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Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
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NATIONAL CFC Phase-out Plan
Argentina

MP/ARG/04/018

Manufacturing Sector

Potential equipment for the companies

Final Report as of 10 February 2005
According to sub-paragraph 2.06
Contract Nº 2004 / 195
Unido Purchase order Nº 16000731
PROJECT DEVELOPED BY UBAJAY S.A.

Head of the Project: Juan Carlos Reinhardt
Tel/Fax: 54 - 11 - 4343 - 4127
Mobile: 54 - 911 - 4490 - 2782
E-mail: ubajayingenieria@ciudad.com.ar

BUENOS AIRES - ARGENTINA

Buenos Aires, 10 February 2005

From: Juan Carlos Reinhardt
To: UNIDO General Services Branch
Attn.: Mr. V. Koloskov - Chief, Procurement Services
Mrs. Guillian Ocampo

Ref.: Manufacturing Sector RMP Argentina Final Report 10 February 2005
Proj.: MP/ARG/04/018 - Contract UNIDO N° 2004/195
Purchase Order N° 16000731

SUMMARY

From the 30 companies pre-selected, the following ones were included in this project:

N°	COMPANY	CITY	PROVINCE
1	BACOPE S.A.	Lomas de Zamora	Buenos Aires
2	BERCOMAR S.A.C.I.I.F.C.A.	Caseros	Buenos Aires
3	CGA S.A.	Rosario	Santa Fe
4	FIMET S.R.L.	Santo Tomé	Santa Fe
5	FRI CAL VEN	Alcira	Córdoba
6	FRIOTEX	Rosario	Santa Fe
7	GASTROQUIL S.A.	Quilmes	Buenos Aires
8	IGAR S.R.L.	Córdoba	Córdoba
9	LANIN REF.	Neuquén	Neuquén
10	LAREU REF.	Munro	Buenos Aires
11	LAUGE EQUIP. S.R.L.	Rosario	Santa Fe
12	LIBRA S.R.L.	San Francisco	Córdoba
13	MODUL TERM	Avellaneda	Buenos Aires
14	MOTOCOM	Mar del Plata	Buenos Aires
15	OSCAR BASILOTTA E HIJOS S.H. *	San Miguel de Tucumán	Tucumán
16	POLAIR REF. S.R.L.	Rosario	Santa Fe
17	RIGHI	Berazategui	Buenos Aires
18	SAN TELMO EQUIP. S.A.	Loma Hermosa	Buenos Aires
19	SIMAR	José León Suarez	Buenos Aires
20	TECNOLOGIA EN REF.	Rosario	Santa Fe
21	VICA	Rosario	Santa Fe
22	VINCER S.R.L.	Rosario	Santa Fe
23	WALTER GROSSO	El Trébol	Santa Fe

* Newly included company

The following companies were not included in this project:

N°	COMPANY	CITY	PROVINCE
1	FARPA S.A.	José C. Paz	Buenos Aires
2	FRASCONA Inst. comerciales	Mar del Plata	Buenos Aires
3	GATIC S.A.	Rosario	Santa Fe
4	HIDROFRIO	Ciudad Autónoma de Buenos Aires	
5	HUGO ABEL MAZZETTI S.A.	Mar del Plata	Buenos Aires
6	MILFRIGO	Rosario	Santa Fe
7	REFRIMET S.A.	Caseros	Buenos Aires
8	TECNOFRED	San Martín	Buenos Aires

From all the selected companies, the following documentation was obtained:

- ✓ Signed OPROZ questionnaire
- ✓ Signed Commitment Letter for CFCs non use by the time this project is finalized.

Attached find Final Report MP/ARG/04/018 - Manufacturing Sector (Electronic version: 54 pages; Hard copy: 92 pages) [1]

Sincerely,

Juan Carlos Reinhardt
UBAJAY S.A.

[1] Note: Photographs included only in hard copy.

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SUMMARY OF EQUIPMENT

Table I - POLYURETHANE INJECTION EQUIPMENT AND U$S BY COMPANY.

Nº	COMPANY	11 Lt. / min	20 Lt. / min.	30 Lt. / min.	60 Lt. / min.	80 Lt. / min.	100 Lt. / min.	Accessory header	U$S assigned to the company	Electric Power		
										Volt	Phases	Hz.
1	BERCOMAR SACIIFCA			1					22000	380	three	50
2	FIMET S.R.L.							1	6.000	380	three	50
3	FRI CAL VEN	1							12.000	380	three	50
4	GASTROQUIL S.A.						1		20.000	380	three	50
5	LANIN REF.		1						15.000	380	three	50
6	OSCAR BASILOTTA				1				25.000	380	three	50
7	POLAIR REF. S.R.L.	1							12.000	380	three	50
8	SAN TELMO EQUIP.							1	6.000	380	three	50
	TOTAL	2	1	1	1	0	1	2	118.000			

Table II – SUMMARY OF POLYURETHANE INJECTION EQUIPMENT.

EQUIPMENT	QUANTITY	ELECTRIC POWER		
		Volt	Phases	Hz.
11 Lt./min. Spray injection	2	380	three	50
3-15 Lt. /min	1	380	three	50
6-30 Lt./min	1	380	three	50
12-60 Lt./min	1	380	three	50
20-100 Lt./min	1	380	three	50
Accesrory-header	2	380	three	50

Table III – REFRIGERANT GASES FILLING EQUIPMENT AND U$S BY COMPANY.

Nº	COMPANY	R-134 Filling and Exhaustion equipment	Leak detector	Vacuum pump	Scale	U$S assigned to the company	Electric Power		
							Volt	Phases	Hz.
1	BACOPE S.A.	1	1			5.300	380	three	50
2	BERCOMAR S.A.C.I.I.F.C.A.		1			500	380	three	50
3	CGA S.A.	1	1			5.300	220	one	50
4	FIMET S.R.L.		1			500	380	three	50
5	FRI CAL VEN	1	1			5.300	380	one	50
6	FRIOTEX		1		1	1.150	220	one	50
7	GASTROQUIL S.A.	1	1			5.300	220	one	50
8	IGAR S.R.L.		1	1	1	2.950	220	one	50
9	LANIN REF.	1	1			5.300	220	one	50
10	LAREU REF.	1	1			5.300	380	three	50
11	LAUGE EQUIP. S.R.L.		1	1	1	2.950	380	three	50
12	LIBRA S.R.L.	1	1			5.300	220	one	50
13	MODUL-TERM	1	1			5.300	380	three	50
14	MOTOCOM		1		1	1.150	220	one	50
15	OSCAR BASILOTTA E HIJOS S.H.		1			500	380	three	50
16	POLAIR REF. S.R.L.	1	1			5.300	220	one	50
17	RIGHI	1	1			5.300	380	three	50
18	SAN TELMO EQUIP. S.A.		1			500	380	three	50
19	SIMAR	1	1			5.300	220	one	50
20	TECNOLOGÍA EN REF.	1	1			5.300	220	one	50
21	VICA		1		1	1.150	220	one	50
22	VINCER S.R.L.	1	1			5.300	220	one	50
23	WALTER GROSSO		1	1	1	2.950	220	one	50
	TOTAL	13	23	3	6	83.200			

Table IV – SUMMARY OF REFRIGERANT GASES FILLING EQUIPMENT.

EQUIPMENT	QUANTITY	ELECTRIC POWER		
		Volt	Phases	Hz.
R-134a Filling and Exhaustion equip.	8	220	one	50
	5	380	three	50

Table V – SUMMARY OF LEAK DETECTOR.

EQUIPMENT	QUANTITY	ELECTRIC POWER		
		Volt	Phases	Hz.
Leak detector	23	220	one	50

Table VI – SUMMARY OF VACUUM PUMP.

EQUIPMENT	QUANTITY	ELECTRIC POWER		
		Volt	Phases	Hz.
Vacuum pump	3	220	one	50

Table VII – SUMMARY OF SCALE.

EQUIPMENT	QUANTITY	ELECTRIC POWER		
		Volt	Phases	Hz.
Scale	6	220	one	50

Table VIII – TENTATIVE EQUIPMENT COSTS

MACHINES	TOTAL U$S [*]
11 Lt./ min. Spray - Injector	12,000
20 Lt. / min. Injector with Daily tanks	15,000
30 Lt. / min. Injector	20,000
40 Lt. /min. Injector	22,000
60 Lt. /min. Injector	25,000
80 Lt. /min. Injector	27,000
100 Lt. /min. Injector	27,000
Header injector machine	6,000
R-134 Filling and Exhaustion equipment	4,800
Portable leak detector	400
Vacuum pump (with vacuum control)	1,800
Scale	650

[*] Estimated data provided by equipment suppliers.

Table IX – U$S ASSIGNED TO THE COMPANY vs. U$S ACCORDING TO PROJECT.
COMPANIES INTERESTED IN PARTICIPATING IN THIS PROJECT.

Nº	COMPANY	U$S assigned to the Company	US$ According to project			Difference
			CFC-11	CFC-12	Total	
1	BACOPE S.A.	5.300	0	6.381	6.381	1.081
2	BERCOMAR S.A.C.I.I.F.C.A.	22.500	16.170	3.612	19.782	-2.718
3	CGA S.A.	5.300	0	2.890	2.890	-2.410
4	FIMET S.R.L.	6.500	10.780	0	10.780	4.280
5	FRI CAL VEN	17.300	14.861	7.465	22.326	5.026
6	FRIOTEX	1.150	0	1.204	1.204	54
7	GASTROQUIL S.A.	25.600	12.320	22.876	35.196	9.596
8	IGAR S.R.L.	2.950	4.620	0	4.620	1.670
9	LANIN REF.	20.300	16.170	16.013	32.183	11.883
10	LAREU REF.	5.300	0	7.344	7.344	2.044
11	LAUGE EQUIP. S.R.L.	2.950	8.470	0	8.470	5.520
12	LIBRA S.R.L.	5.300	770	9.632	10.402	5.102
13	MODUL TERM	5.300	3.080	26.488	29.568	24.268
14	MOTOCOM	1.150	0	1.324	1.324	174
15	OSCAR BASILOTTA E HIJOS S.H.	25.500	16.900	6.020	22.920	-2.580
16	POLAIR REF. S.R.L.	17.700	19.250	3.973	23.223	5.523
17	RIGHI	5.300	3.080	2.408	5.488	188
18	SAN TELMO EQUIP. S.A.	6.500	27.720	0	27.720	21.220
19	SIMAR	5.300	770	2.408	3.178	-2.122
20	TECNOLOGÍA EN REF.	5.300	770	3.612	4.382	-918
21	VICA	1.150	0	1.204	1.204	54
22	VINCER S.R.L.	5.300	0	2.408	2.408	-2.892
23	WALTER GROSSO	2.950	2.310	0	2.310	-640
	TOTAL	**201.900**	**158.041**	**127.263**	**285.304**	

Table X – COMPANIES THAT ARE NOT INTERESTED IN PARTICIPATING IN THIS PROJECT.

Nº	COMPANY	U$S assigned to the Company	US$ According to project		
			CFC-11	CFC-12	Total
1	FARPA S.A.	(*)	1.155	0	1.155
2	FRASCONÁ Inst. comerciales	(**)	0	9.632	9.632
3	GATIC S.A.	Bankrupt	7.700	13.244	20.944
4	HIDROFRÍO	(**)	0	1.204	1.204
5	HUGO ABEL MAZZETTI S.A.	(**)	0	1.324	1.324
6	MILFRIGO	(**)	0	13.244	13.244
7	REFRIMET S.A.	(*)	26.957	10.836	37.793
8	TECNOFRED	(*)	12.320	0	12.320
	TOTAL		**48.132**	**49.484**	**97.616**

(*) They are not interested in participating in this project.
(**)These companies have not sent us the information we requested.

Table XI - TOTAL FUNDS ASSIGNED TO THE COMPANIES vs. TOTAL PROJECT FUNDS (U$S).

TOTAL PROJECT	**360,000**
TOTAL ASSIGNED TO COMPANIES	**201,900**
DIFFERENCE	**158,100**

Table XII – LIST OF PRESENT POLYURETANE INJECTION EQUIPMENT OF THE PROJECT COMPANIES

Nº	COMPANY	20 lt./ min.	30 Lt./min.	40 Lt./min	60 Lt./min	80 Lt./min	100 Lt./min	MANUAL
1	BERCOMAR S.A.C.I.I.F.C.A.			1				
2	FARPA S.A.	1						
3	FIMET S.R.L.						1	
4	FRI CAL VEN	2						
5	GASTROQUIL S.A.						1	
6	IGAR S.R.L.	1						
7	LANIN REF.	1						
8	LAREU REFRIGERACION	1						
9	LAUGE EQUIP. S.R.L.		1					
10	MODUL TERM						1	
11	OSCAR BASILOTTA S.H.						1	
12	POLAIR REF. S.R.L.							1
13	REFRIMET S.A.				1	1		
14	RIGHI				1			
15	SAN TELMO EQUIP. S.A.						1	
16	SIMAR	1						
17	TECNOFRED				1			
18	WALTER GROSSO							1
	TOTAL	7	1	1	3	1	5	2

TOTAL:
20 Lt. /min injector: 7
30 Lt. /min injector: 1
40 Lt. /min injector: 1
60 Lt. /min injector: 3
80 Lt. /min injector: 1
100 Lt. /min injector: 5
Manual: 2

Table XIII – LIST OF PRESENT REFRIGERANT GASES FILLING EQUIPMENT OF THE PROJECT COMPANIES

N°	COMPANY	Filling and Exhaustion equipment	Leak Detector	Vacuum Pump	Llenado Manual
1	BACOPE S.A.	1	1	1	
2	BERCOMAR S.A.C.I.I.F.C.A.		1	1	1
3	CGA S.A.			1	1
4	FIMET S.R.L.		1	1	
5	FRASCONA		1	2	1
6	FRI CAL VEN		3	4	1
7	FRIOTEX				1
8	GASTROQUIL S.A.		1	1	1
9	HIDROFRIO			1	1
10	HUGO ABEL MAZZETTI S.A.			1	1
11	LANIN REF.			1	1
12	LAREU REFRIGERACION		1	1	1
13	LAUGE EQUIP.S.R.L.			1	
14	LIBRA S.R.L.		1	1	1
15	MILFRIGO S.R.L.			1	1
16	MODUL TERM		1	2	1
17	MOTOCOM		3	1	1
18	OSCAR BASILOTTA S.H.			1	1
19	POLAIR REF. S.R.L.		1	2	1
20	REFRIMET S.A.		1	1	1
21	RIGHI		3	4	1
22	SIMAR		1	1	1
23	TECNOFRED			1	
24	TECNOLOGÍA EN REF.		1	1	1
25	VICA		1	1	1
26	VINCER		1		1
	TOTAL	**1**	**23**	**33**	**22**

TOTAL:
Filling and Exhaustion equipment: 1
Leak detector: 23
Vacuum pump: 33
Refrigerants' manual filling: 22

EQUIPMENT SPECIFICATIONS

Refrigeration Equipments MP/ARG/04/018

Scope of supply includes:

A-) 1 Piece Production, evacuation and refrigerant (HCFC 134 a) Charging Board with vacuum pump , and vacuum check

Machine specification outline

Two stage vacuum Pump 12 m^3 /Hour
4 charging channels
Refrigerant HFC 134 a
Charges: Min 50 Gr. Max 1000 Gr. +/- 1 % or 1 gr.
Charging speed: 30 g/sec
Accuracy: charges < 100 +/- 1 gr. or 1 %
Operation Temperature: 10 º C to 45 º C
Connection: 2 meters evacuation and charging hose with ¼ "Quick Release Coupling
Control: Microprocessor
Vacuum Gauge: Electronic vacuum gauge with adjustable pressure set point.
Alarm: Alarm at empty refrigerant cylinder and faulty pressure rise (Acoustic and visual)
Timers: Timers for evacuation /vacuum
Indicators Lamps: Lamps indicating state of process
Automatic Process: Fully automatic .Evacuation, Vacuum Check, Refrigerant Charge
Temperature control: Required for accuracy of refrigerant charge

General conditions:
One (1) year full warranty
Service facilities-repair center in the territory
Spare parts for one-year operation
Assistance for equipment's starting up.
Operative and maintenance manuals in Spanish

EQUIPMENT	QUANTITY	ELECTRIC POWER		
		Volt	Phases	Hz.
R-134a Filling and	8	220	one	50
Exhaustion equip.	5	380	three	50

B-) 1 Piece Evacuation Pump

Vacuum control with Pass and Fail Indication
Minimum Capacity: 10 m^3 /Hour
Time for evacuation to vacuum level for the appliances: Max 15 min.
Vaccum Gauge: Electronic vacuum gauge with pressure set point.
Vacuum equipment: It must be able to work with 1 system by connecting simultaneously the equipment to the low pressure and high pressure lines (2 hoses in total)

General conditions:
One (1) year full warranty
Service facilities-repair center in the territory
Spare parts for one-year operation
Assistance for equipment's starting up.
Operative and maintenance manuals in Spanish

EQUIPMENT	QUANTITY	ELECTRIC POWER		
		Volt	Phases	Hz.
Vacuum pump	3	220	one	50

C-) 1 Piece Scale

Fully Automatic and Programmable
Capacity 20 Kg.
Digital display
Auto zero and Tara
Automatic shut off
Units: Pounds and Kilos
Accuracy: 2 grams
Up and down counter
With solenoide valve for automatic charge
Sturdy Construction Metallic Cabinet

General conditions:
One (1) year full warranty
Service facilities-repair center in the territory
Spare parts for one-year operation
Assistance for equipment's starting up.
Operative and maintenance manuals in Spanish

EQUIPMENT	QUANTITY	ELECTRIC POWER		
		Volt	Phases	Hz.
Scale	6	220	one	50

D-) 1 Piece portable detector

Cord less, hand held, electronic leak detector for fluorine based refrigerants with
Automatic background compensation suitable for HFC 134 a duty, with a minimum sensitivity < 3 gr. (0, 1 oz/yr)
Controls: Power on/off
Technology: Heated Diode
Sensivity: Small, medium and large
Contamination adjustment: Automatic and manual Background Adjust
Sensing Probe: Flexible sensing probe of 1 feet
Carrying Case: Part of unit
Sensor adjustment: Manual and Automatic Adjustment control by Standard bottle
Power Supply: Rechargeable Battery. Battery charger 220V 50/60Hz

General conditions:
One (1) year full warranty
Service facilities-repair center in the territory
Spare parts for one-year operation
Assistance for equipment's starting up.
Operative and maintenance manuals in Spanish

EQUIPMENT	QUANTITY	ELECTRIC POWER		
		Volt	Phases	Hz.
Leak detector	23	220	one	50

Recommended bidders:

CEMA S.A.	ARG	RECOVERY TECHNOLOGIES INC.	CANADA
GALILEO	ITALY	FUTURE TECHNOLOGIES	ITALY
TST-STAG	SPAIN	KH VACUUM TECHNIK	AUSTRIA
OMS	ITALY		

MEDIUM-OUTPUT SPRAY DISPENSER
RIGID PU FOAM
HCFC-141b BASED

Description of basic unit:
Mobile high pressure two component dispenser to produce rigid PU foam for spray foam and pour-in-place applications
Capacity: Approximately 12 Lt./min.

General features:
As a minimum, the unit must be equipped with:
- Opposite or parallel piston pumping system capable of handling viscosities up to 1,000 cPs. The cylinders must be exchangeable to allow change in component ratio.
- Isocyanate pump lubrication
- Safety valves or rupture disks to safeguard against over-pressure

Applicator(s):
Spray gun:
- Automatic air cleaning
- Working pressure approximately 100 bar at gun exit

Pouring gun: To be offered, including timer

Hoses: 4 x 15 m, modular heatable

Barrel pumps:
- For the polyol blend
- For the isocyanate

General conditions:
One (1) year full warranty
Service facilities-repair center in the territory
Spare parts for one-year operation
Assistance for equipment's starting up.
Operative and maintenance manuals in Spanish

Quantity of Equipments and Electric Power

Quantity of Equipments	Electric Power		
	Volt	Phases	Hz
2	380	three	50

Recommended bidders:

Gusmer	USA	Graco	USA
Glass Craft	USA	Intergun	ESP
Pumer	BRA		

MEDIUM-SIZED LOW PRESSURE FOAM DISPENSER
RIGID OR FLEXIBLE PU FOAM, HCFC-141b WITH DAILY TANKS

Description of basic unit:

Low pressure dispenser with variable output between 3 and 15 l/min to produce rigid or flexible PU foam for the manufacturing of refrigeration equipments.

