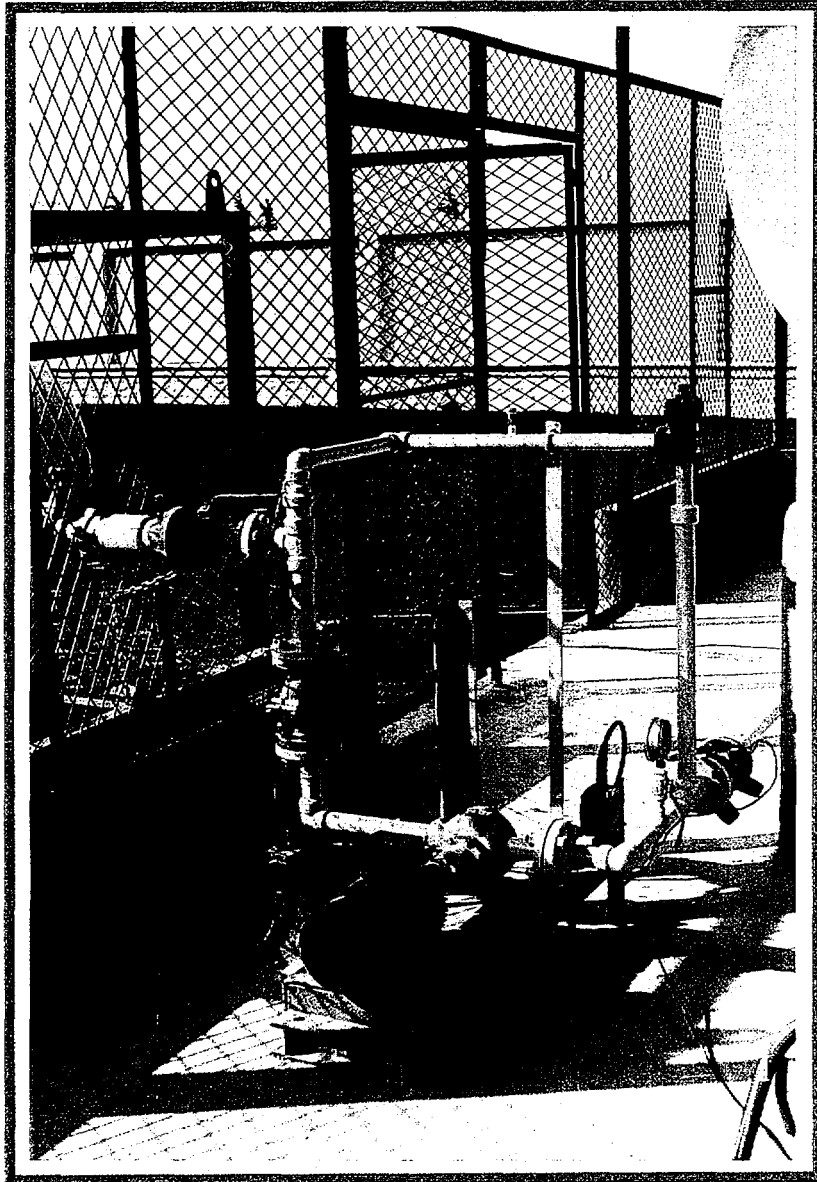
**VIEW OF LPG PIPEWORK IN FILLING ROOM
SHOWING SAFETY AND ISOLATING VALVES
AND PURGE PIPEWORK**



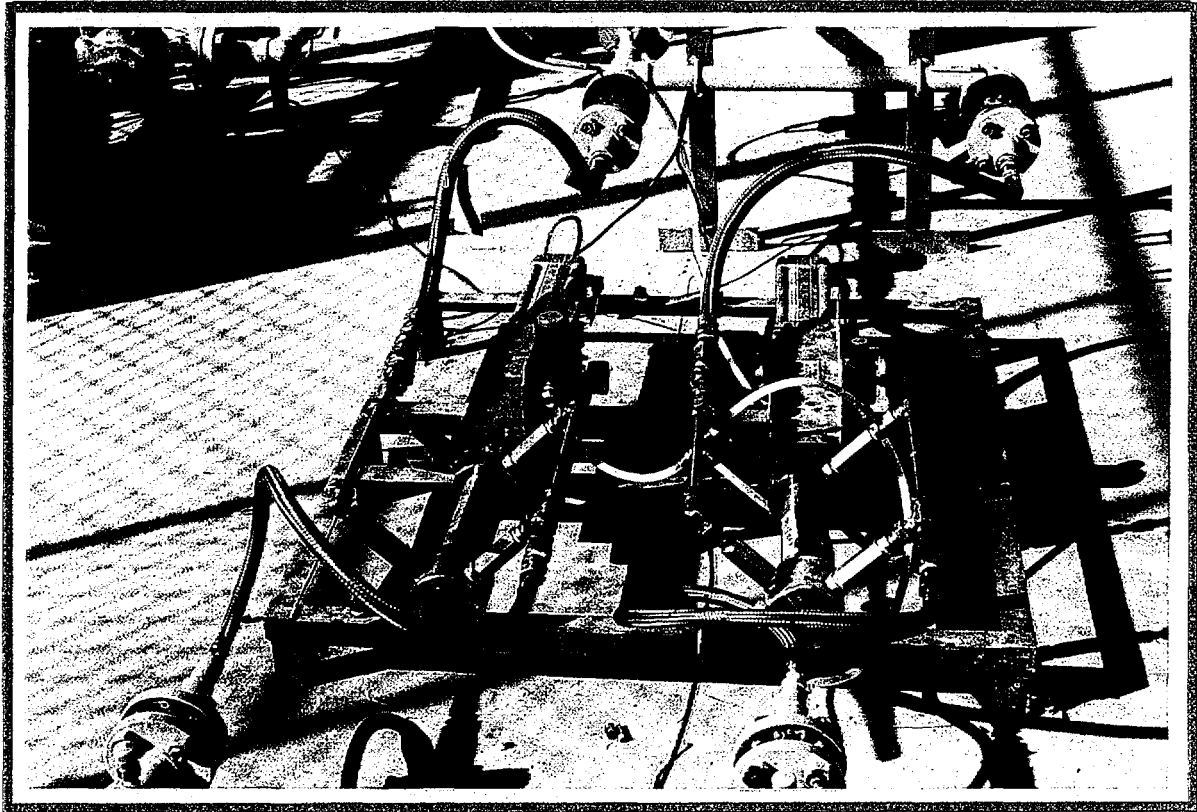
**GENERAL VIEW OF LPG STORAGE AREA SHOWING 5cu.m AND 2 cu.m
STORAGE VESSELS.**



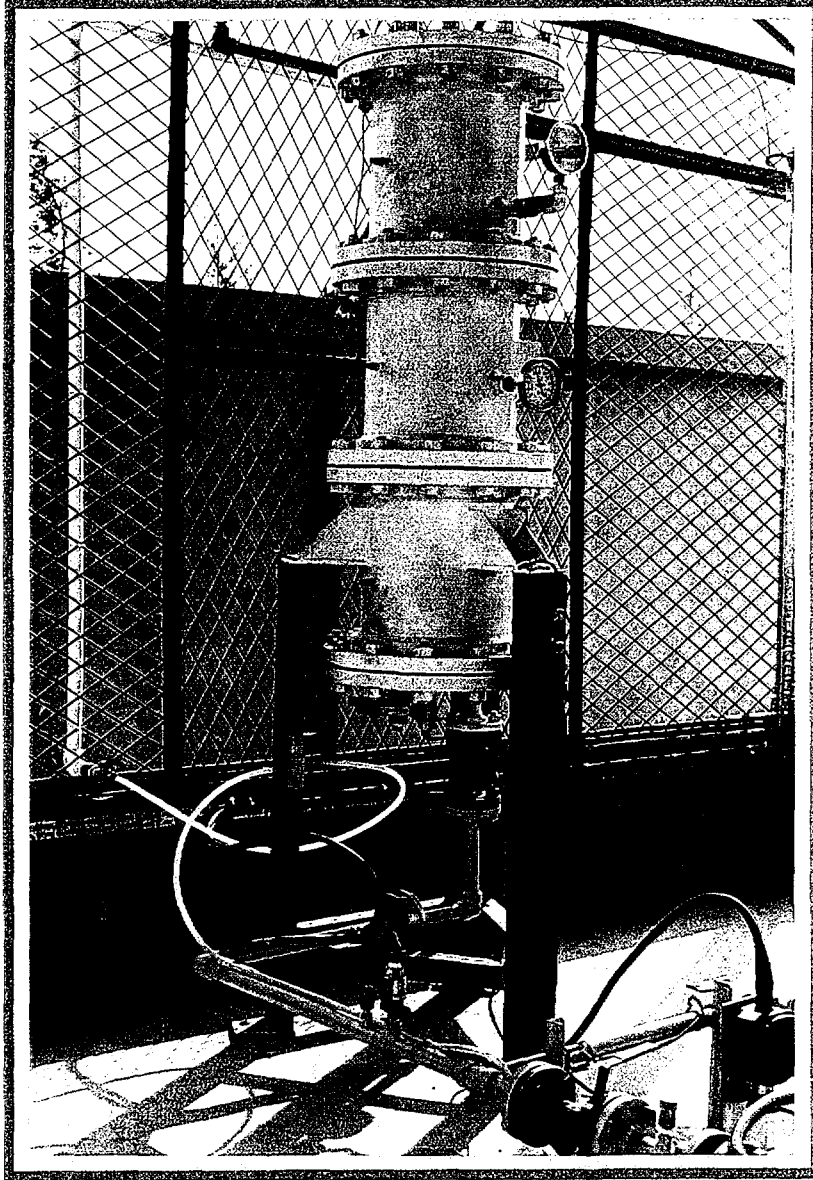
VIEW OF 2cu.m TRANSPORTABLE VESSEL.