Output range at mixing ratio 1:5/ 5:1. An output range at mixing ratio 1:1 should be quoted as alternative.
3-15 l/min (approximately)
..... - .... g/sec (approximately)

General features:

As a minimum, the unit must be equipped with:
Filters before the component pumps
Recirculation adjustment and gauge
Gauge for adjustment of pouring pressure

Pumps:

To be equipped with two (2) variable output metering pumps
Leak control: Equipped with individual drip pans
Pump capacity: Suitable for the machine rating
To be equipped with two (2) drums product transference pumps

Mixing head:

Mechanical agitator (approximately 7,000 rpm) guaranteeing correct foam mixing and laminar output over the entire working range.
Size: Suitable for entire output range
Working pressure: Up to 13 bar (equivalent of 200 psi)
Cleaning: Automatic and manual flushing and drying of the mixing chamber, with timers, for cleaning with either solvent or hot water solution, and air drying cycles.
Support: Vertically mounted on a boom of standard (2,000-4,000 mm) length allowing a 180^0 working radius and a minimum of 500 mm vertical movement

Working tanks: 2 working tanks (polyol blend, isocyanate) to serve the dispensing unit
Tank volume: 50 l each
Controls:
Min./max. level control with alarm function
Temperature control system to maintaining tank temperatures of 15-40 $\pm$ ^{0}C, combined with a hot and cold water source of adequate capacity and a double walled tank or heat exchangers in the recirculation combined with a hot and cold water sources of adequate capacity.
Other features:
Allowing pressure up to 2.5 bar (35 psi equivalent)
Pressure gauge
Pressure relief
Mounted on separate drip pans of sufficient capacity
Equipped with low rpm agitators

MEDIUM-SIZED LOW PRESSURE FOAM DISPENSER
3-15 Lt. /min – continuation

Control panels:
Shot timers:
- Minimal 10 individual shot timers to be included
- 0.1 seconds precision
- Reading error display

PLC unit: Preferably included
Operator panel: A separate operator panel to be mounted on the mixing head with buttons for Start/Stop, Pour and Emergency Stop, interlocked with the mixing head cleaning system

General conditions:
One (1) year full warranty
Service facilities-repair center in the territory
Spare parts for one-year operation
Assistance for equipment's starting up.
Operative and maintenance manuals in Spanish

Quantity of Equipments and Electric Power

Quantity of Equipments	Electric Power		
	Volt	Phases	Hz
1	380	three	50

Recommended bidders:

Edge-Sweets	USA	Cannon	ITA	kymofoam	USA
Decke	USA	SAIP	ITA	Hi-Tech	USA
Elastogran	GER	Cosmic	ITA	Sulpol	BRA
Transtecnica	BRA	Fibermaq	BRA	GFT	THA
Tecnomix	MEX	OMS	ITA		

MEDIUM-SIZED LOW PRESSURE FOAM DISPENSER
RIGID OR FLEXIBLE PU FOAM, HCFC-141b

Description of basic unit:

Low pressure dispenser with variable output between 6 and 30 l/min to produce rigid or flexible PU foam for the manufacturing of refrigeration equipments.

Output range at mixing ratio 1:5/ 5:1. An output range at mixing ratio 1:1 should be quoted as alternative.

6-30 l/min (approximately)

..... - .... g/sec (approximately)

General features:

As a minimum, the unit must be equipped with:

Filters before the component pumps
Recirculation adjustment and gauge
Gauge for adjustment of pouring pressure

Pumps:

To be equipped with two (2) variable output metering pumps
Leak control: Equipped with individual drip pans
Pump capacity: Suitable for the machine rating
To be equipped with two (2) drums product transference pumps

Mixing head:

Mechanical agitator (approximately 7,000 rpm) guaranteeing correct foam mixing and laminar output over the entire working range.
Size: Suitable for entire output range
Working pressure: Up to 13 bar (equivalent of 200 psi)
Cleaning: Automatic and manual flushing and drying of the mixing chamber, with timers, for cleaning with either solvent or hot water solution, and air drying cycles.
Support: Vertically mounted on a boom of standard (2,000-4,000 mm) length allowing a 180^0 working radius and a minimum of 500 mm vertical movement

Working tanks: 2 working tanks (polyol blend, isocyanate) to serve the dispensing unit
Tank volume: 100 l each
Controls:

Min. /max. level control with alarm function
Temperature control system to maintaining tank temperatures of 15-40 $\pm$ ^{0}C, combined with a hot and cold water source of adequate capacity and a double walled tank or heat exchangers in the recirculation combined with a hot and cold water sources of adequate capacity.

Other features:

Allowing pressure up to 2.5 bar (35 psi equivalent)
Pressure gauge
Pressure relief
Mounted on separate drip pans of sufficient capacity
Equipped with low rpm agitators

MEDIUM-SIZED LOW PRESSURE FOAM DISPENSER
6 – 30Lt. /min – continuation

Control panels:
Shot timers:
- Minimal 10 individual shot timers to be included
- 0.1 seconds precision
- Reading error display

PLC unit: Preferably included
Operator panel: A separate operator panel to be mounted on the mixing head with buttons for Start/Stop, Pour and Emergency Stop, interlocked with the mixing head cleaning system

General conditions:
One (1) year full warranty
Service facilities-repair center in the territory
Spare parts for one-year operation
Assistance for equipment's starting up.
Operative and maintenance manuals in Spanish

Quantity of Equipments and Electric Power

Quantity of Equipments	Electric Power		
	Volt	Phases	Hz
2	380	three	50

Recommended bidders:

Edge-Sweets	USA	Cannon	ITA	kymofoam	USA
Decke	USA	SAIP	ITA	Hi-Tech	USA
Elastogran	GER	Cosmic	ITA	Sulpol	BRA
Transtecnica	BRA	Fibermaq	BRA	GFT	THA
Tecnomix	MEX	OMS	ITA		

MEDIUM-SIZED LOW PRESSURE FOAM DISPENSER

RIGID OR FLEXIBLE PU FOAM, HCFC-141b

Description of basic unit:

Low pressure dispenser with variable output between 12 and 60 l/min to produce rigid or flexible PU foam for the manufacturing of refrigeration equipments.

Output range at mixing ratio 1:5/ 5:1. An output range at mixing ratio 1:1 should be quoted as alternative.

12-60 l/min (approximately)

..... - .... g/sec (approximately)

General features:

As a minimum, the unit must be equipped with:

Filters before the component pumps
Recirculation adjustment and gauge
Gauge for adjustment of pouring pressure

Pumps:

To be equipped with two (2) variable output metering pumps
Leak control: Equipped with individual drip pans
Pump capacity: Suitable for the machine rating
To be equipped with two (2) drums product transference pumps

Mixing head:

Mechanical agitator (approximately 7,000 rpm) guaranteeing correct foam mixing and laminar output over the entire working range.
Size: Suitable for entire output range
Working pressure: Up to 13 bar (equivalent of 200 psi)
Cleaning: Automatic and manual flushing and drying of the mixing chamber, with timers, for cleaning with either solvent or hot water solution, and air drying cycles.
Support: Vertically mounted on a boom of standard (2,000-4,000 mm) length allowing a 180^0 working radius and a minimum of 500 mm vertical movement

Working tanks: 2 working tanks (polyol blend, isocyanate) to serve the dispensing unit
Tank volume: 100 l each
Controls:

Min. /max. level control with alarm function
Temperature control system to maintaining tank temperatures of 15-40 $\pm$ ^{0}C, combined with a hot and cold water source of adequate capacity and a double walled tank or heat exchangers in the recirculation combined with a hot and cold water sources of adequate capacity.

Other features:

Allowing pressure up to 2.5 bar (35 psi equivalent)
Pressure gauge
Pressure relief
Mounted on separate drip pans of sufficient capacity
Equipped with low rpm agitators

MEDIUM-SIZED LOW PRESSURE FOAM DISPENSER
12 - 60 Lt. /min – continuation

Control panels:
Shot timers:
- Minimal 10 individual shot timers to be included
- 0.1 seconds precision
- Reading error display

PLC unit: Preferably included
Operator panel: A separate operator panel to be mounted on the mixing head with buttons for Start/Stop, Pour and Emergency Stop, interlocked with the mixing head cleaning system

General conditions:
One (1) year full warranty
Service facilities-repair center in the territory
Spare parts for one-year operation
Assistance for equipment's starting up.
Operative and maintenance manuals in Spanish

Quantity of Equipments and Electric Power

Quantity of Equipments	Electric Power		
	Volt	Phases	Hz
1	380	three	50

Recommended bidders:

Edge-Sweets	USA	Cannon	ITA	kymofoam	USA
Decke	USA	SAIP	ITA	Hi-Tech	USA
Elastogran	GER	Cosmic	ITA	Sulpol	BRA
Transtecnica	BRA	Fibermaq	BRA	GFT	THA
Tecnomix	MEX	OMS	ITA		

MEDIUM-SIZED LOW PRESSURE FOAM DISPENSER

RIGID OR FLEXIBLE PU FOAM, HCFC-141b

Description of basic unit:

Low pressure dispenser with variable output between 20 and 100 l/min to produce rigid or flexible PU foam for the manufacturing of refrigeration equipments.

Output range at mixing ratio 1:5/ 5:1. An output range at mixing ratio 1:1 should be quoted as alternative.

20-100 l/min (approximately)

..... - .... g/sec (approximately)

General features:

As a minimum, the unit must be equipped with:

Filters before the component pumps
Recirculation adjustment and gauge
Gauge for adjustment of pouring pressure

Pumps:

To be equipped with two (2) variable output metering pumps
Leak control: Equipped with individual drip pans
Pump capacity: Suitable for the machine rating
To be equipped with two (2) drums product transference pumps

Mixing head:

Mechanical agitator (approximately 7,000 rpm) guaranteeing correct foam mixing and laminar output over the entire working range.
Size: Suitable for entire output range
Working pressure: Up to 13 bar (equivalent of 200 psi)
Cleaning: Automatic and manual flushing and drying of the mixing chamber, with timers, for cleaning with either solvent or hot water solution, and air drying cycles.
Support: Vertically mounted on a boom of standard (2,000-4,000 mm) length allowing a 180^0 working radius and a minimum of 500 mm vertical movement

Working tanks: 2 working tanks (polyol blend, isocyanate) to serve the dispensing unit
Tank volume: 200 l each
Controls:

Min. /max. level control with alarm function
Temperature control system to maintaining tank temperatures of 15-40 $\pm$ ^{0}C, combined with a hot and cold water source of adequate capacity and a double walled tank or heat exchangers in the recirculation combined with a hot and cold water sources of adequate capacity.

Other features:

Allowing pressure up to 2.5 bar (35 psi equivalent)
Pressure gauge
Pressure relief
Mounted on separate drip pans of sufficient capacity
Equipped with low rpm agitators

MEDIUM-SIZED LOW PRESSURE FOAM DISPENSER
20 - 100 Lt. /min – continuation

Control panels:
Shot timers:
- Minimal 10 individual shot timers to be included
- 0.1 seconds precision
- Reading error display

PLC unit: Preferably included
Operator panel: A separate operator panel to be mounted on the mixing head with buttons for Start/Stop, Pour and Emergency Stop, interlocked with the mixing head cleaning system

General conditions:
One (1) year full warranty
Service facilities-repair center in the territory
Spare parts for one-year operation
Assistance for equipment's starting up.
Operative and maintenance manuals in Spanish

Quantity of Equipments and Electric Power

Quantity of Equipments	Electric Power		
	Volt	Phases	Hz
1	380	three	50

Recommended bidders:

Edge-Sweets	USA	Cannon	ITA	kymofoam	USA
Decke	USA	SAIP	ITA	Hi-Tech	USA
Elastogran	GER	Cosmic	ITA	Sulpol	BRA
Transtecnica	BRA	Fibermaq	BRA	GFT	THA
Tecnomix	MEX	OMS	ITA		

Header specification

One header for the following machine:
Brand: CANNON
Serial number: 130585
Code: 133093-4
TC 35 SZ
VLV FREON40.12
Model: C100RF2
Year: 1994
Capacity: 100 Kg/min.

Recommended bidder: Cannon ITA

Beneficiary company: FIMET S.R.L.

One header for the following machine:
Brand: CANNON
Serial number: 1027881
Model: HC100
Year: 1990
Capacity: 1.2 Kg/min.

Recommended bidder: Cannon ITA

Beneficiary company: San Telmo Equipamientos S.A.

DATA OF REFRIGERATION COMPANIES
PROJECT MP/ARG/04/018

1. BACOPE S.A.

Bacope S. A. is a privately owned company located in Lomas de Zamora city, Buenos Aires Province. It was founded in 1969 and has 30 employees.

The factory covers an area of approximately 1750 m^2.

It produces industrial processes coolers up to 2 HP, water coolers for shops and industries.
The gas used for refrigeration is CFC-12.

Equipment:

- Filling and Exhaustion equipment, brand: Cema, model: ONFILL F1F/H, year 2001.
- Vacuum pump, brand: Robinair, model: E-18, year 2001.
- Vacuum pump, brand: Cema.
- Leak detector, manual type, year 1998.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
BACOPE S.A.	0	0.53	0.53

Chosen machines:

- R-134 a Filling and Exhaustion equipment.
- Vacuum pump
- Leak detector

2. BERCOMAR S.A.C.I.I.F.C.A.

Bercomar S.A.C.I.I.F.C.A. is a privately owned company located in Caseros city, Buenos Aires Province. It was founded in 1962 and has 11 employees.

It produces freezers, cold keepers and display cabinets. The gas used for refrigeration is CFC-12.

Equipment:

- Injector, brand: ICR, year 1985, low pressure. Capacity: 30 Lt. / min.
- Vacuum pump. (Without data)
- Leak detector. (Without data)

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
BERCOMAR	2.1	0.3	2.4

Chosen machines:

- Injector: capacity: 40 Lt. / min. low pressure
  Mixing header
  Transfer pump

- Leak detector

3. CGA S.A.

CGA S.A. is a privately owned company located in Rosario city, Santa Fe Province. It was founded in 1993 and has 7 employees.

The factory covers an area of approximately 500 m^2.

It produces gastronomy machinery. The gas used for refrigeration is CFC - 12.

Equipment replenishment is manually done.

- Vacuum pump.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
CGA S.A.	0	0.24	0.24

Chosen machines:

- R-134 a Filling and Exhaustion equipment.
- Leak detector

4. FARPA S.A.

Farpa S. A. is a privately owned company located in José C. Paz city, Buenos Aires Province. It was founded in 1995 and has 7 employees.

Company has informed us that, in year 2001 it did not operate, for that reason it did not deliver gases purchase invoices relative to that year.

It produces absorption refrigerators for hotel rooms.

Equipment: home-made mixer.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
FARPA S.A.	0.15	0	0.15

This company is not interested in participating in this project.

5. FIMET S.R.L.

Fimet S.R.L. is a privately owned company located in Santo Tomé city, Santa Fe Province. It was founded in 1986 and has 5 employees.

The factory covers an area of approximately 800 m^2.

It produces drinking water tank towers. The gas used for refrigeration is CFC – 22.

Equipment:

- Injector, brand: CANNON, year 1994. Capacity: 100 Lt. /min.
  Model: C100RF2.
- Vacuum pump, brand: Dosivac.
- Leak detector, brand: Tif.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
FIMET S.R.L.	1.4	0	1.4

Chosen machines:

- Injection machine header
- Leak detector

6. FRASCONÁ Instalaciones Comerciales y Gastronómicas

Frasconá is a privately owned company located in Mar del Plata city, Buenos Aires Province. It was founded in 1981 and has 6 employees.

The factory covers an area of approximately 550 m^2.

It produces condensing units, cold central units and cold-storage chambers. The gas used for refrigeration is CFC-12.

Equipment:

- Vacuum pump, brand: Goulal.
- Vacuum pump, brand: Robinair, model: 15401.
- Leak detector, brand: Robinair, model: 16500.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
FRASCONÁ	0	0.8	0.8

This company is not interested in participating in this project.

7. FRI CAL VEN

Fri-cal-ven is a privately owned company located in Alcira city, Córdoba Province. It was founded in 1983 and has 8 employees.

It produces industrial and transport refrigerating equipment. The gas used for refrigeration is CFC – 12.

Equipment:

- Vacuum pump, brand: Pascal, 17 years.
- Vacuum pump, brand: Dosivac, 10 years.
- Vacuum pump, brand: Robinair, 3 years.
- Vacuum pump: (without data)
- 2 Injectors, brand: glass-craft, model: maxi, capacity: 12Lt. /min., model 1990.
- 3 Leak detector, 2 years.
- 5 Cargo analyzing systems.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
FRI CAL VEN	1.93	0.62	2.55

Chosen machines:

- Sprayer: 8 to14 Lt. / min. capacity, low pressure
  Heated hoses
  Applying pistol
  Transference pumps
- R -134 a Filling and Exhaustion equipment.
- Portable leak detector.
- Filling scale with R 134-a control.
- R 134-a filling analyzing system.

8. FRIOTEX

Friotex is a privately owned company located in Rosario city, Santa Fe Province. It was founded in 1967 and has 8 employees.

The factory covers an area of approximately 800 m^2.

It produces commercial refrigerators and cold-storage chambers. The gas used for refrigeration is CFC-12.

Equipment replenishment is manually done.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
FRIOTEX	0	0.1	0.1

Chosen machines:

- Scale
- Leak detector

9. ORGANIZACIÓN GASTROQUIL S.A.

Organización Gastroquil S.A. is a privately owned company located in Quilmes city, Buenos Aires Province. It was founded in 1997 and has 21 employees. It was previously called "Organización Quilmes" founded in 1970.

It produces trays, vertical display cabinets, chambers and other commercial refrigerating equipment. The gas used for refrigeration is CFC - 12.

Equipment:

- Injector, brand: AISTEC, model: K-100, capacity injector 100 Lt. /min. adjustable 60/100 Kg. /min. Date of manufacturing: 1996.
- Vacuum pump, brand: Pascal.
- Leak detector, TIF-5000.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
GASTROQUIL S.A.	1.6	1.9	3.5

Chosen machines:

- Injector: capacity: 60/100 Lt. / min. high pressure; with a 6 meter hose length minimum.
- Vacuum pump
- R-134 a Filling and Exhaustion equipment
- Leak detector

10. GATIC S.R.L.

Gatic S.R.L. is a privately owned company located in Rosario city, Santa Fe Province.

It produces display trays and juice dispensers.

Equipment:

- Vacuum pump. (Without data).
- Injectors (Without data).
- Leak detector (Without data).

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
GATIC S.R.L.	1	1.1	2.1

It was impossible to visit this company because it has been shut down due to bankruptcy.

11. HIDROFRÍO

Hidrofrío is a privately owned company located in Capital Federal city, Buenos Aires Province.

The factory covers an area of approximately 400 m^2.

It produces coolers for liquids. The gas used for refrigeration is CFC-12 and CFC-22.

Equipment replenishment is manually done.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
HIDROFRÍO	0	0.1	0.1

This company is not interested in participating in this project.

12. HUGO ABEL MAZZETTI S.A.

Hugo Abel Mazzetti S. A. is a privately owned company located in Mar del Plata city, Buenos Aires Province. It was founded in 1975 and has 12 employees.

The factory covers an area of approximately 800m^2.

It produces evaporators, condensers and display cabinets. The gas used for refrigeration is CFC-12, R-502 and R-22.