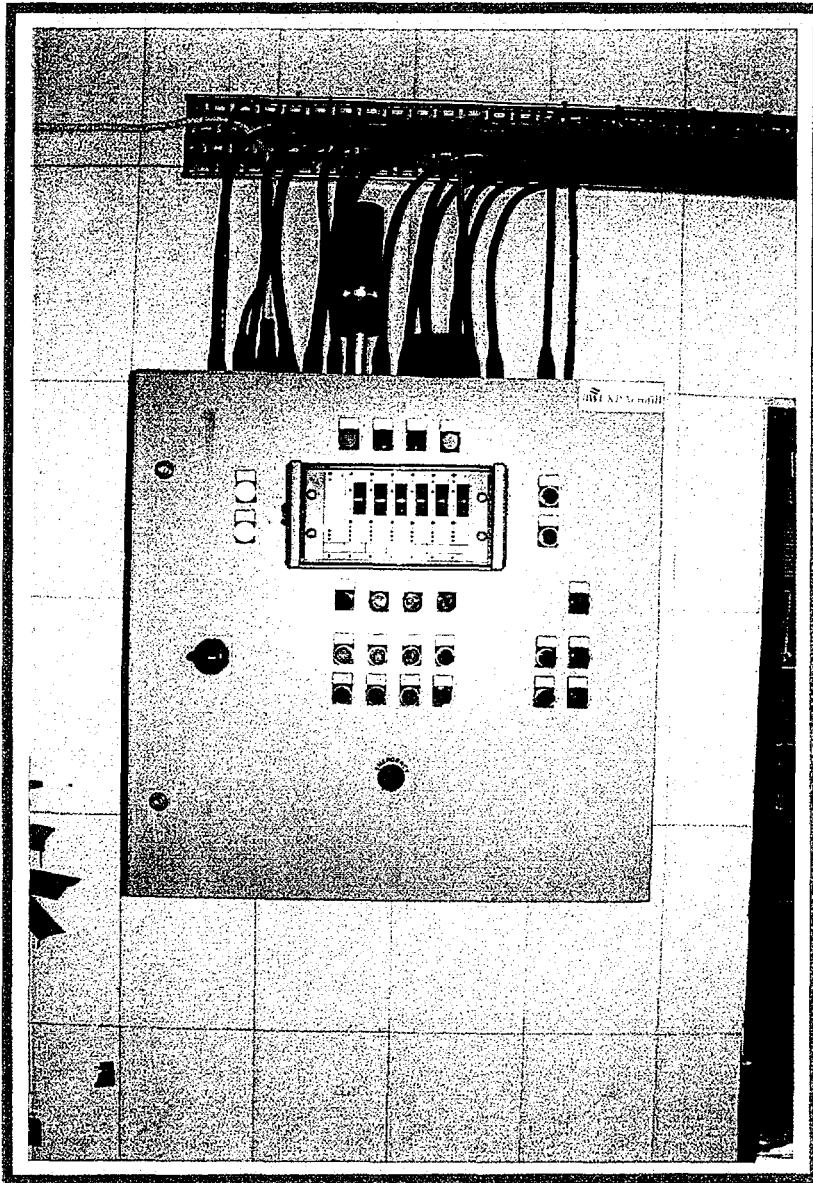
VIEW OF LPG OFFLOAD PUMP



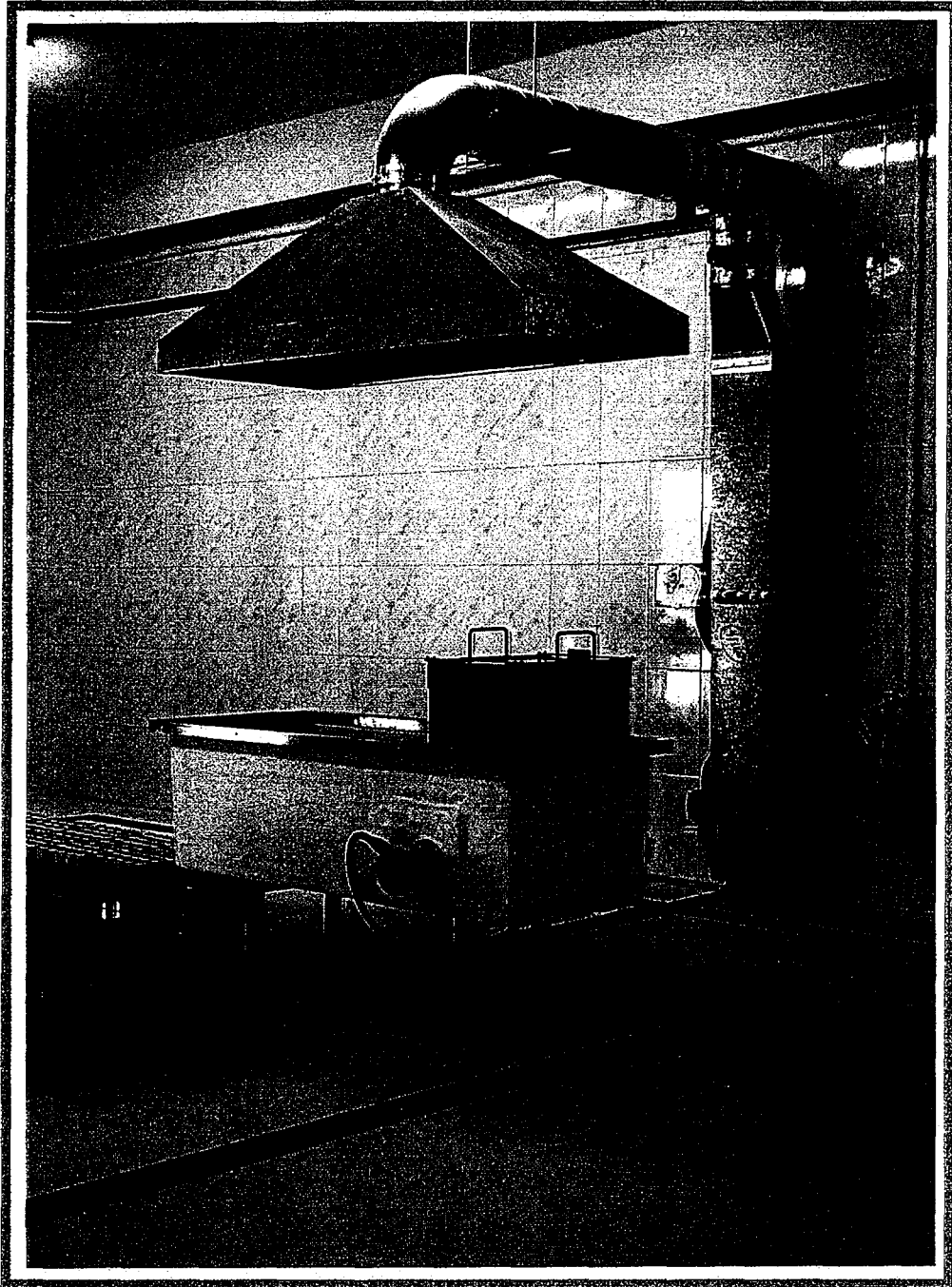
VIEW OF PNEUMATIC TRANSFER PUMPS FOR LPG