Equipment refilling is manually done with electronic scale.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
HUGO MAZZETTI	0	0.11	0.11

This company is not interested in participating in this project.

13. IGAR S.R.L.

Igar S.R.L. is a privately owned company located in Cordoba city, Cordoba Province. It was founded in 1974 and has 8 employees.

The factory covers an area of approximately 1500 m^2.

It produces commercial refrigerators.

Equipment:

- Injector, brand: Aistec, year 1993. Capacity: 20Lt./min
- Vacuum pump, brand: Pascal. Model: 1990.
- Leak detector, brand: TIF 5550A.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
IGAR S.R.L.	0.6	0	0.6

Chosen machines:

- Vacuum pump
- Leak detector
- Scale

14. LANIN

Lanin is a privately owned company located in Neuquen city, Neuquen Province. It was founded in 1991 and has 7 employees.

The factory covers an area of approximately 500 m^2.

It produces commercial refrigerators and cold storage chambers. The gas used for refrigeration is CFC-12 and R-22.

Equipment:

- Injector, brand: ICR, model: 2000. Capacity: 8Lt./min
- Vacuum pump, brand: Dosivac.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
LANIN	2.1	1.33	3.43

Chosen machines:

- Injector: capacity 8 Lt. / min.
- R-134a Filling and Exhaustion equipment.
- Vacuum pump.
- Leak detector.

15. LAREU REFRIGERACIÓN

Lareu refrigeración is a privately owned company located in Munro city, Buenos Aires Province. It was founded in 1994 and has 12 employees.

The factory covers an area of approximately 800 m^2.

Equipment:

- Injector, capacity: 180 gr. /sec.
- Vacuum pump (Without data).
- Leak detector (Without data).

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
LAREU REF.	0	0.61	0.61

Chosen machines:

- R-134 a Filling and Exhaustion equipment.
- Leak detector.

16. LAUGE EQUIPAMIENTOS S.R.L.

Lauge Equipamientos S.R.L. is a privately owned company located in Rosario city, Santa Fe Province. It was founded in 1999 and has 10 employees.

The factory covers an area of approximately 900 m^2.

It produces equipment for supermarkets. The gas used for refrigeration is CFC-12 and R-22.

Equipment:

- Injector, brand: Rosasco, model: 1990, capacity 30 Lt. / min, low pressure.
- Vacuum pump. (Without data).
- Leak detector. (Without data).

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
LAUGE EQ. S.R.L.	1.1	0	1.1

Chosen machines:

- Vacuum pump.
- Leak detector.
- Scale

17. LIBRA S.R.L.

Libra S.R.L. is a privately owned company located in San Francisco city, Cordoba Province. It was founded in 1984 and has 4 employees.

The factory covers an area of approximately 550 m^2.

It produces commercial refrigerators and cold-storage chambers. The gas used for refrigeration is CFC-12.

Equipment:

- Vacuum pump, brand: Pascal.
- Leak detector (Without data).

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
LIBRA S.R.L.	0.1	0.8	0.9

Chosen machines:

- R-134 a Filling and Exhaustion equipment.
- Portable leak detector.

18. MILFRIGO

Milfrigo is a privately owned company located in Rosario city, Santa Fe Province. It was founded in 1977 and has 4 employees.

The factory covers an area of approximately 400 m^2.

It produces refrigerated transport equipment. The gas used for refrigeration is CFC-12 and R-502.

Equipment:

- Vacuum pump, brand: Dosivac, model: DV 350, capacity 21 m^3/h, year 1992.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
MILFRIGO	0	1.1	1.1

This company is not interested in participating in this project.

19. MODUL TERM

Modul term is a privately owned company located in Avellaneda city, Buenos Aires Province. It was founded in 1994 and has 3 employees.

The factory covers an area of approximately 350 m^2 with an additional storehouse of 250 m^2.

It produces modular chambers and gastronomic refrigerators, both with polyurethane foam injected insulation. The gas used for refrigeration is CFC-12.

Equipment:

- Injector with blender at 580 RMP, digital control and injection capacity 130 Kg. /min. Date of manufacturing: December 1994.
- Vacuum pump, brand: Pascal, model: P300, potency: 1HP, Argentina Industry.
- Vacuum pump, brand: Pascal, potency: 4 HP, Argentina Industry.
- Leak detector, brand: Leak-Seeker, model: LS 790 A.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
MODUL TERM	0.4	2.2	2.6

Chosen machines:

- Header injector machine.
- R-134 Filling and Exhaustion equipment.
- Leak detector.

20. MOTOCOM Refrigeración Comercial

Motocom Refrigeración Comercial is a privately owned company located in Mar del Plata city, Buenos Aires Province. It was founded in 1978 and has 3 employees.

The factory covers an area of approximately 300 m^2.

It produces commercial refrigerators and cold- storage chambers. The gas used for refrigeration is CFC-12.

Equipment:

- Vacuum pump, brand: Dosivac.
- Leak detector, brand: Tif, models: 5000, 5500, and 8500.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
MOTOCOM	0	0.11	0.11

Chosen machines:

- Scale.
- Leak detector.

21. OSCAR BASILOTTA E HIJOS S.H.

Oscar Basilotta e hijos S.H. is a privately owned company located in San Miguel de Tucumán city, Tucumán Province. It was founded in 1992.

The factory covers an area of approximately 500 m^2.

It produces isolation panels for cold rooms. The gas used for refrigeration is CFC-12.

Equipment:

- Injector, brand: ICR, model: 1994, capacity 100Kg. / min, low pressure.
- Vacuum pump.
- Leak detector.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
BASILLOTA S.H.	2.16	0.48	2.64

Chosen machines:

- Injector, capacity: 60 Lt. /min. Low pressure, with 2 m hose minimum length.
- Leak detector.

22. REFRIGERACIÓN POLAIR S.R.L.

Refrigeración Polair S.R.L. is a privately owned company located in Rosario city, Santa Fe Province. It was founded in 1991 and has 6 employees.

The factory covers an area of approximately 800 m^2.

It produces cold-storage chambers and refrigerating equipment for transport. The gas used for refrigeration is CFC-12 and R-502.

Equipment:

- Vacuum pump, brand: Robinair, model: P300, potency: 1 HP, Argentina Industry.
- Vacuum pump, brand: Pascal, potency: 4 HP, Argentina Industry.
- Injector, brand: Gusmer, capacity: 10 Kg. / min; lent by Huntsman.
- Leak detector, brand: Leak-Seeker, model: LS 790 A.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
REFRIGERACION POLAIR S.R.L.	2.5	0.33	2.83

Chosen machines:

- Sprayer: capacity: 8 to14 Lt. / min. low pressure
  Hose length between 10 and 12 meters.
- R-134 a Filling and Exhaustion equipment.
- Vacuum pump.
- Leak detector.

23. REFRIMET S.A.

Refrimet S.A. is a privately owned company located in Caseros city, Buenos Aires Province. It was founded in 1990 and has 8 employees.

The factory covers an area of approximately 2000 m^2.

It produces vertical display cabinets, freezers, refrigerators, counters and ice cream cold keepers. The gas used for refrigeration is CFC-12 and R-502.

Equipment refilling is manually done.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
REFRIMET S.A.	3.5	0.9	4.4

This company is not interested in participating in this project.

24. RIGHI, Unidades frigoríficas especiales.

Righi is a privately owned company located in Berazategui city, Buenos Aires Province. It was founded in 1994 and has 6 employees.

The factory covers an area of approximately 330 m^2.

It produces special units for laboratories and industry. The gas used for refrigeration is CFC-12, R-502, R-13 and R-23.

Equipment:

- Injector, brand: Aistec, injector capacity 60 Kg. / min. Date of manufacturing: 1990.
- 4 Vacuum pump, brand: Sorva.
- 3 Leak detectors.
- 5 Load analyzers

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
RIGHI	0.4	0.2	0.6

Chosen machines:

- R-134 a Filling and Exhaustion equipment.
- Leak detector.

25. SAN TELMO EQUIPAMIENTOS S.A.

San Telmo Equipamientos S. A. is a privately owned company located in Loma Hermosa city, Buenos Aires Province. It was founded in 1994 and has 11 employees.

The factory covers an area of approximately 2300 m^2.

It produces modular panels for cold-storage chambers. The gas used for refrigeration is R-22.

Equipment:

- Injector, brand: CANNON, injector capacity: 1.2 Kg. / sec. Date of manufacturing: 1990.
- 4 Vacuum pump, brand: Sorva.
- 3 Leak detectors.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
SAN TELMO	3.6	0	3.6

Chosen machines:

- Injection machine header
- Leak detector

26. SIMAR

Simar is a privately owned company located in José Leon Suarez city, Buenos Aires Province. It was founded in 1977 and has 3 employees.

The factory covers and area of approximately 300 m^2.

It produces domestic refrigerators, commercial refrigerators and cold- storage chambers. The gas used for refrigeration is CFC-12.

Equipment:

- Injector, brand: Rosasco, injector capacity: 18 Kg. / min.
- Vacuum pump, brand: Pascal.
- Leak detectors, brand: Tiff.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
SIMAR	0.1	0.2	0.3

Chosen machines:

- R-134 a Filling and Exhaustion equipment.
- Vacuum pump.
- Leak detector.

27. TECNOFRED

Tecnofred is a privately owned company located in San Martin city, Buenos Aires Province. It was founded in 1986 and has 6 employees.

It produces refrigerators and cold-storage chambers. The gas used for refrigeration is CFC-12.

Equipment:

- Injector, brand: Aistec, injection capacity 60 Kg. / min.
- Vacuum pump, brand: Dosivac, model: DVR.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
TECNOFRED	1.6	0	1.6

This company is not interested in participating in this project.

28. TECNOLOGÍA EN REFRIGERACIÓN S.R.L.

Tecnología en Refrigeración S.R.L. is a privately owned company located in Rosario city, Santa Fe Province. It was founded in 1979 and has 30 employees.

The factory covers an area of approximately 1850 m^2.

It produces air conditioning equipment and agricultural machinery. The gas used for refrigeration is CFC-12.

Equipment:

- Vacuum pump. (Without data)
- Leak detector. (Without data).

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
TEC. EN REF.	0.1	0.3	0.4

Chosen machines:

- R-134 a Filling and Exhaustion equipment.
- Vacuum pump.
- Leak detector.

29. VICA REFRIGERACIÓN COMERCIAL

Vica Refrigeración Comercial is a privately owned company located in Rosario city, Santa Fe Province. It was founded in 1979 and has 6 employees.

The factory covers an area of approximately 800 m^2.

It produces commercial refrigeration equipment. The gas used for refrigeration is CFC-12.

Equipment:

- Vacuum pump, brand: Pascal, model: P300, 15 years.
- Leak detector, brand: CPS Leak Seeker, model: L-780 A, 10 years.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
VICA	0	0.1	0.1

Chosen machines:

- Scale
- Leak detector.

30. VINCER S.R.L.

VINCER S.R.L. is a privately owned company located in Rosario city, Santa Fe Province. It was founded in 1994 and has 12 employees.

The factory covers an area of approximately 550 m^2.

It produces commercial refrigeration equipment and cold-storage chambers for ice cream parlors and bakeries. The gas used for refrigeration is CFC-12.

Equipment:

- Injector, brand: Robinair, 10 years.
- Vacuum pump, brand: Pascal, 10 years.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
VICA	0	0.2	0.2

Chosen machines:

- Vacuum pump.
- Leak detector.

31. WALTER GROSSO

WALTER GROSSO is a privately owned company located in El Trebol city, Santa Fe Province. It was founded in 1977 and has 5 employees.

The factory covers an area of approximately 1880 m^2.

It produces thermal equipment for cooling food products. The gas used for refrigeration is CFC-12.

Equipment replenishment is manually done.

Validated consumption:

	CFC-11 (MT. /yr.)	CFC-12 (MT. /yr.)	CFC Consumption Total
WALTER GROSSO	0.3	0	0.3

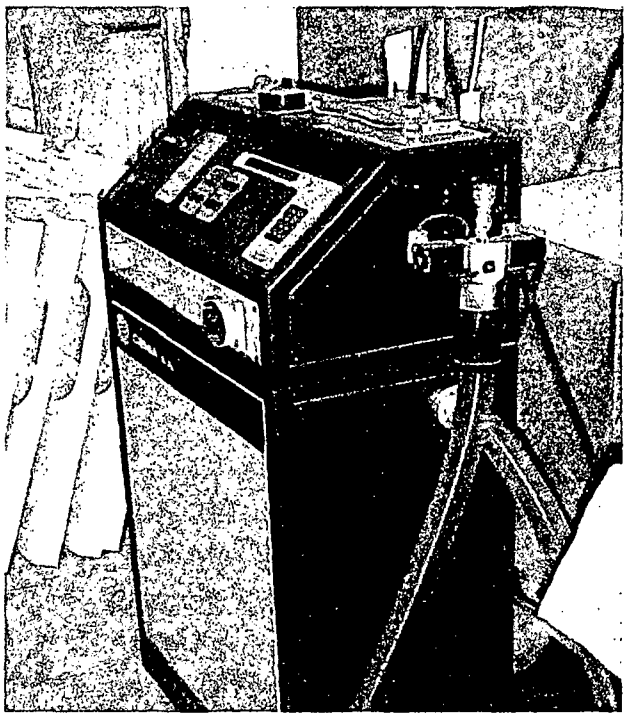
Chosen machines:

- Vacuum pump.
- Leak detector.
- Scale.

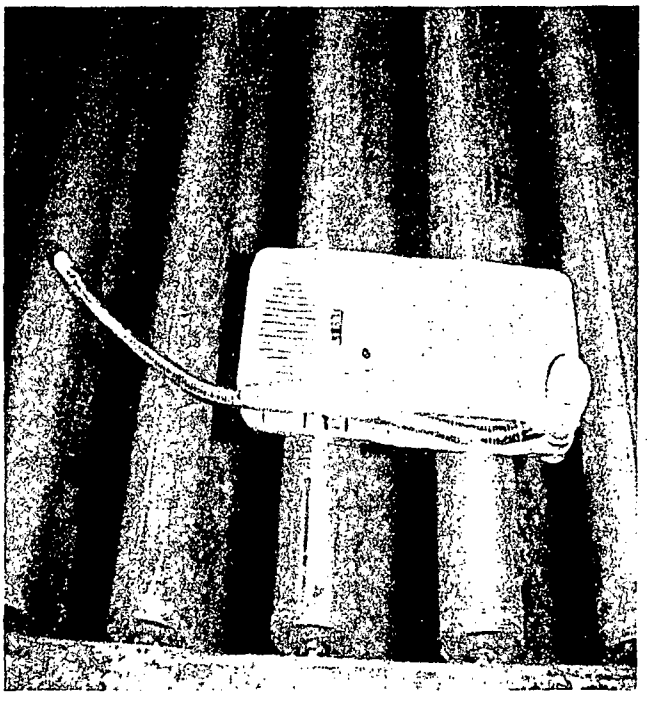
PHOTOGRAPHS OF EXISTING EQUIPMENT IN THE PRE-SELECTED COMPANIES

1. BACOPE S.A.

Filling and exhaustion equipment, Brand: CEMA. Year: 2001

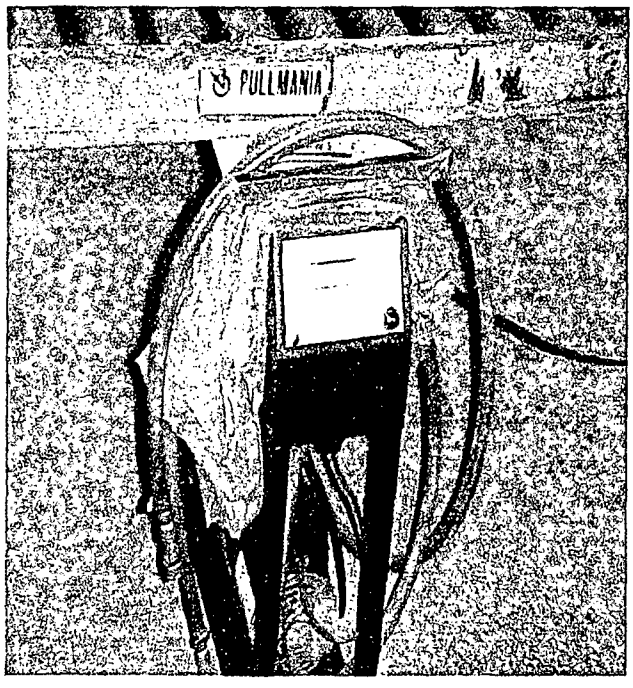


Leak detector, brand: Tif.

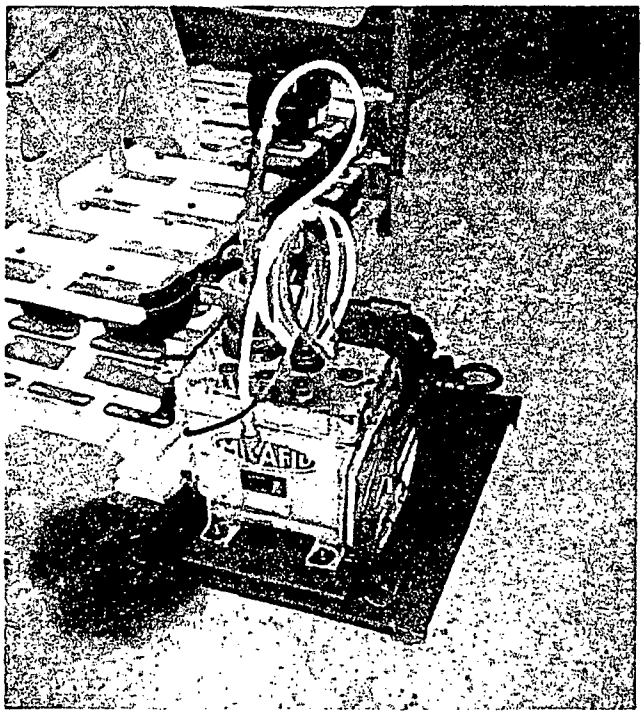


BACOPE S.A.-Continuation

Vacuum pump, brand: CEMA.

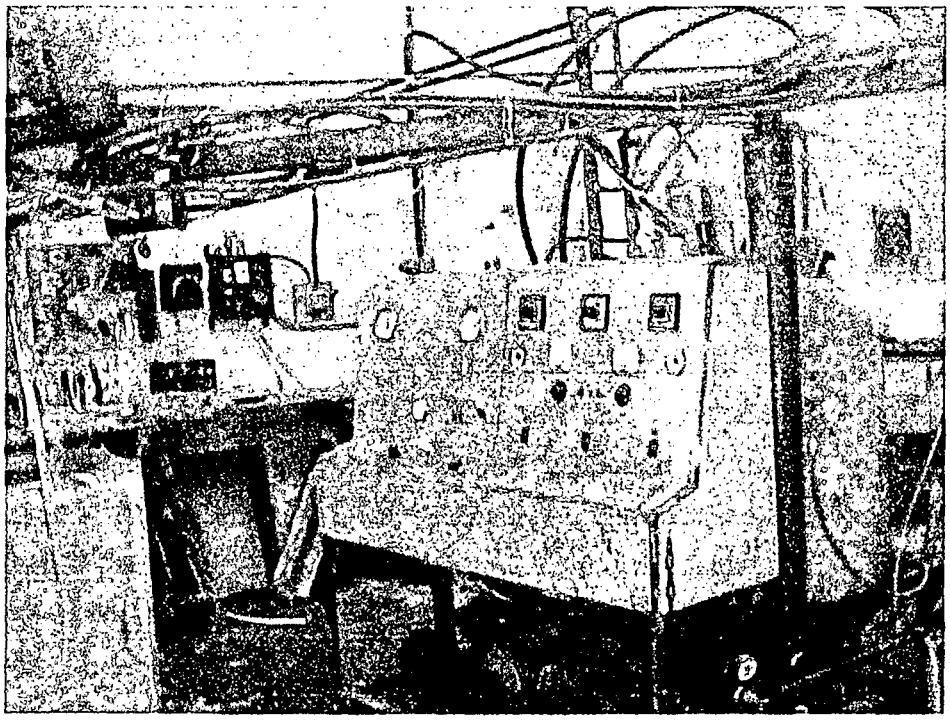


Vacuum pump.

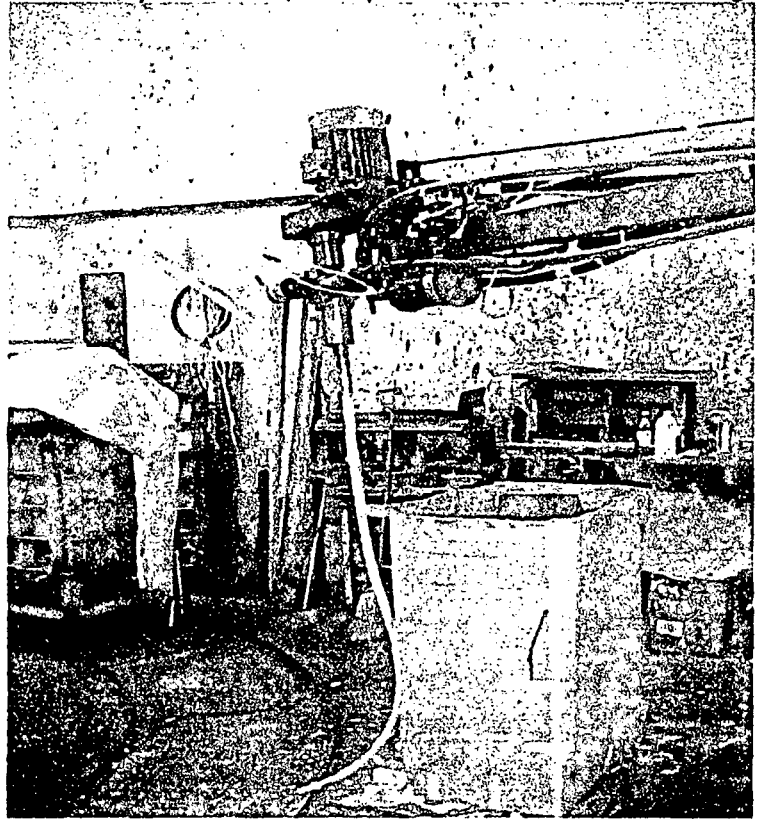


2. BERCOMAR S.A.C.I.I.F.C.A.

Injector, brand: ICR, year 1985, low pressure. Capacity: 30 Kg. / min.

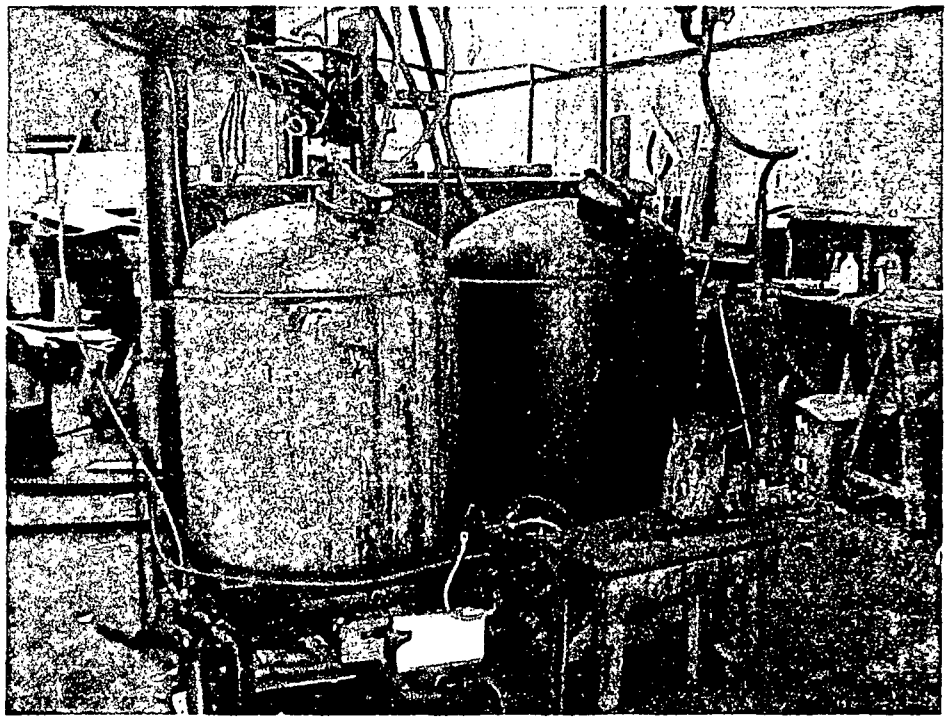


Injector, brand: ICR, year 1985, low pressure. Capacity: 30 Kg. / min.

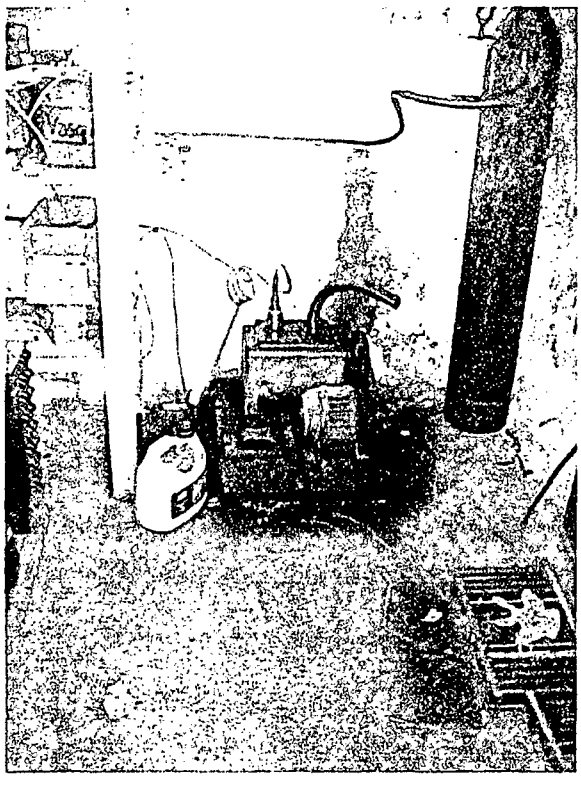


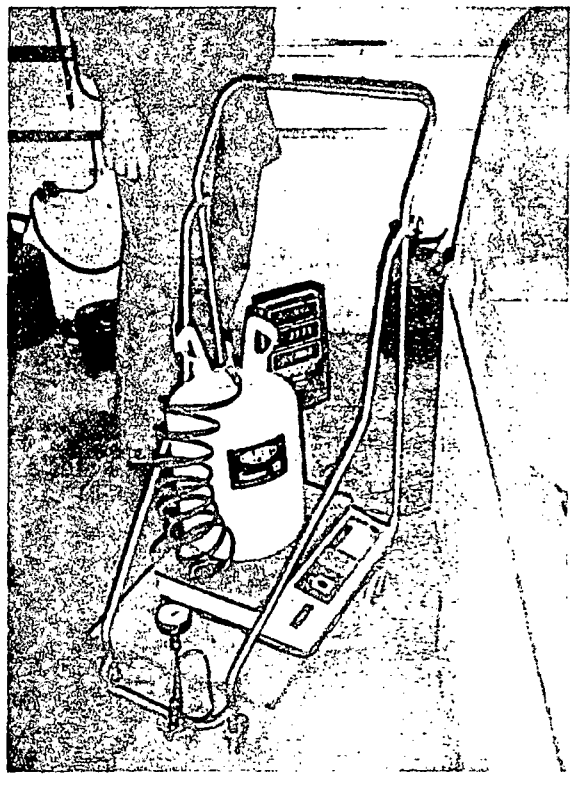
BERCOMAR S.A.C.I.I.F.C.A. – Continuation

Injector, brand: ICR, year 1985, low pressure. Capacity: 30 Kg. / min.



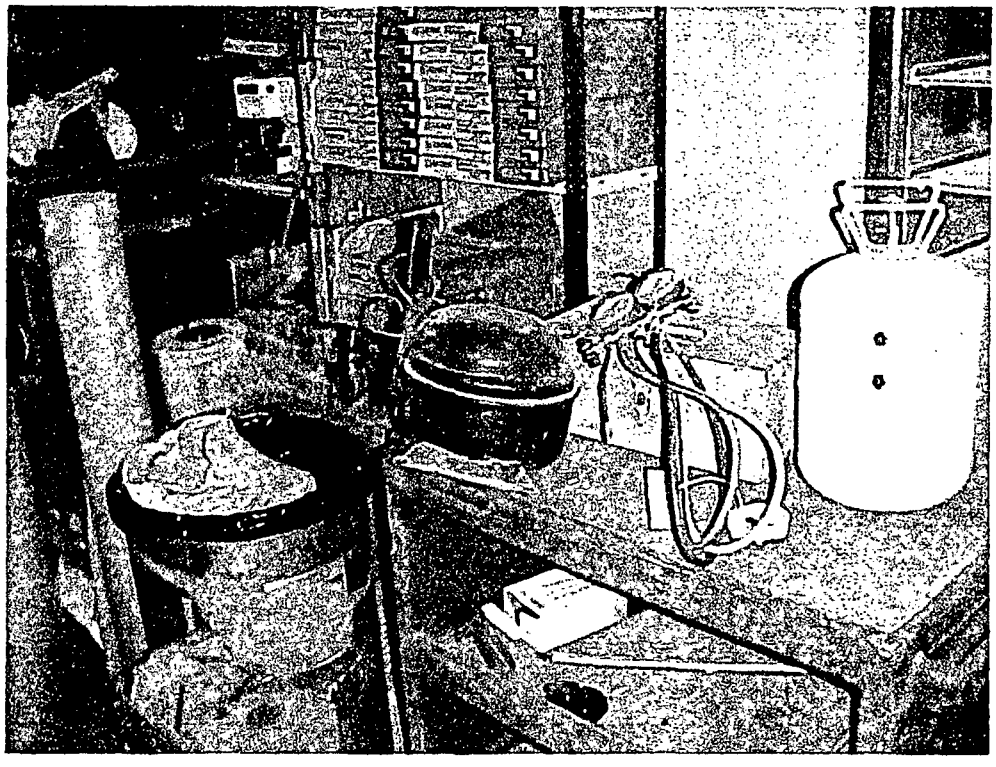
Vacuum pumps.



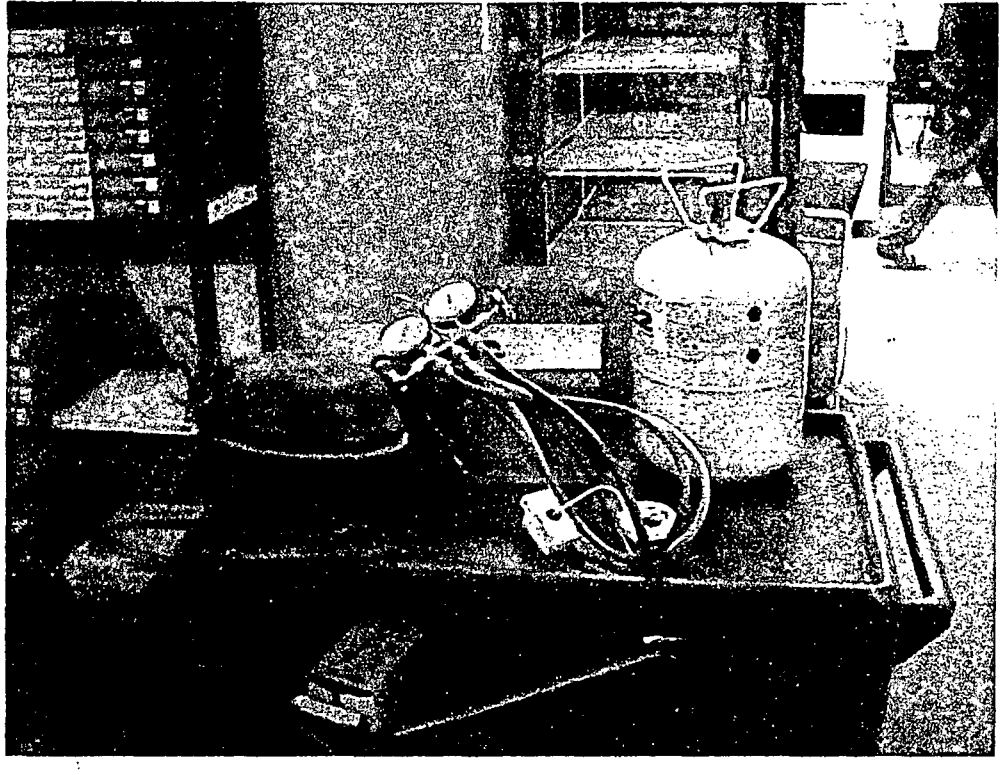


3. CGA S.A.

Vacuum pump.

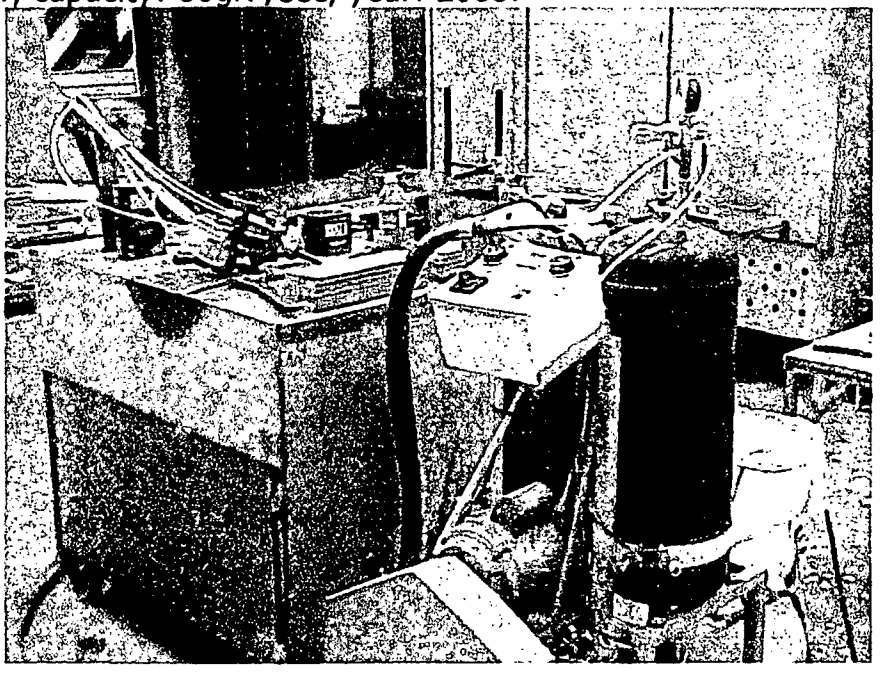


Vacuum pump.

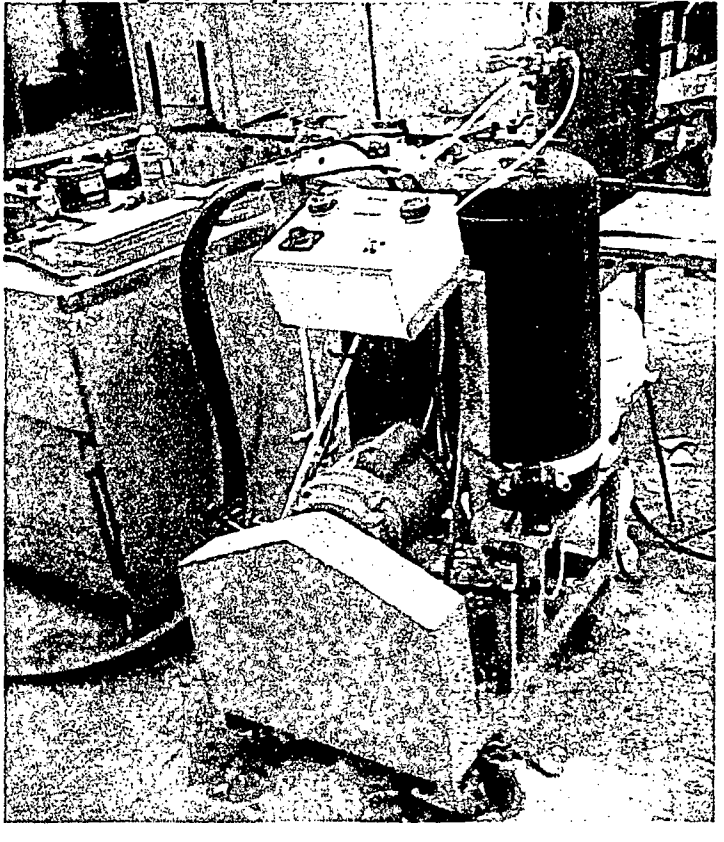


4. FARPA S.A.
Company that is not interested in participating in this project.

Injector, capacity: 80gr. /sec, year: 2003.

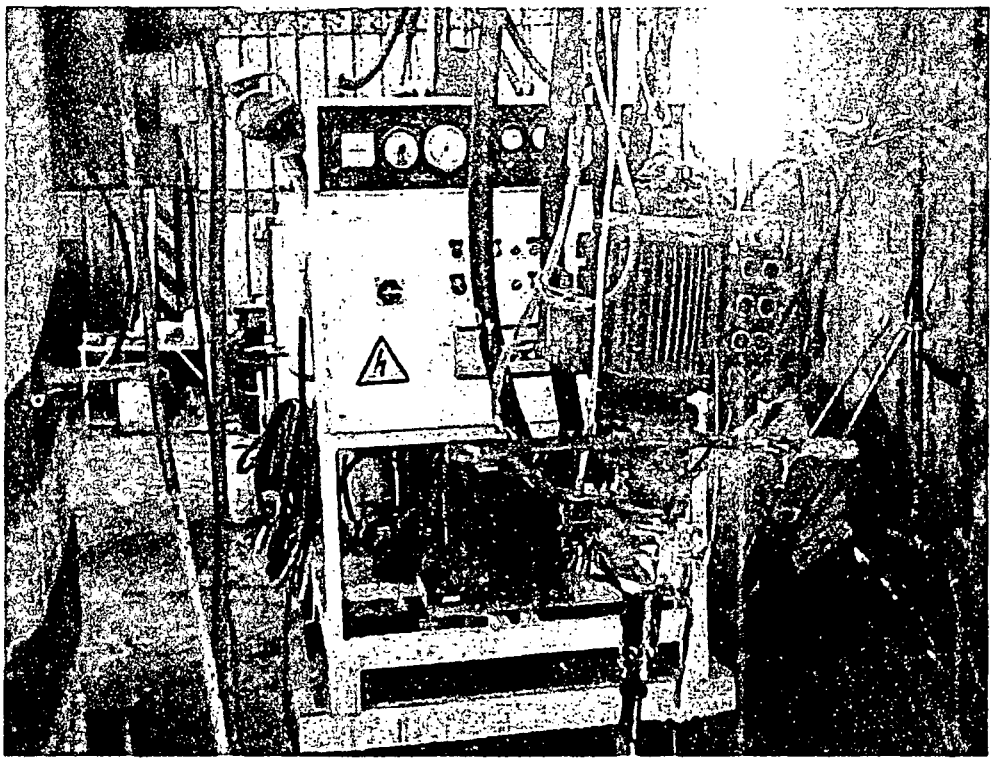


Injector, capacity: 80gr. /sec, year: 2003.