VIEW OF THREE COMPARTMENT DEODORISING COLUMN



VIEW OF SAFETY SYSTEM CONTROL PANEL



VIEW OF TEST BATH AND VENTILATION SYSTEM

3.4. BASIC SAFETY TRAINING PROGRAMME

BASIC SAFETY TRAINING PROGRAMME

1. Overview of Training Programme

Safety is everybody's business from Manager to Line Operative.

Create a culture of interest, team spirit and a focus on the common goal.

Create a team responsible for setting up procedures teaching the people who will operate them and monitoring and modifying procedures as and when required.

Suggestions for the Plant Operating Safety Team

Site Safety Officer -
Site Training Officer -
Site Fire Officer -
Site Engineer -
Trainers -

The team will probably have an interest in other areas as well as the Aerosol Plant.

The Company may have a structure in place.
Discuss with the team

REVIEW BAMA FEA REQUIREMENTS

BASIC TRAINING

INDUCTION TRAINING

LINE OPERATIVES

FORK LIFT OPERATIVES

PROCESS (MIXING) OPERATIVES

TANK FARM STAFF

QUALITY CONTROL STAFF

STOCK AUDIT STAFF

LINE MECHANICS (INCL. TANK FARM)

ELECTRICAL ENGINEERS

MANAGERS

SECURITY

FIRE FIGHTERS

L.P.G PROPERTIES

What do we know about L.P.G. A.K.A. BUTANE/PROPANE or HYDROCARBON PROPELLANT?

- It is a liquifiable gas stored under pressure in the liquid phase. But with vapour in the top of the tank.
- If spilt or leaked to the open air it will boil off rapidly to vapour.
- It is colourless and has a distinctive smell when delivered to site. After treatment it has only a very slight smell.
- It is non toxic but has Narcotic, Anaesthetic Properties.
- It is heavier than air but lighter than water.
- As a vapour it is highly flammable but only over a limited range of gas air mixtures. About 2% to 10% of gas in air.
- When boiling off from liquid to vapour it removes heat from surface in contact - "cold burns" to skin

How do we handle L.P.G.?

- Store and transfer in closed pressurised system 2-4 bar in liquid phase.

Vessels	}	All must be suitable for pressure and anti static fire safe.
Pipework	}	
Valves & Fittings	}	

- All electrical equipment to be suitable for flammable (Hazardous) area operation. Ex rated for main power systems "Intrinsically Safe" for low voltage (8-9v) non sparking control circuits.
- All of the storage and pipework are electrically continuous
(bonding strips across flanged joints, for example) and the whole system is earthed.
- Tanker must be connected to earth before any other connections to it are made.
- The connecting hoses are anti static and pressure resistant. Special L.P.G. Hoses.

FILLING LINE

- Propellant filling takes place in an external room separated from the main room and designed to be explosion resistant (walls and roof).
- During the filling process there is an escape of liquid propellant every time a can is filled. This occurs every time the nozzle adaptor lifts off the valve and is a function of the valve type in terms of quantity of gas lost.
- There is also the possibility of gas loss for other reasons such as faulty or damaged can and/or valve or leaking propellant filling head.
- How do we deal with this potential hazard?
- First by ventilation to dilute and remove the vapour from the room. Two systems are used, one to remove the gas from the immediate Propellant Filler Area, the second to draw air from the floor of the room. (Gas is heavier than Air).
- These systems are two speed and the extraction can be increased by 100% if necessary.
- This action is automatic and is controlled by a system of Gas Detectors installed in the room. If any detector signals a gas concentration of more than 20% of the lower flammable limit (LFL) of the gas that is 20% of 2% gas in air, so still well below the flammable range, then the fans are automatically switched to high speed and audible and visual warnings are given.