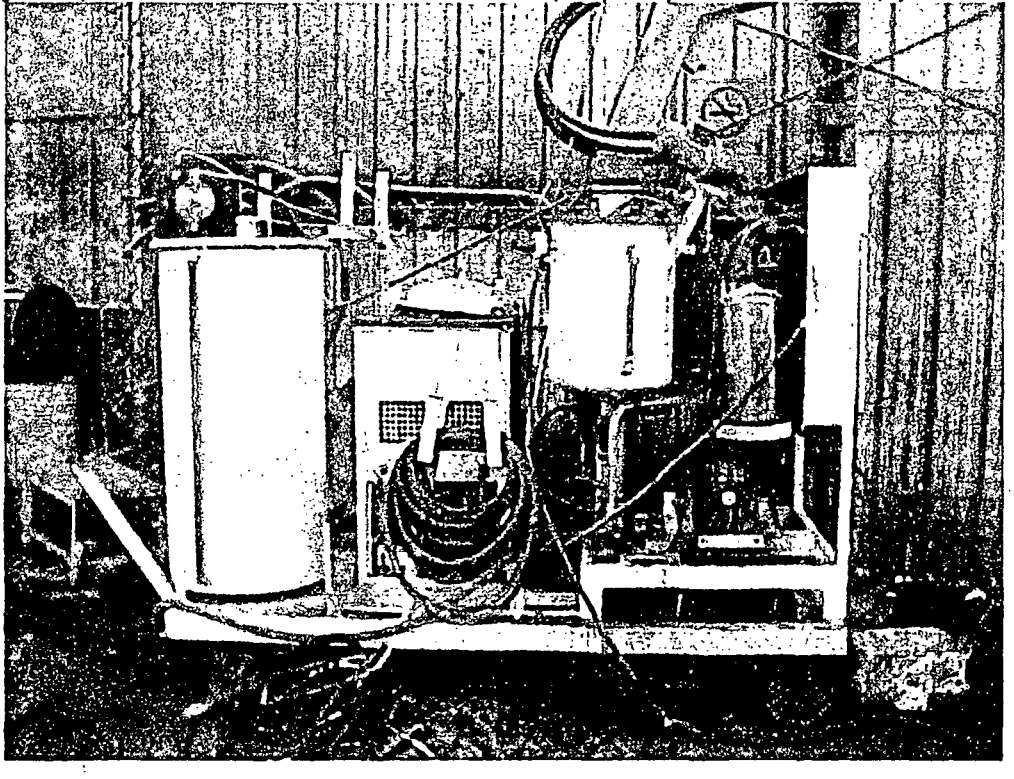


5. FIMET S.R.L.

Injector, brand: CANNON, model: C100RF2, capacity: 100 Lt. / min, year: 1994.

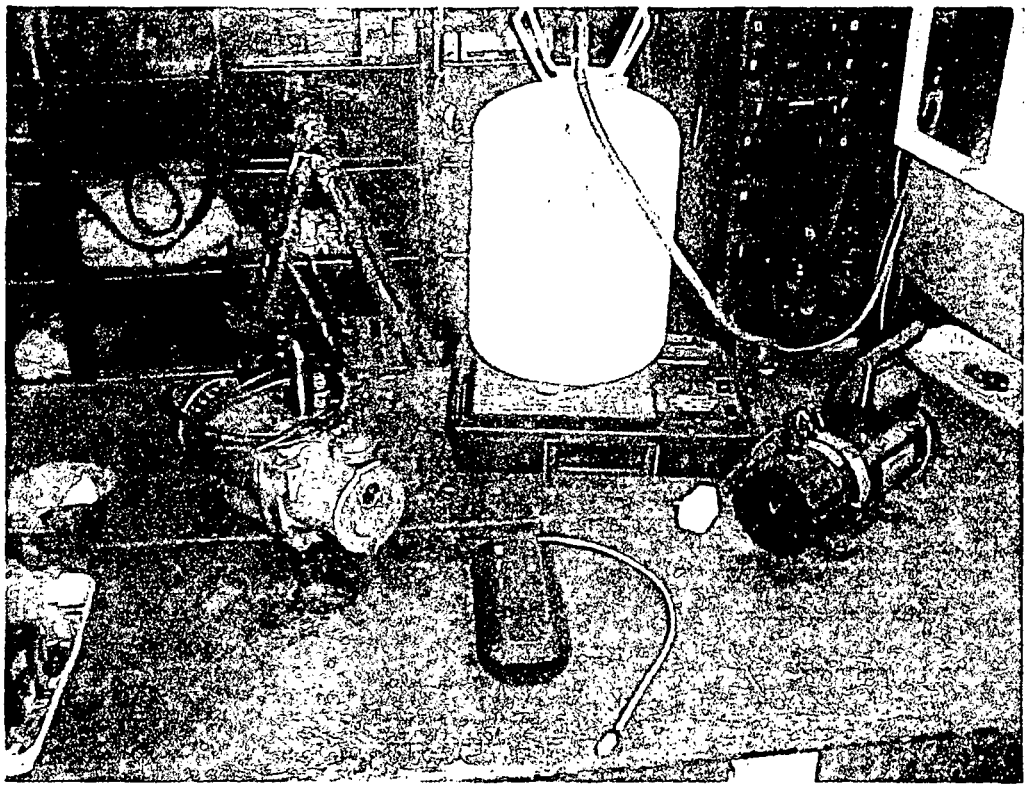


Injector, brand: CANNON, model: C100RF2, capacity: 100 Lt. / min, year: 1994.



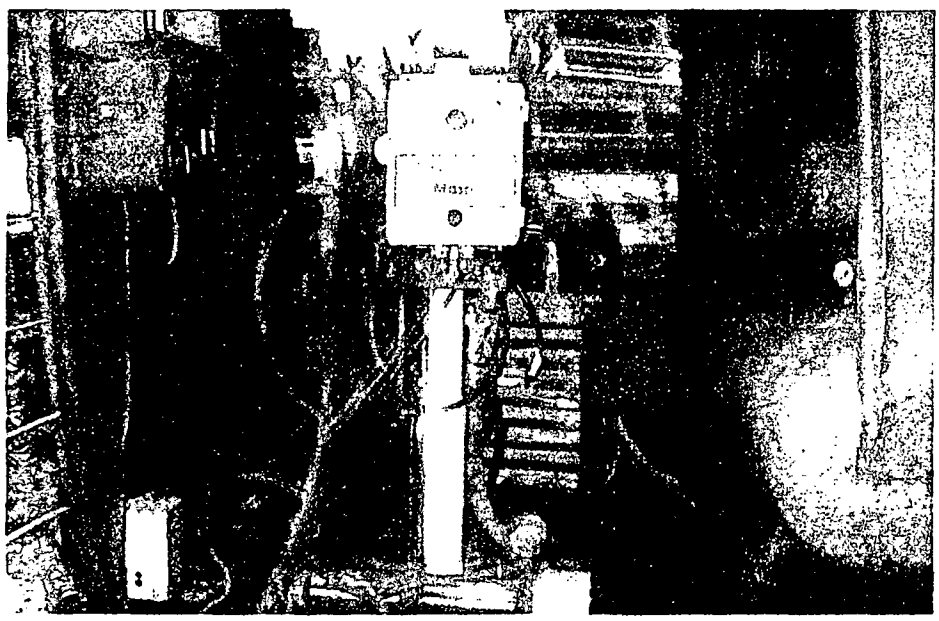
6. FRASCONÁ Instalaciones Comerciales
Company that is not interested in participating in this project.

Vacuum pump, brand: Goulal.
Vacuum pump, brand: Robinair, model15401.
Leak detector, brand: Robinair, model 16500.

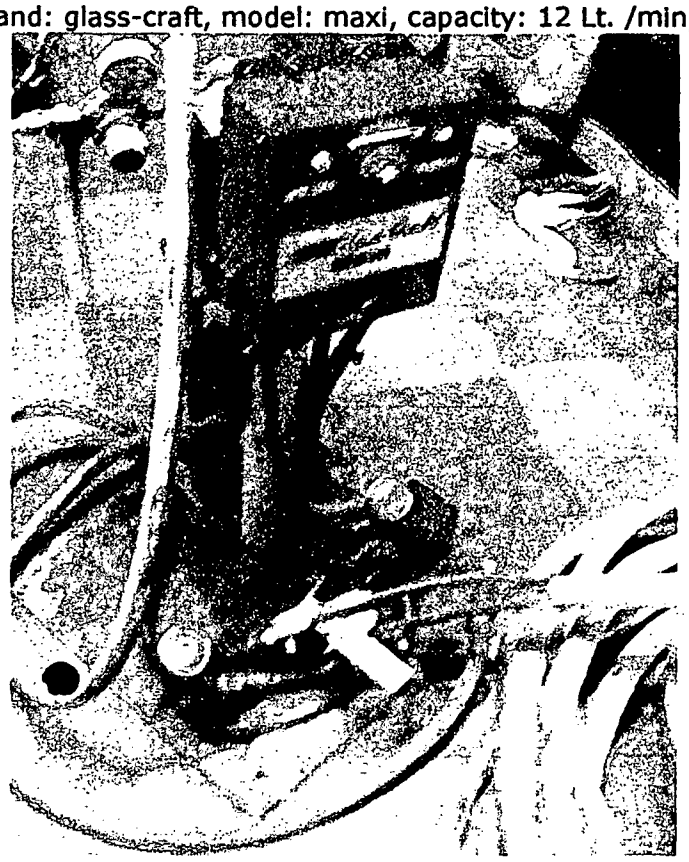


7. FRI CAL VEN

2 Injectors, brand: glass-craft, model: maxi, capacity: 12 Lt. /min, year: 1990

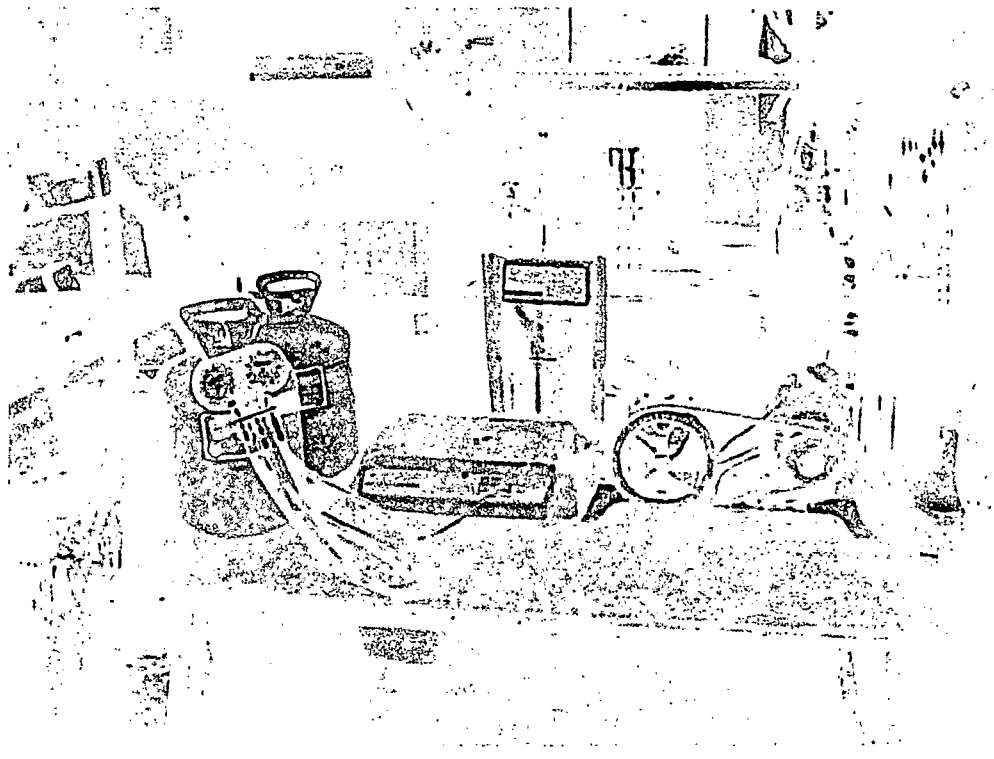


2 Injectors, brand: glass-craft, model: maxi, capacity: 12 Lt. /min, year: 1990



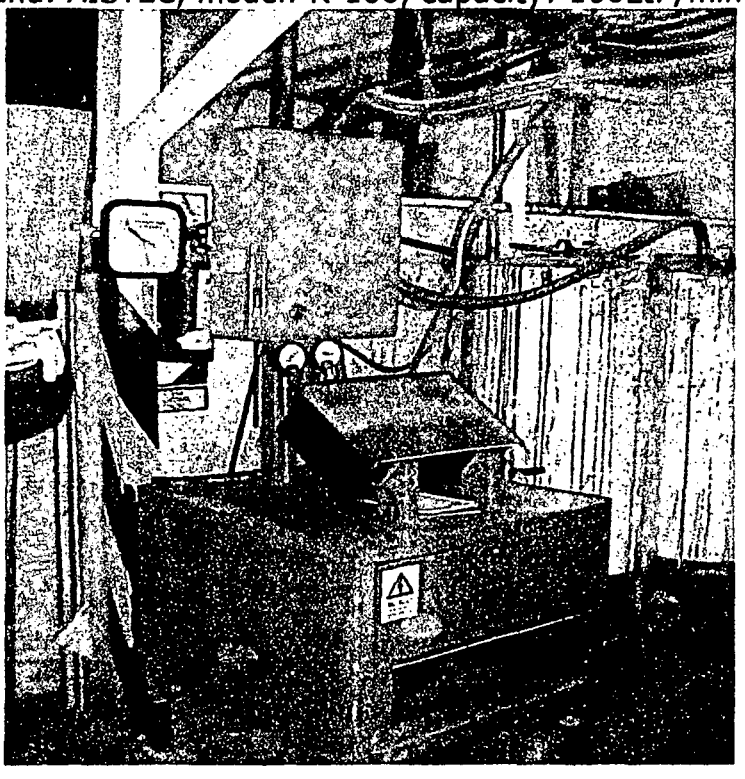
8. FRIOTEX

Vacuum pump

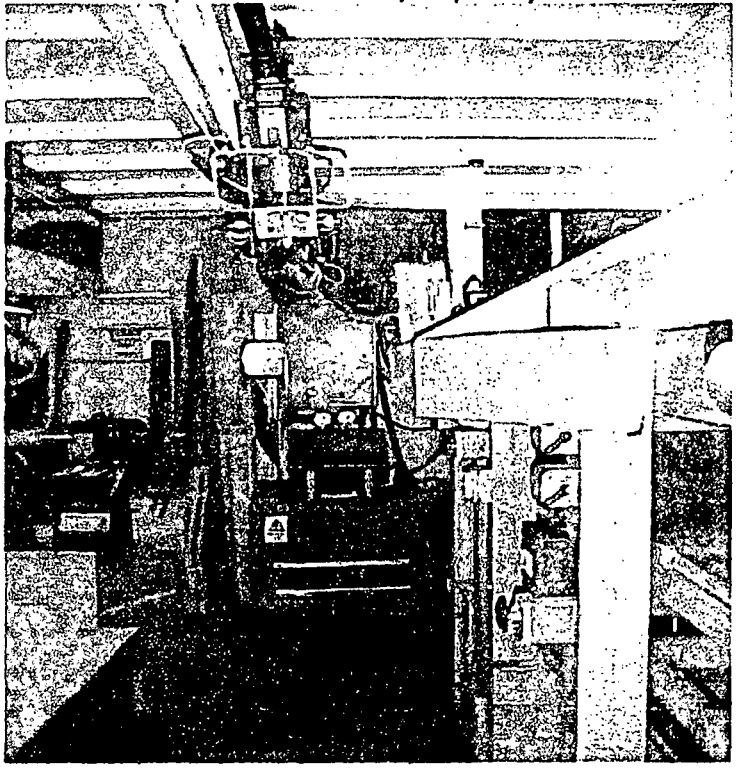


9. GASTROQUIL S.A.

Injector, brand: AISTEC, model: K-100, capacity: 100Lt. /min.



Injector, brand: AISTEC, model: K-100, capacity: 100Lt. /min.



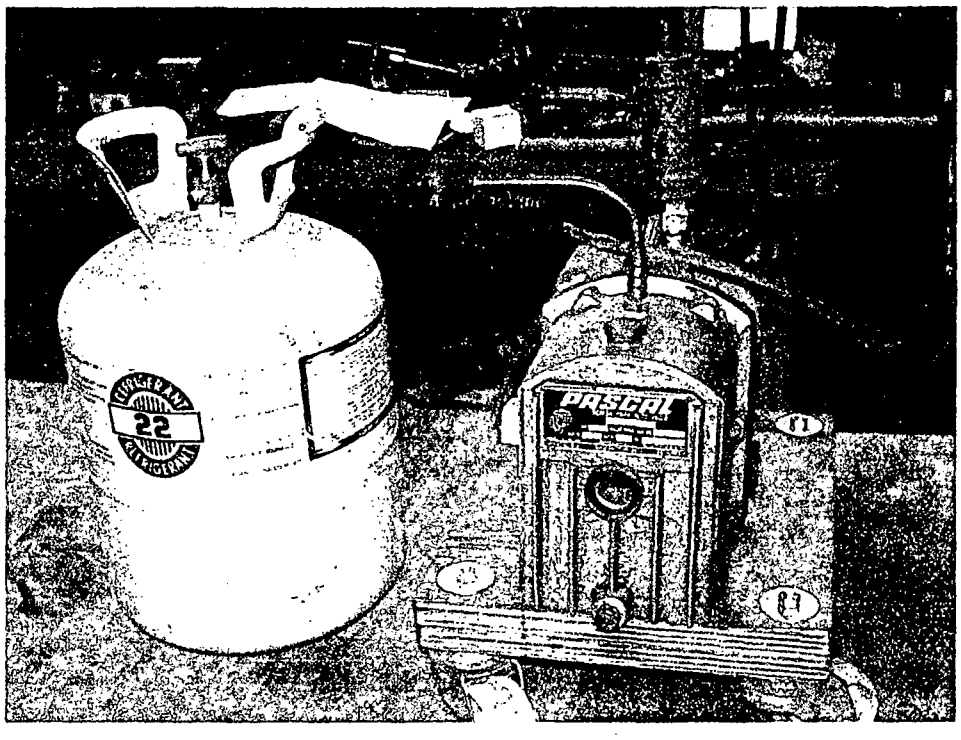
10. GATIC S.R.L.

It was impossible to visit this company because it is shut down due to bankruptcy.

11. HIDROFRÍO

Company that is not interested in participating in this project

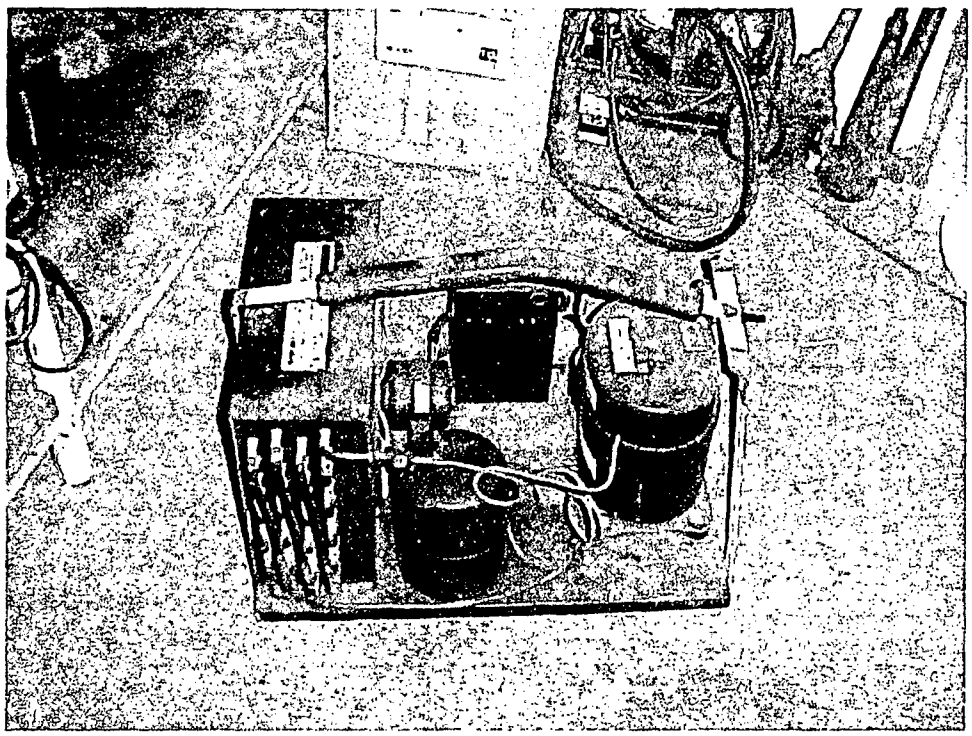
Vacuum pump, brand: Pascal.



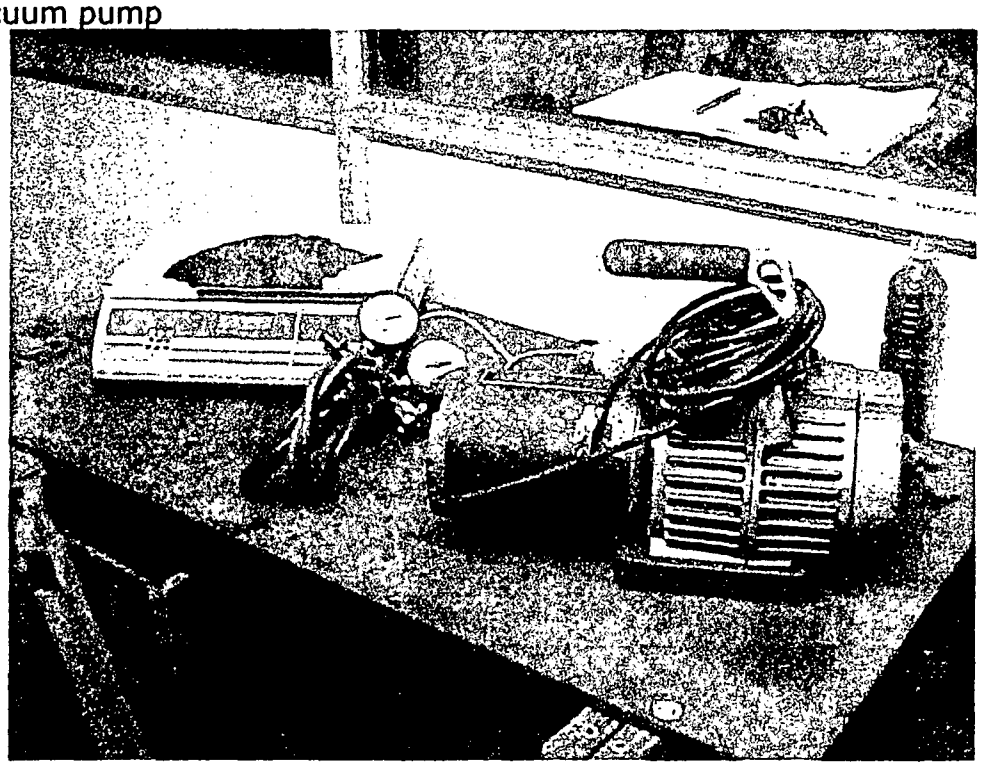
12. HUGO ABEL MAZZETTI S.A.

Company that is not interested in participating in this project

Vacuum pump

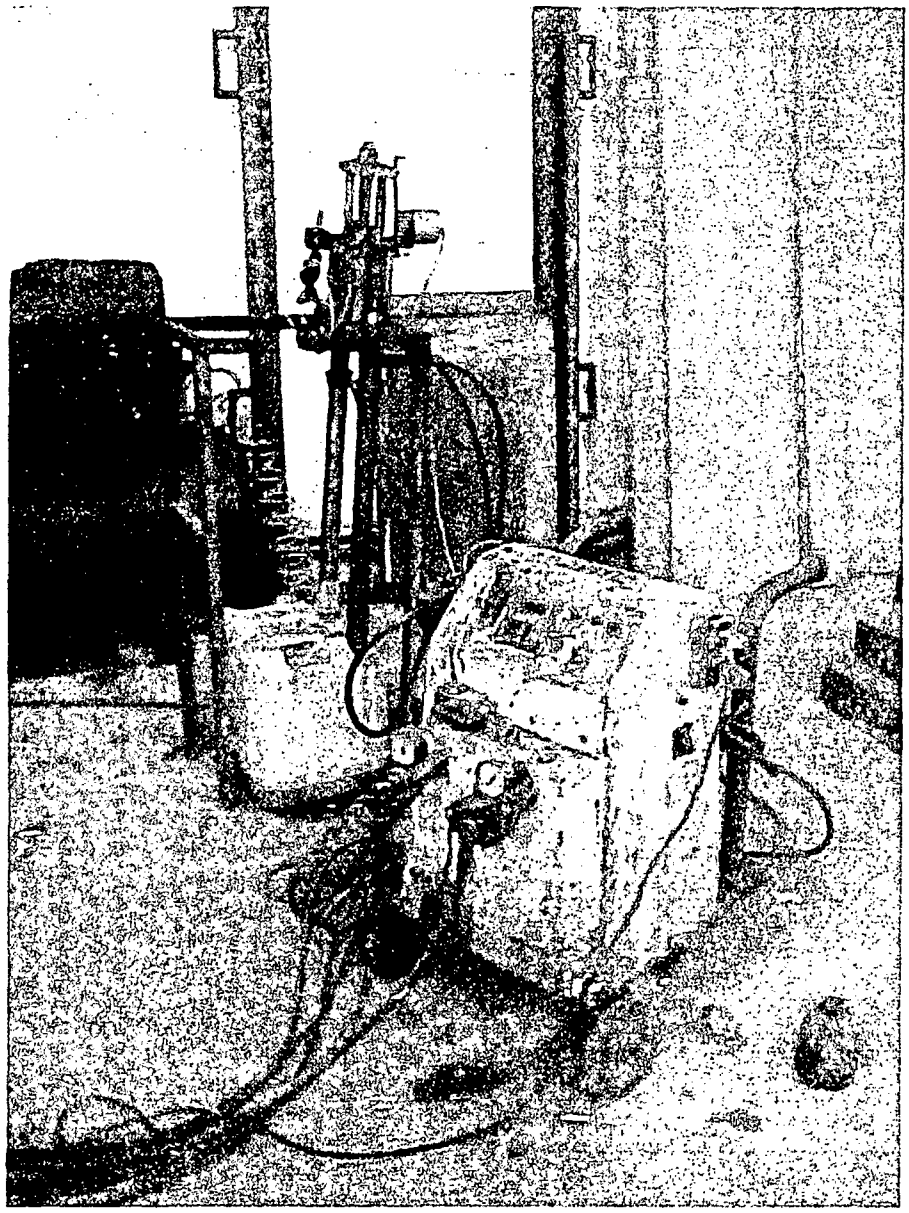


Vacuum pump



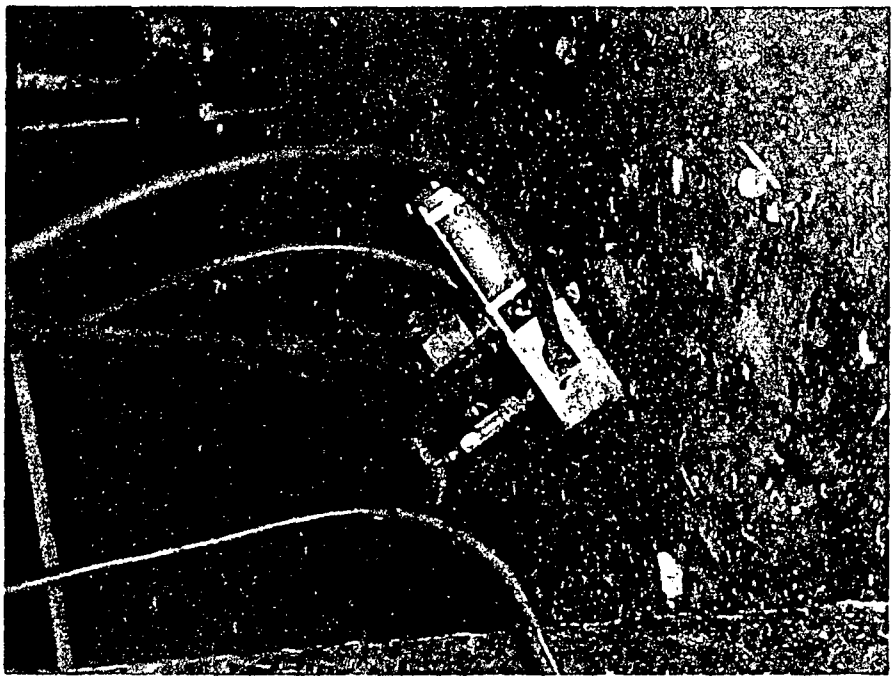
13. IGAR S.R.L.

Injector, brand: AISTEC, capacity: 20 Kg. /min, year: 1993.

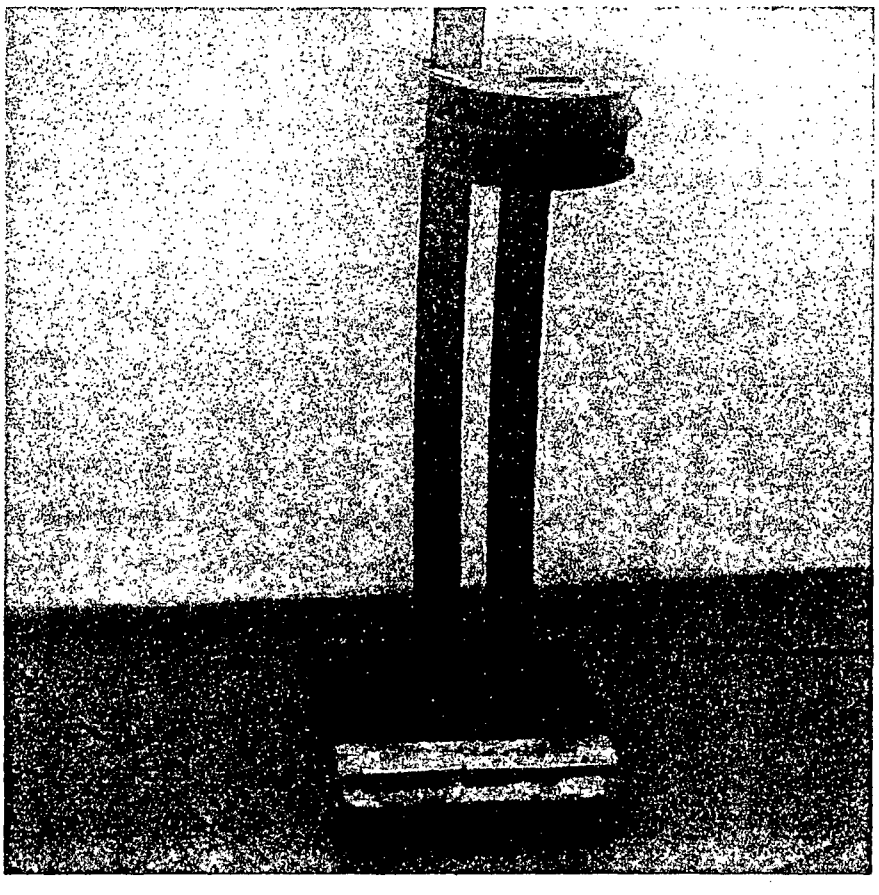


IGAR S.R.L. – Continuation

Header - Injector

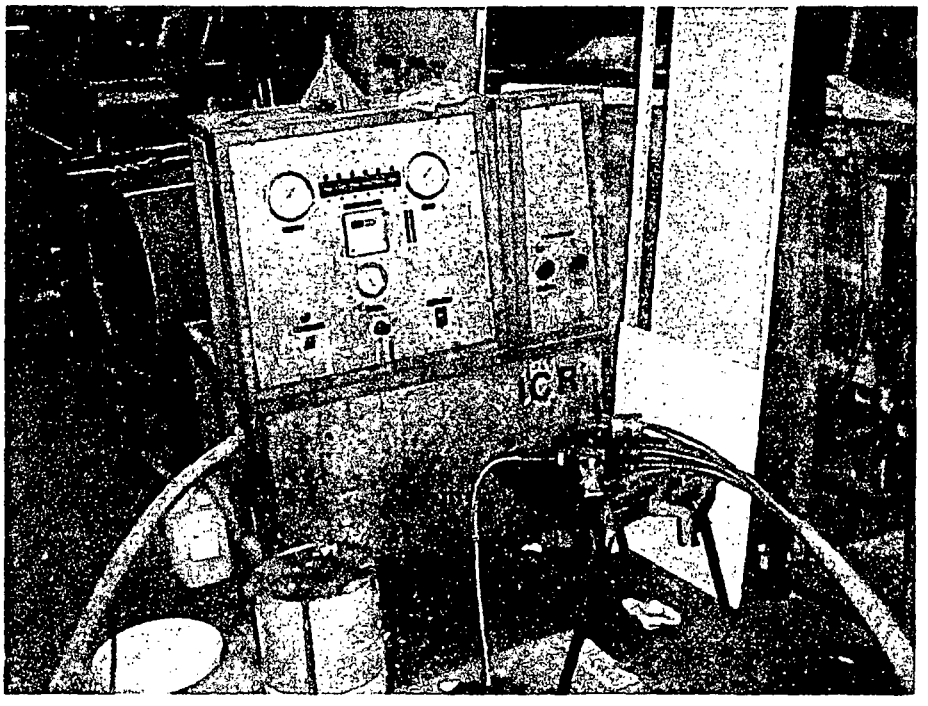


Scale

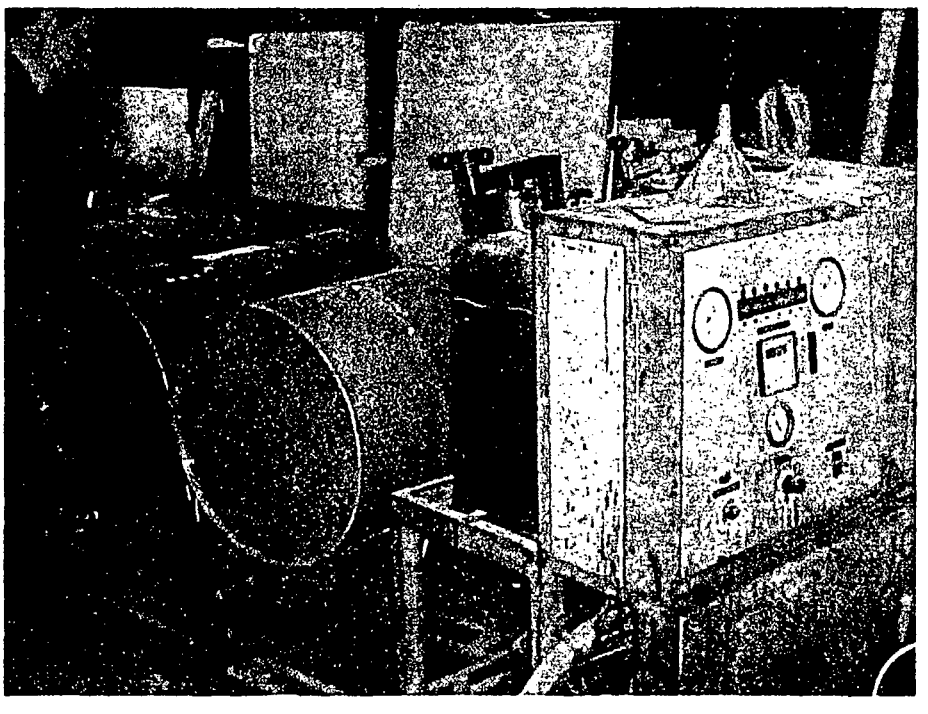


14. LAREU REFRIGERACIÓN

Injector, capacity: 180 gr. /sec.

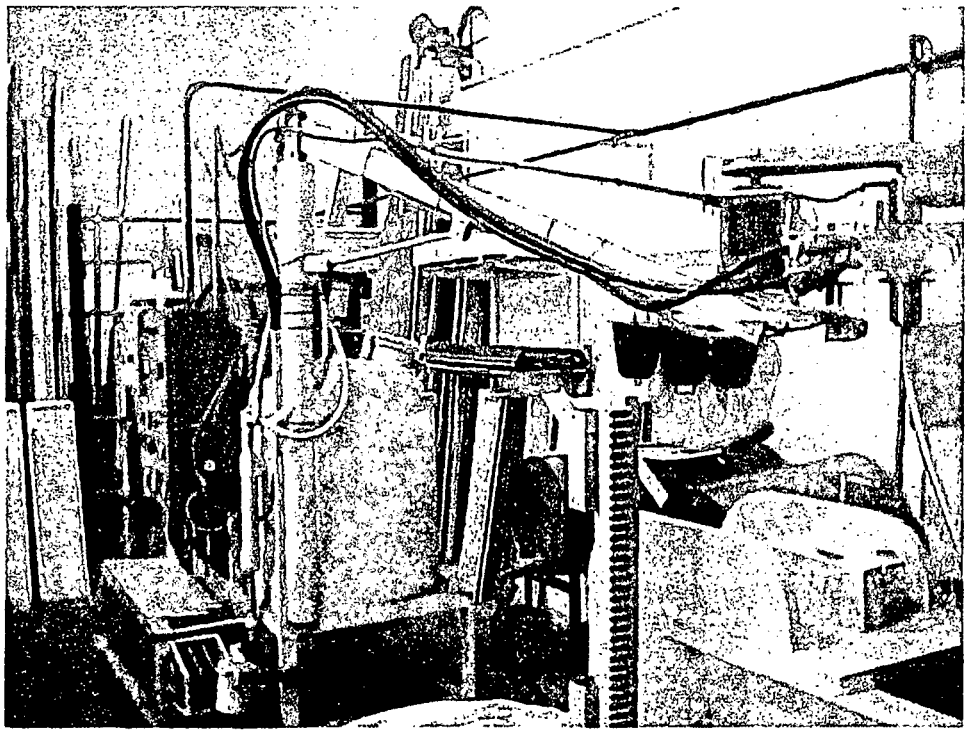


Injector, capacity: 180 gr. /sec.

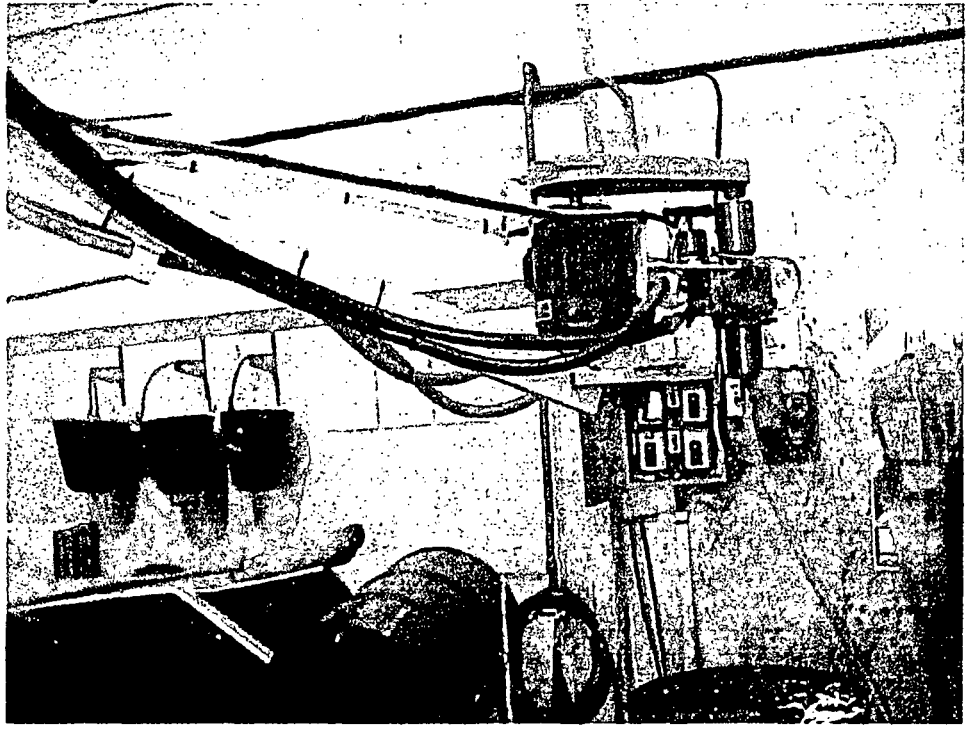


15. LAUGE EQUIPAMIENTOS S.R.L.

Injector, brand: Rosasco, capacity: 30 Lt. /min, year: 1990.