If the gas level continues to rise indicating an escalating problem then at 40% of the 'LFL' the line is automatically stopped and gas safety shut-off valves are closed limiting the potential gas leakage to what is in the end of the pipework.

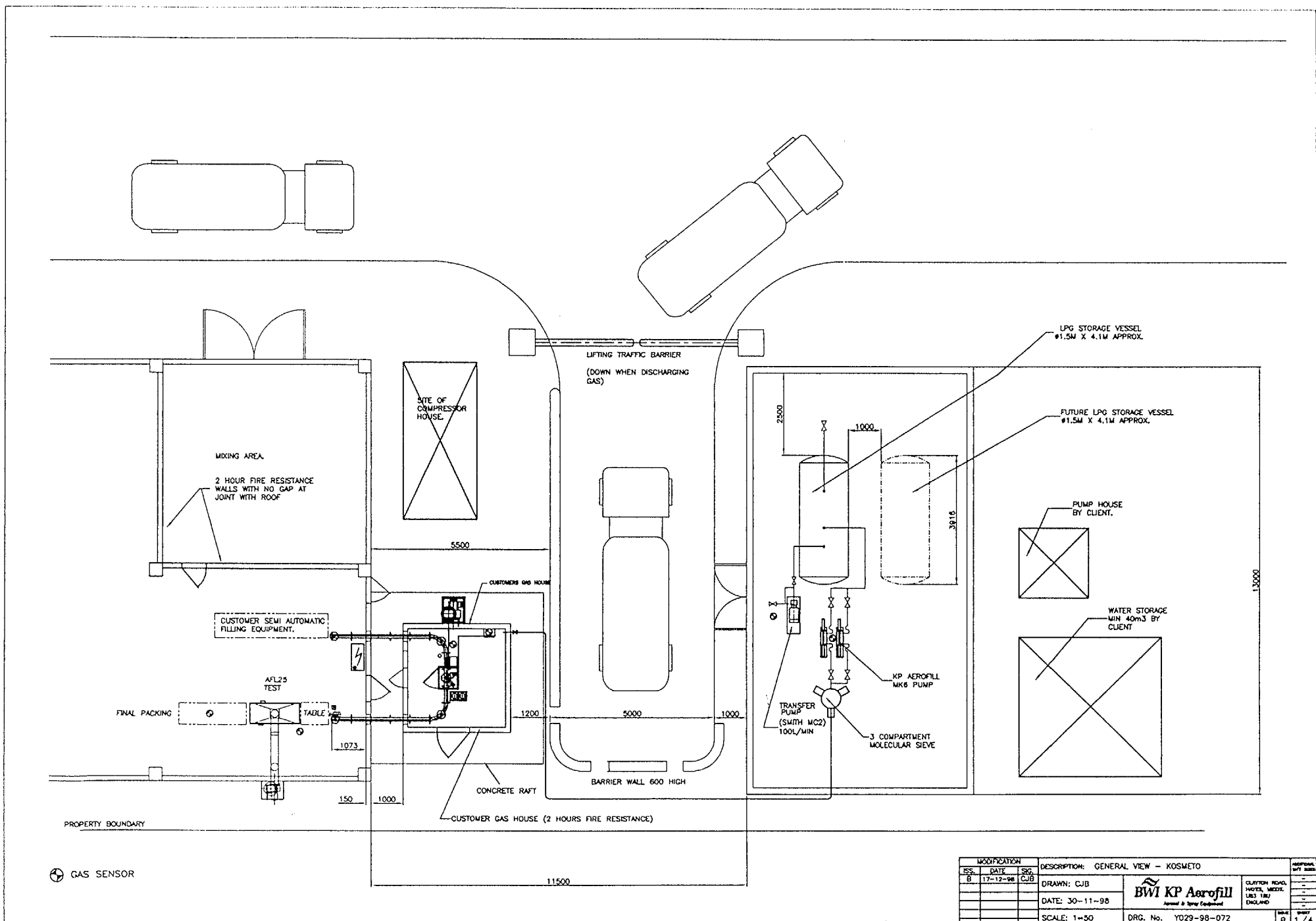
- For the ventilation system to operate effectively the room doors must be closed. Time switches are fitted to each door so that if the door is not closed and latched within say 11 seconds the line will stop.
- Further refinements include air flow switches to monitor the actual flow rate in each system and not merely the fact that the motors are switched on.

- SCRAP CANS WHICH ARE LEAKING

Rejects from the line should be placed in a suitable metal container (not plastic) and removed to an outside designated area where they may safely be emptied.

- Packed filled stock should be transferred from the filling hall to the finished goods area at regular intervals to ensure that there is no major hazard concentration in the filling area.