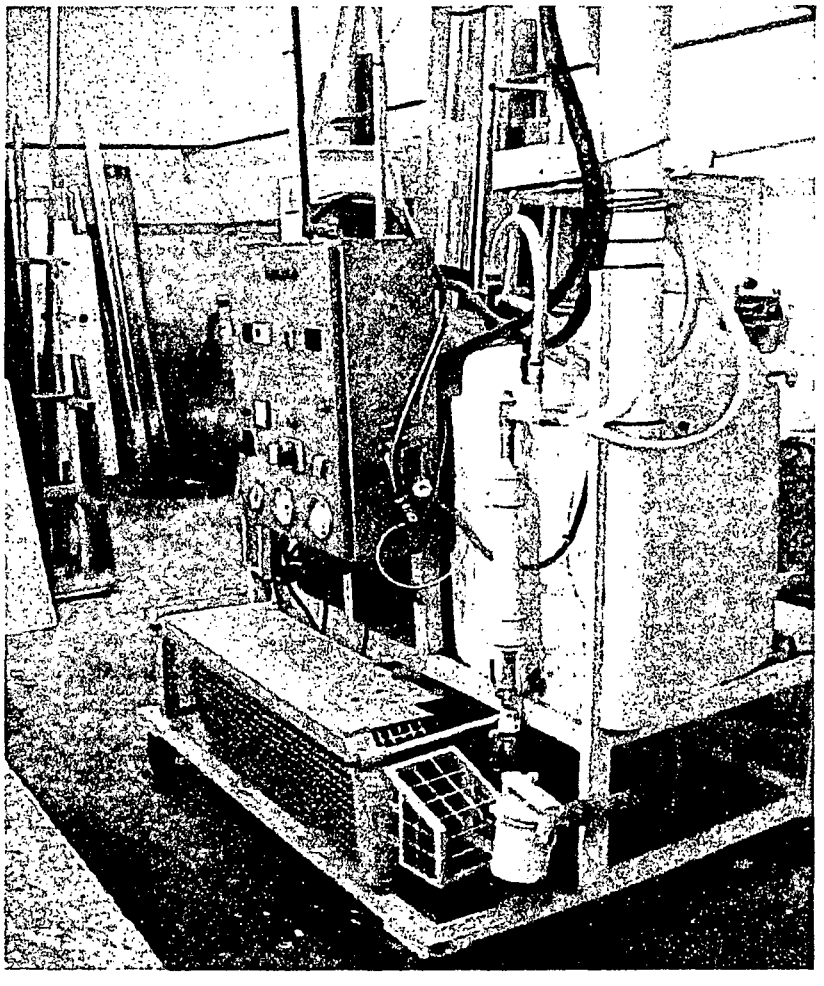


Header - Injector



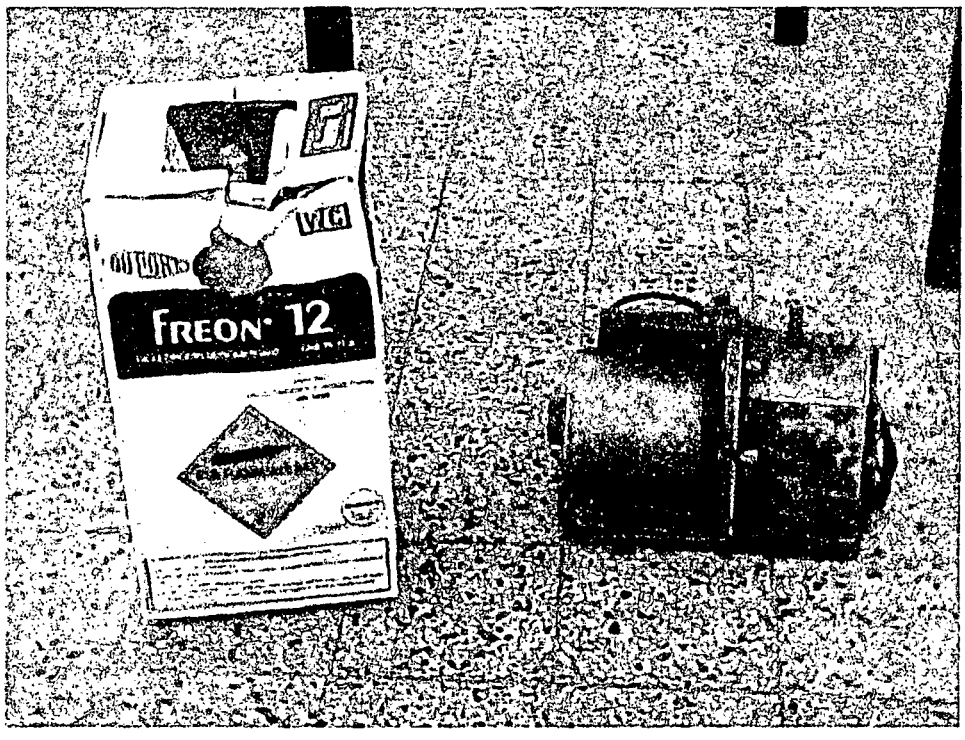
LAUGE EQUIPAMIENTOS S.R.L. - Continuation

Injector, brand: Rosasco, capacity: 30 Lt. /min, year: 1990



16. LIBRA S.R.L.

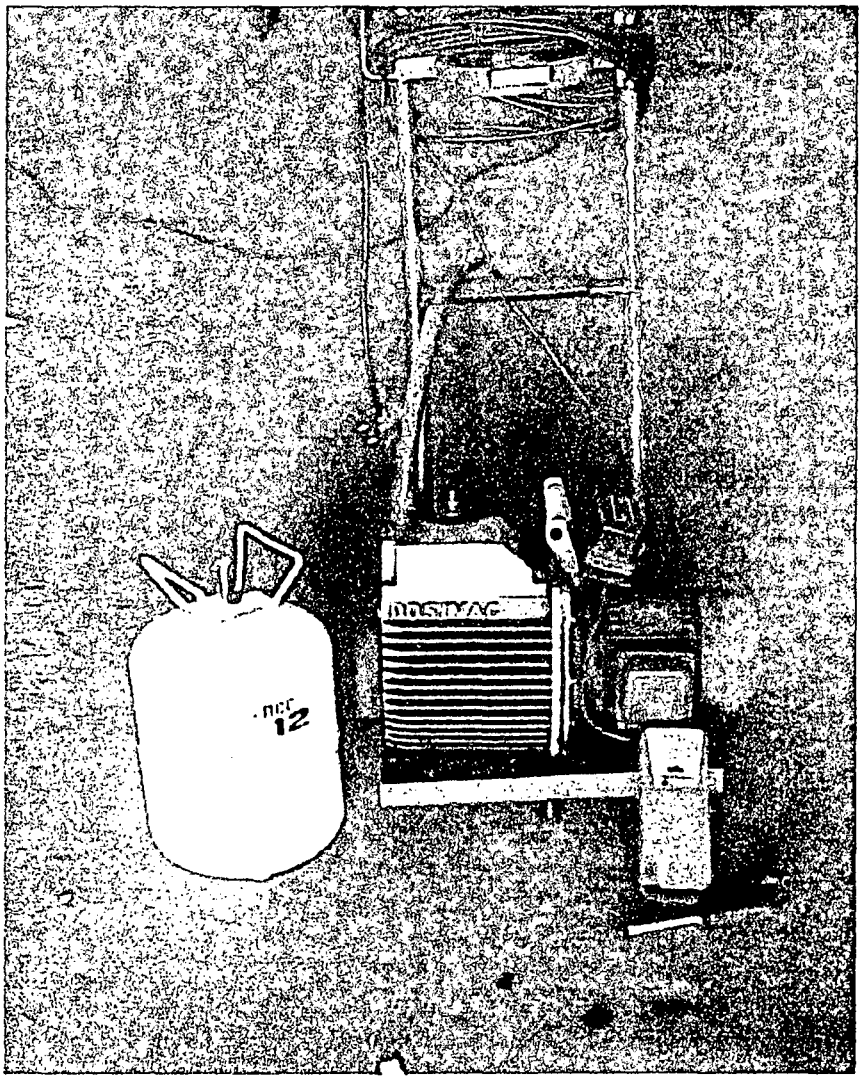
Vacuum pump, brand: Pascal.



Vacuum pump, brand: Pascal.

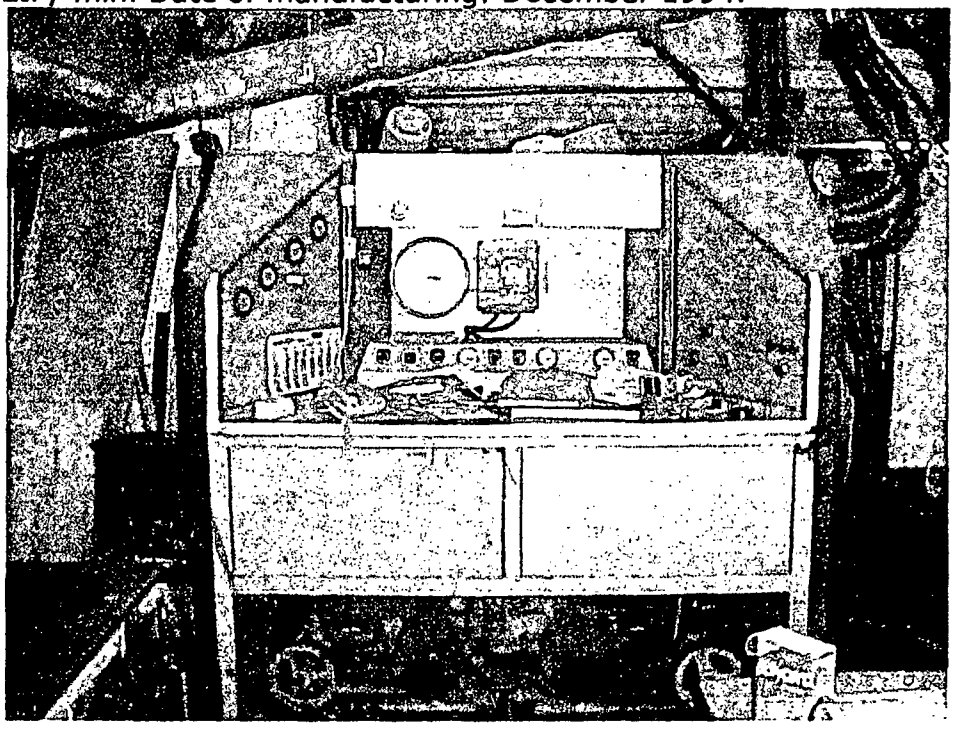
17. MILFRIGO S.R.L.
Company that is not interested in participating in this project

Vacuum pump, brand: Dosivac, model: DV 350, capacity: 21 m^3 /h.

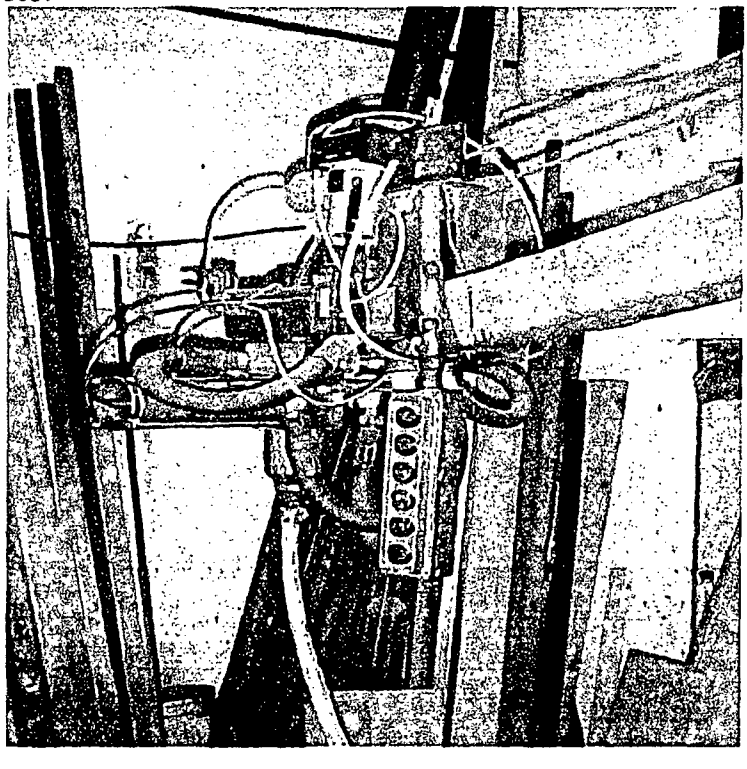


18. MODUL TERM

Injector with blender at 580 RMP, digital control and injection capacity 130 Lt. / min. Date of manufacturing: December 1994.

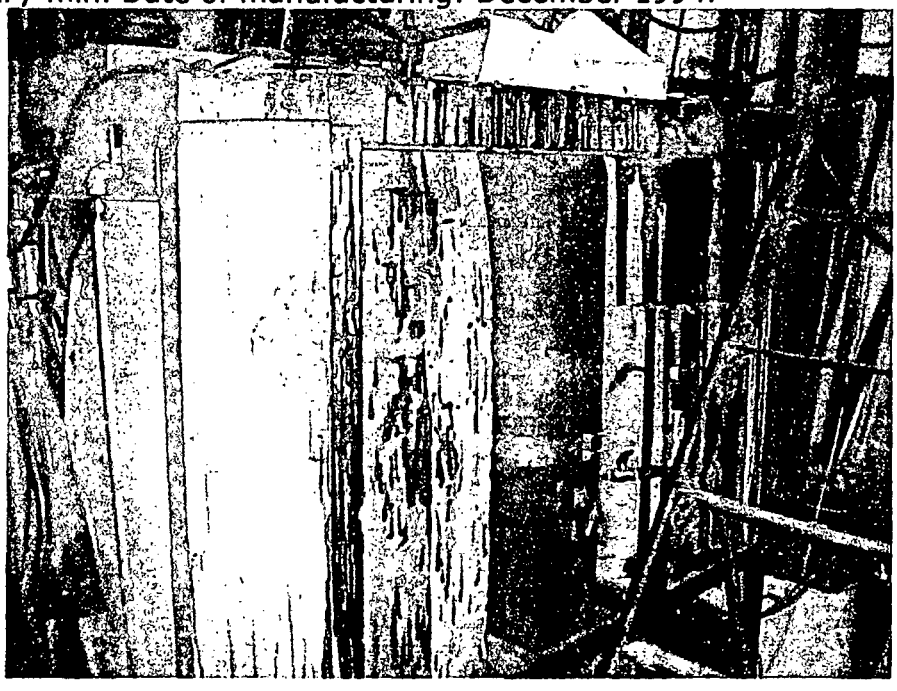


Header injector

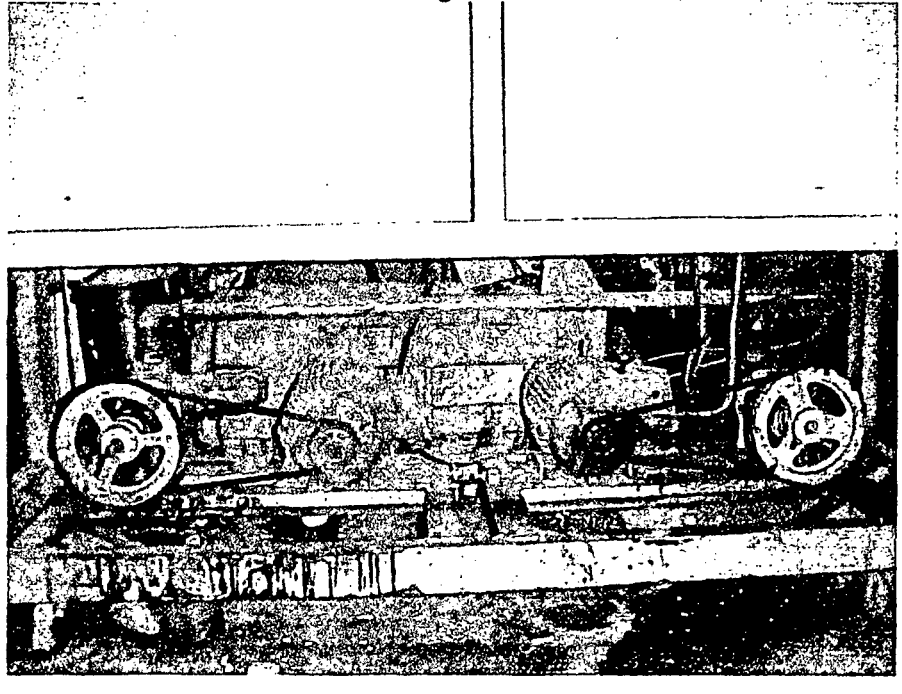


MODUL TERM – Continuation

Injector with blender at 580 RMP, digital control and injection capacity 130 Lt. / min. Date of manufacturing: December 1994.

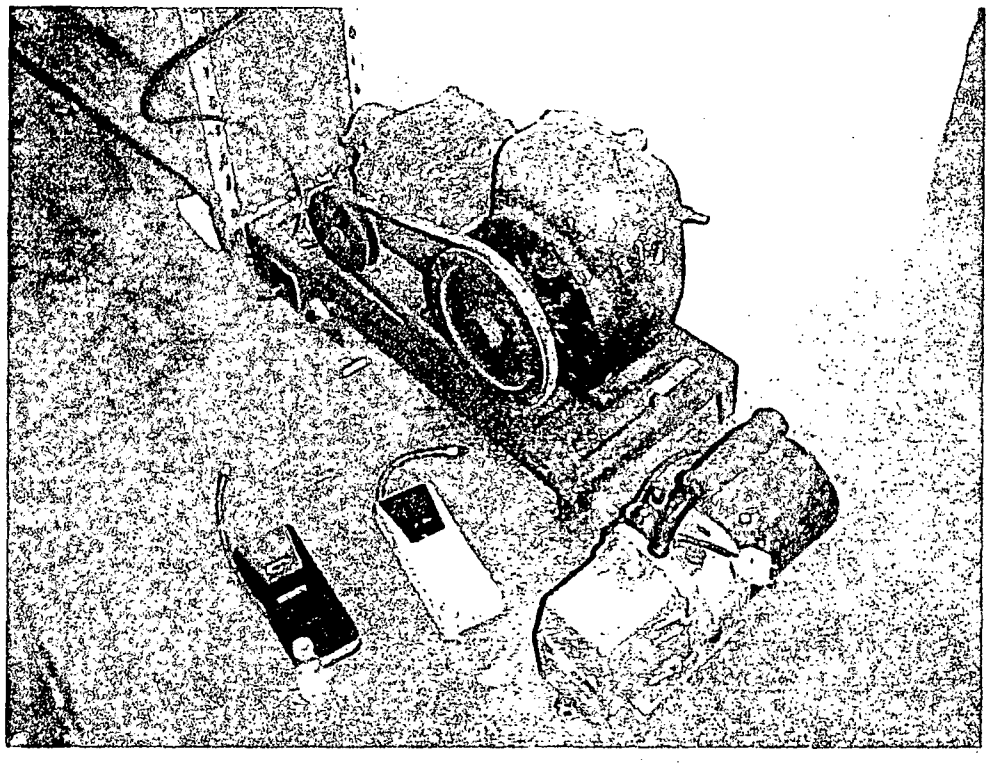


Injector with blender at 580 RMP, digital control and injection capacity 130 Lt. / min. Date of manufacturing: December 1994.