3.5. SITE PLANS (AS INSTALLED)



MODIFICATION			DESCRIPTION: GENERAL VIEW - KOSMETO	REVISIONS
ISS.	DATE	BY		
B	17-12-98	CJB	DRAWN: CJB	CLAYTON ROAD, WATER, MIDDX, UK3 1TU, ENGLAND
			DATE: 30-11-98	
			SCALE: 1=50	
			DRG. No. Y029-98-072	1/4

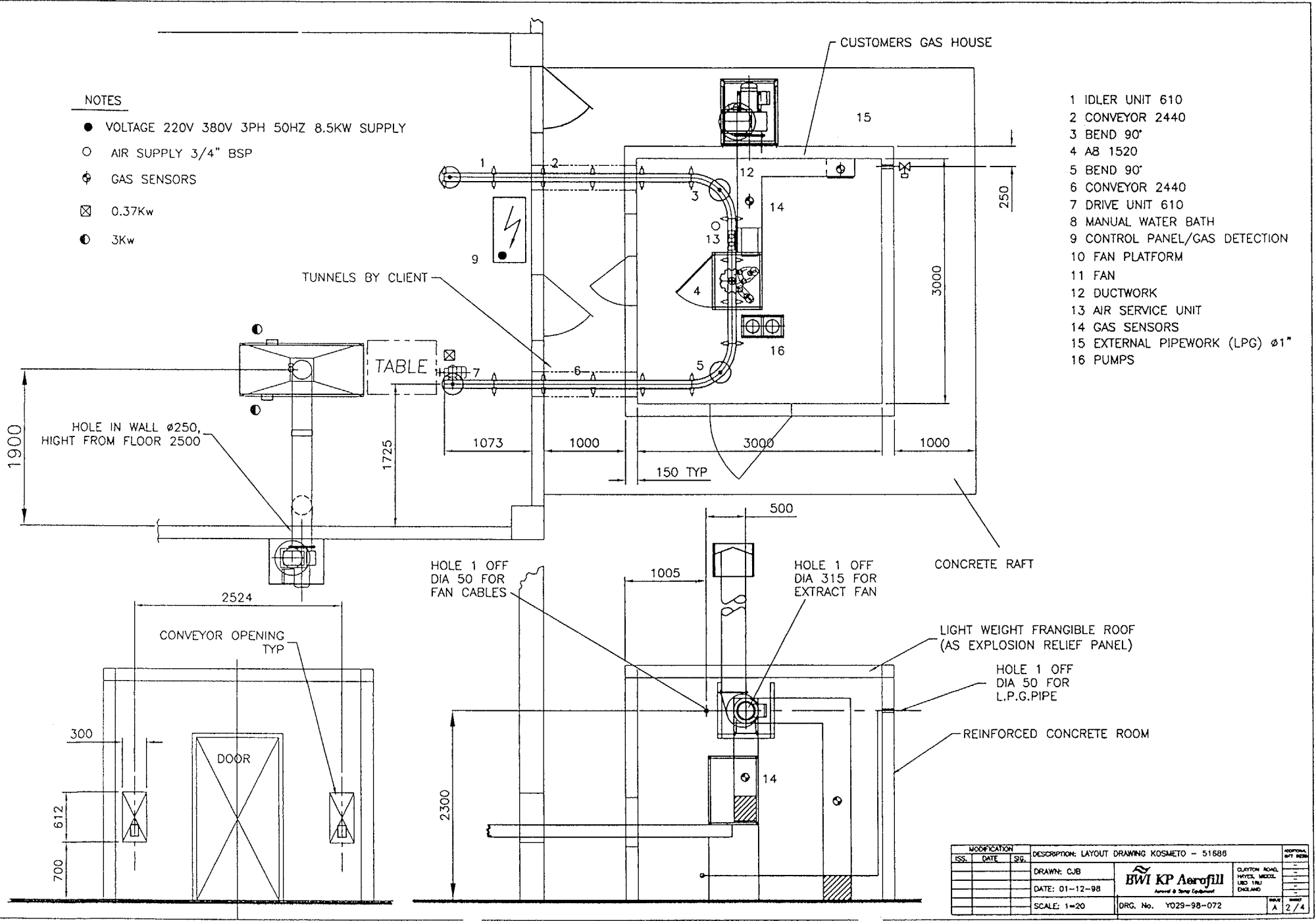
⊕ GAS SENSOR

BWI KP Aerofill
Specialty Gas Equipment

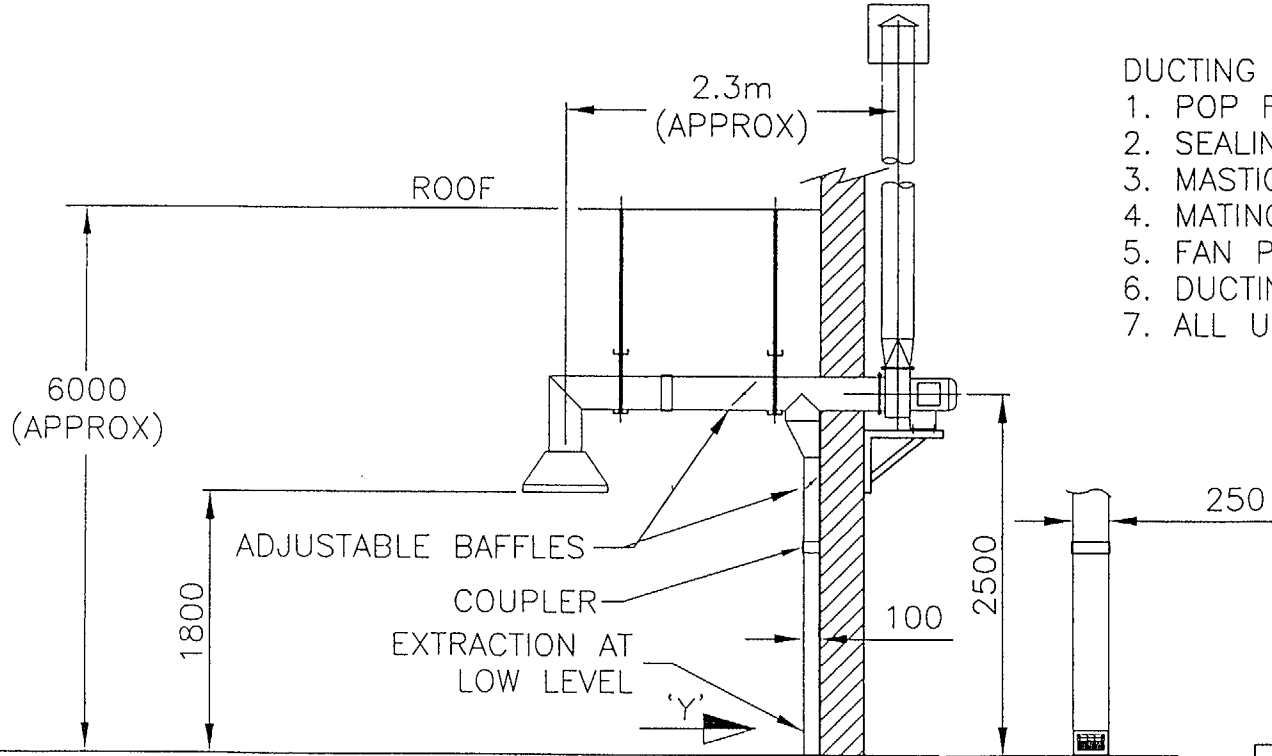
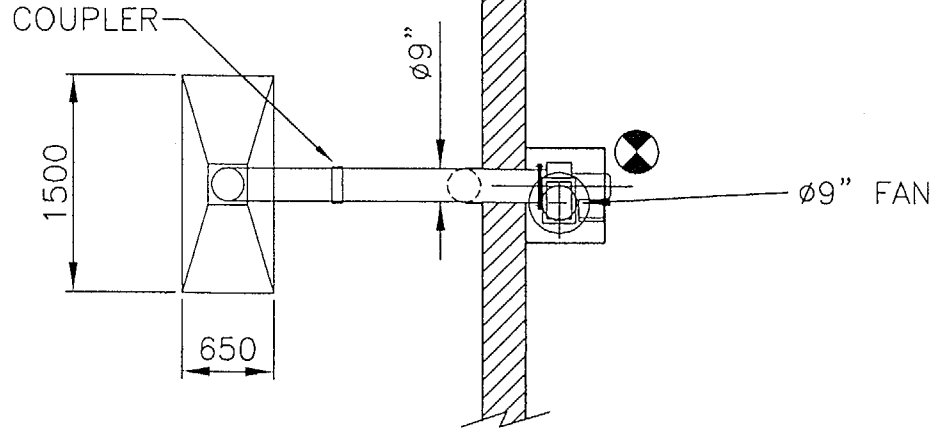
NOTES

- VOLTAGE 220V 380V 3PH 50HZ 8.5KW SUPPLY
- AIR SUPPLY 3/4" BSP
- ⊕ GAS SENSORS
- ⊠ 0.37kw
- 3Kw

- 1 IDLER UNIT 610
- 2 CONVEYOR 2440
- 3 BEND 90°
- 4 AB 1520
- 5 BEND 90°
- 6 CONVEYOR 2440
- 7 DRIVE UNIT 610
- 8 MANUAL WATER BATH
- 9 CONTROL PANEL/GAS DETECTION
- 10 FAN PLATFORM
- 11 FAN
- 12 DUCTWORK
- 13 AIR SERVICE UNIT
- 14 GAS SENSORS
- 15 EXTERNAL PIPEWORK (LPG) Ø1"
- 16 PUMPS



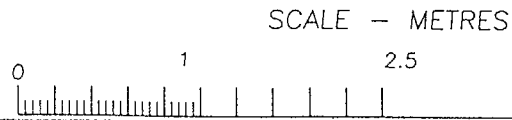
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ISS.	DATE	SIG.			BY
			DRAWN: CJB		BY
			DATE: 01-12-98		DATE
			SCALE: 1=20		SCALE
			DRG. No. Y029-98-072		NO. OF SHEETS
					2 / 4



- DUCTING TO BE SUPPLIED COMPLETE WITH:-
1. POP RIVETS
 2. SEALING TAPE
 3. MASTIC
 4. MATING PARTS TO BE NUMBERED
 5. FAN PLATFORM PAINT RAL 7035
 6. DUCTING GALVANISED
 7. ALL UNI-STRUT & THREADED SUPPORTS

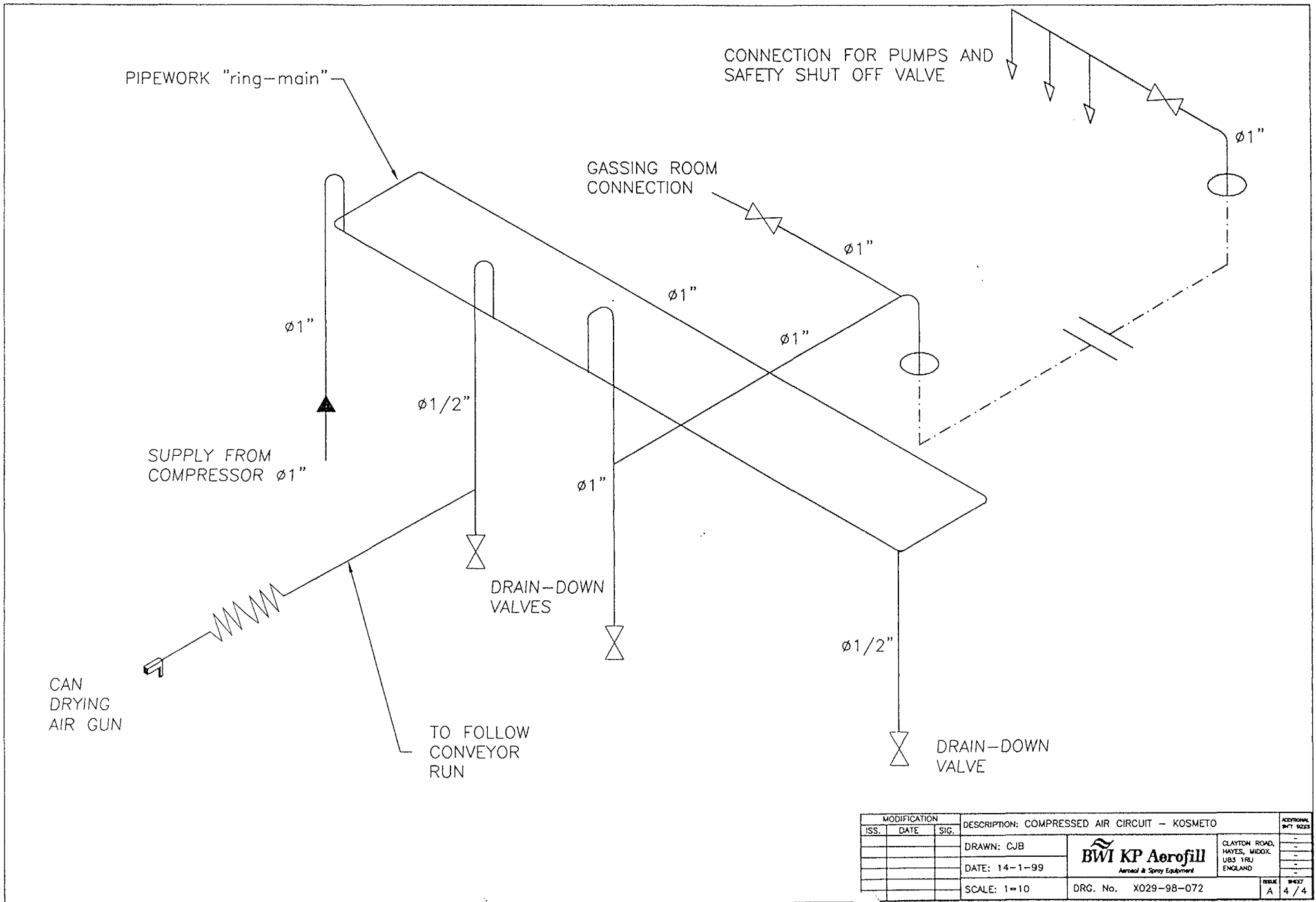
0.75KW

KOSMETO - 51686



VIEW ON ARROW 'Y'

MODIFICATION			DESCRIPTION: TEST BATH DUCTING/EXTRACTION	ADDITIONAL SHEET NO.
ISS.	DATE	SIG.		
			DRAWN: CJB	CLAYTON ROAD, BWI KP Aerofill <small>Aerofill & Spray Equipment</small> HAYES, MIDDX, UB3 1RU ENGLAND
			DATE: 1-12-98	
			SCALE: 1-25	
			DRG. No. X029-98-072	
			ISSUE A	3/4



MODIFICATION			DESCRIPTION: COMPRESSED AIR CIRCUIT - KOSMETO	ADDRESS: BWT 9223
ISS.	DATE	SIG.		
			DRAWN: CJB	BWI KP Aerofill <small>Aeroal & Spray Equipment</small> CLAYTON ROAD, HAYES, MIDDX. UB3 1RU ENGLAND
			DATE: 14-1-99	
			SCALE: 1=10	
			DRG. No. X029-98-072	ISSUE: A SHEET: 4/4