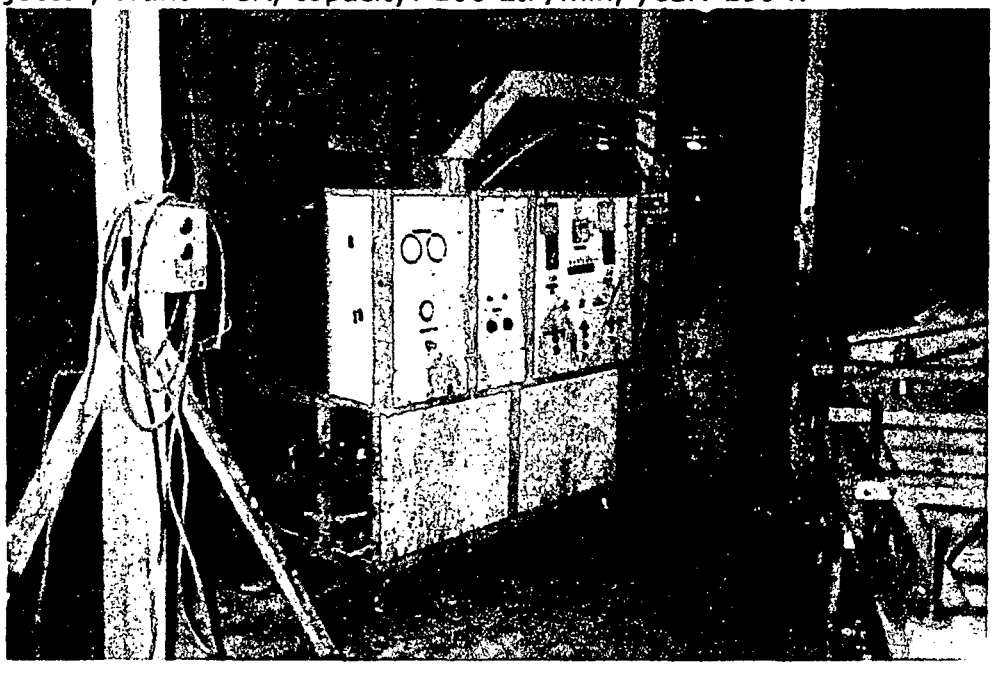
19. MOTOCOM Refrigeración Comercial

Vacuum pump, brand: Dosivac
Leak detector, brand: Tif, models: 5000, 5500 and 8500.

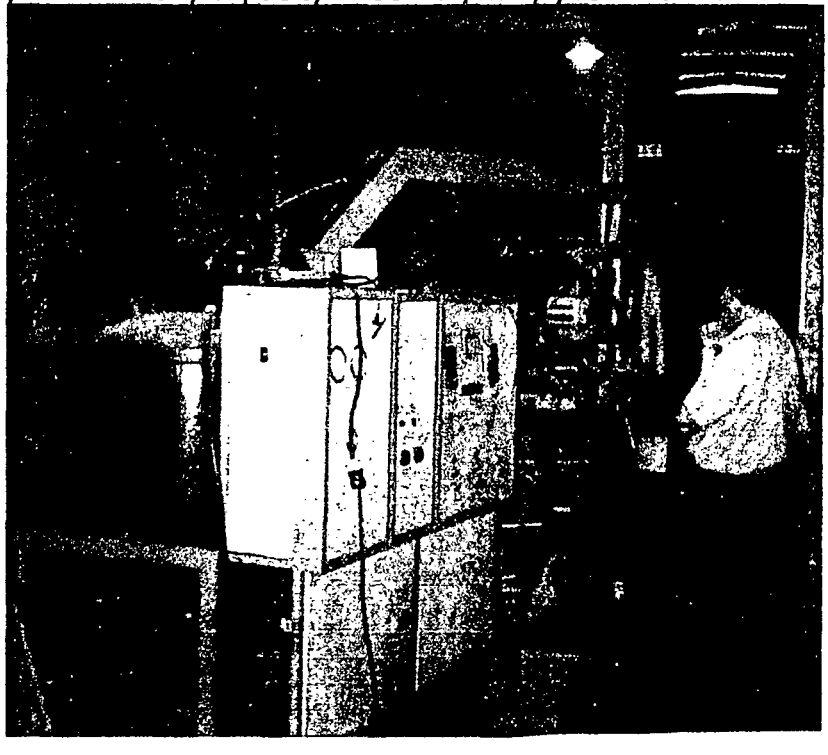


20. OSCAR BASILOTTA E HIJOS S.H.

Injector, brand: ICR, capacity: 100 Lt. /min, year: 1994.



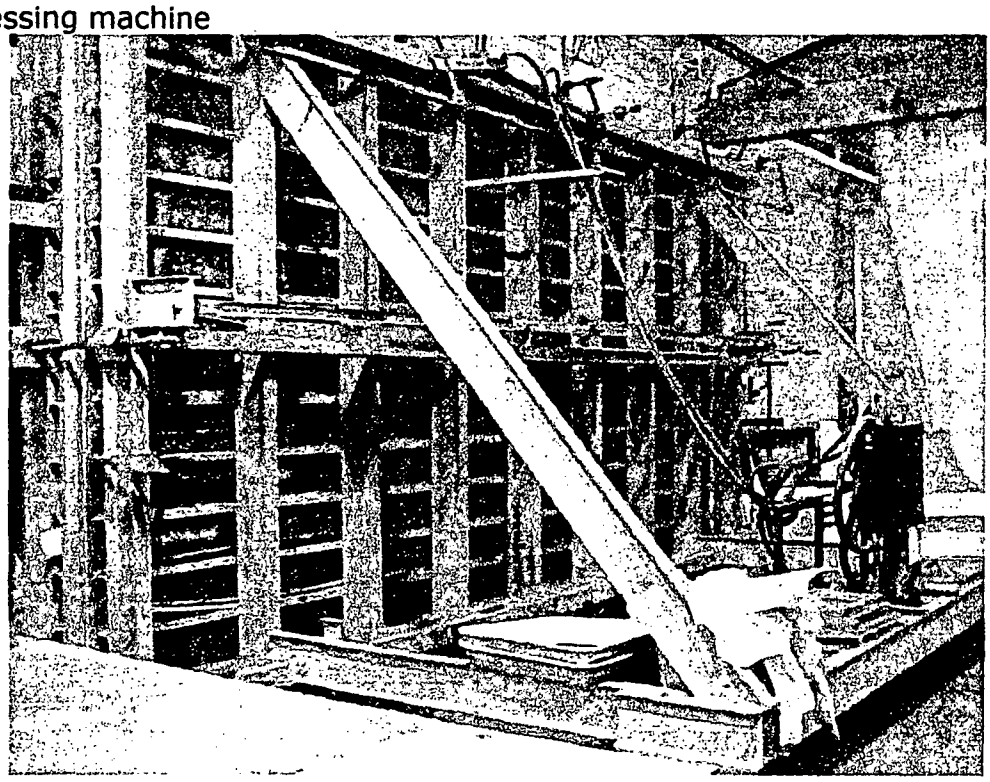
Injector, brand: ICR, capacity: 100 Lt. /min, year: 1994.



21. POLAIR REFRIGERACIÓN S.R.L.

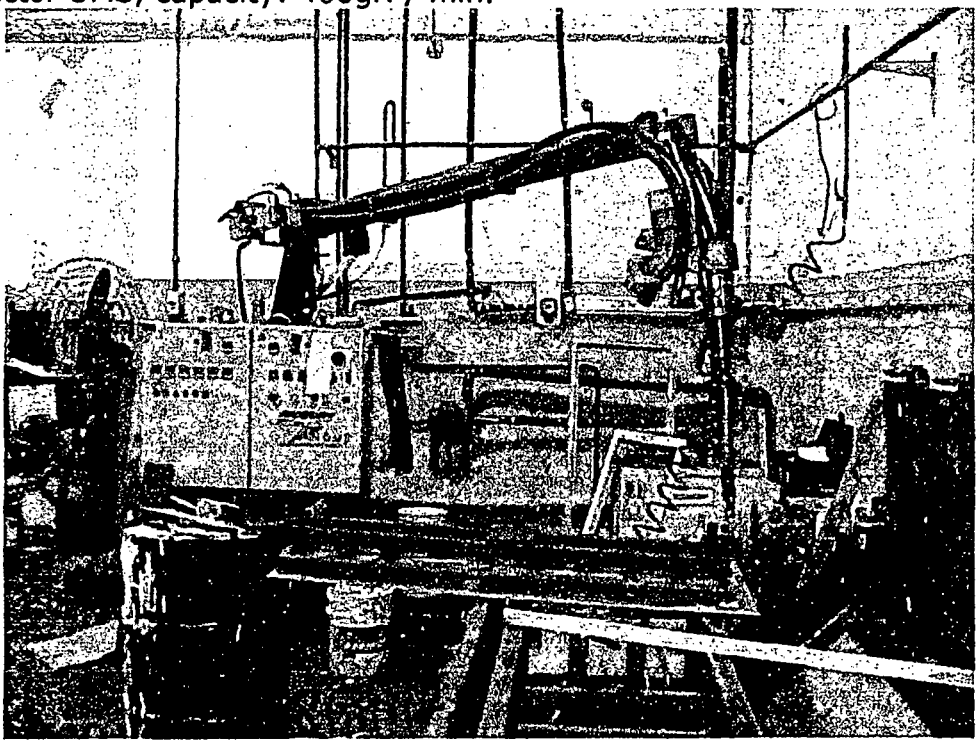
Vacuum pump, brand: Robinair, model: P300, potency: 1HP.

Pressing machine

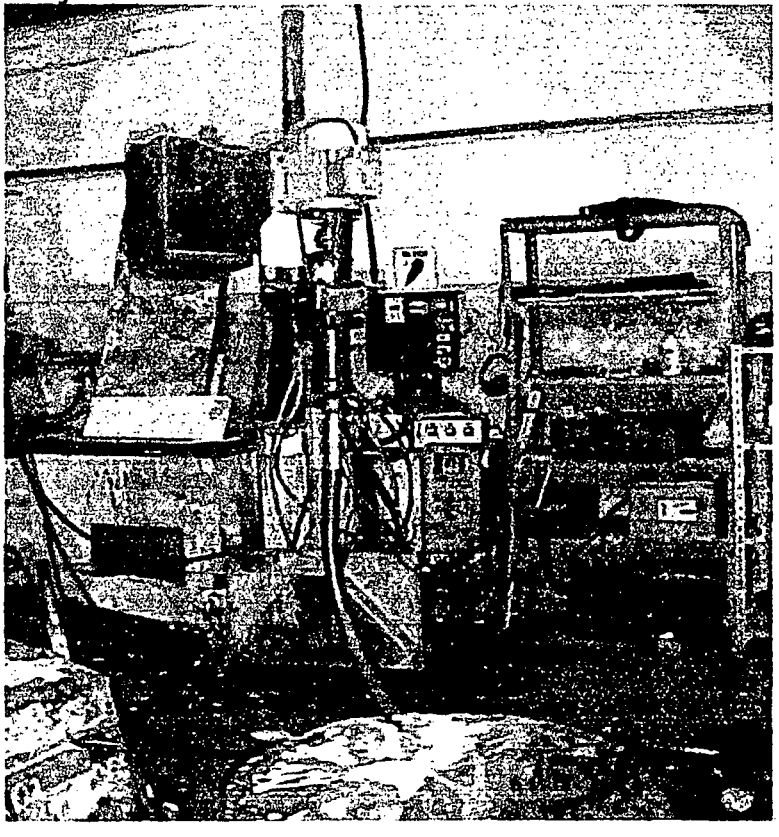


22. REFRIMET S.A.
Company that is not interested in participating in this project

Injector OMS, capacity: 400gr. / min.

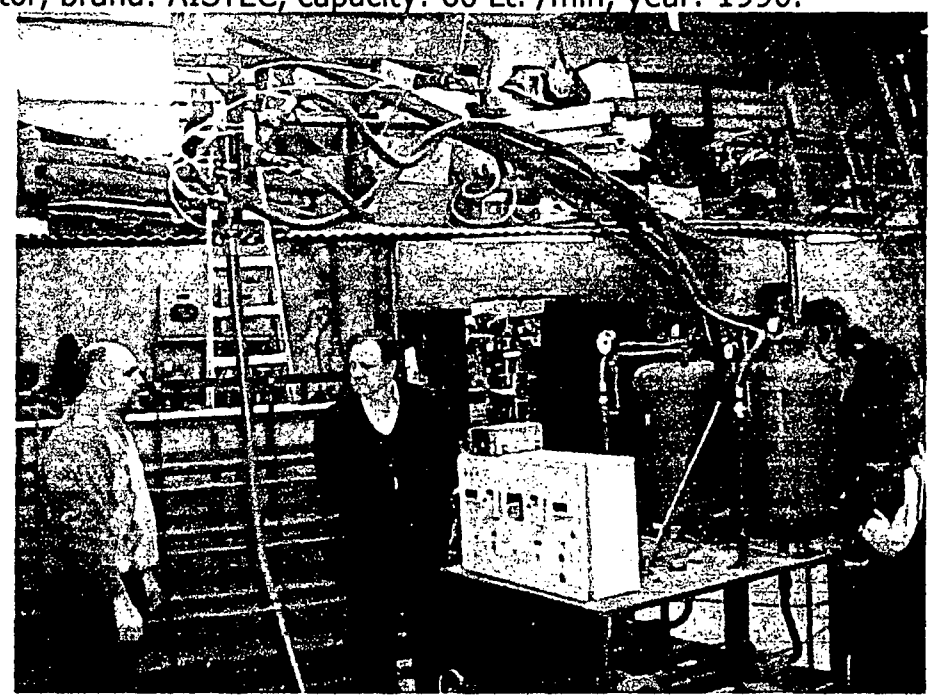


Home made Injector



23. RIGHI

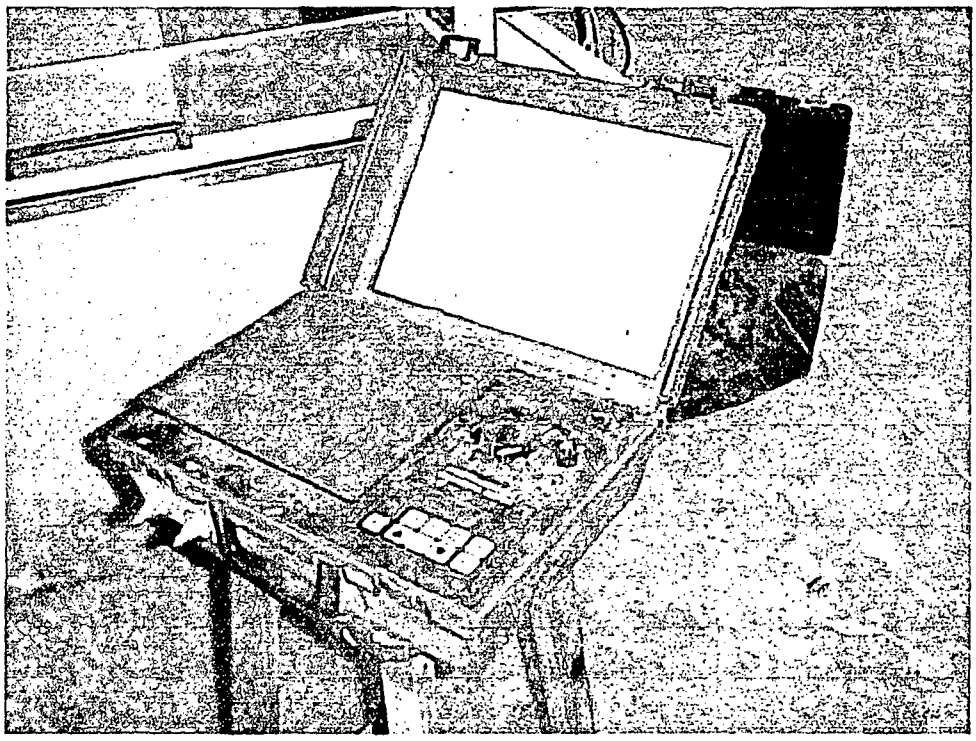
Injector, brand: AISTEC, capacity: 60 Lt. /min, year: 1990.



Injector, brand: AISTEC, capacity: 60 Lt. /min, year: 1990.

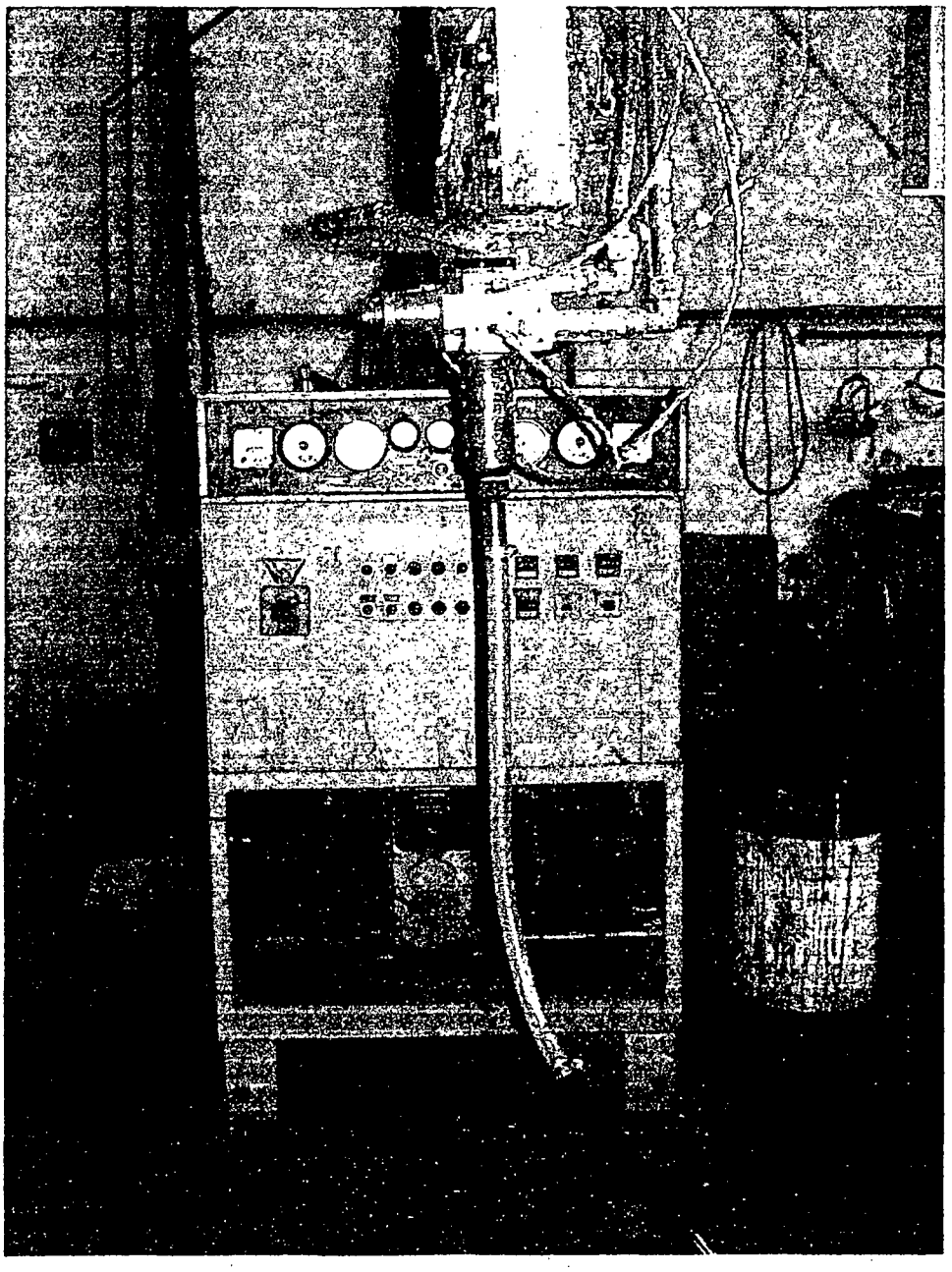
RIGHI – Continuation

Scale



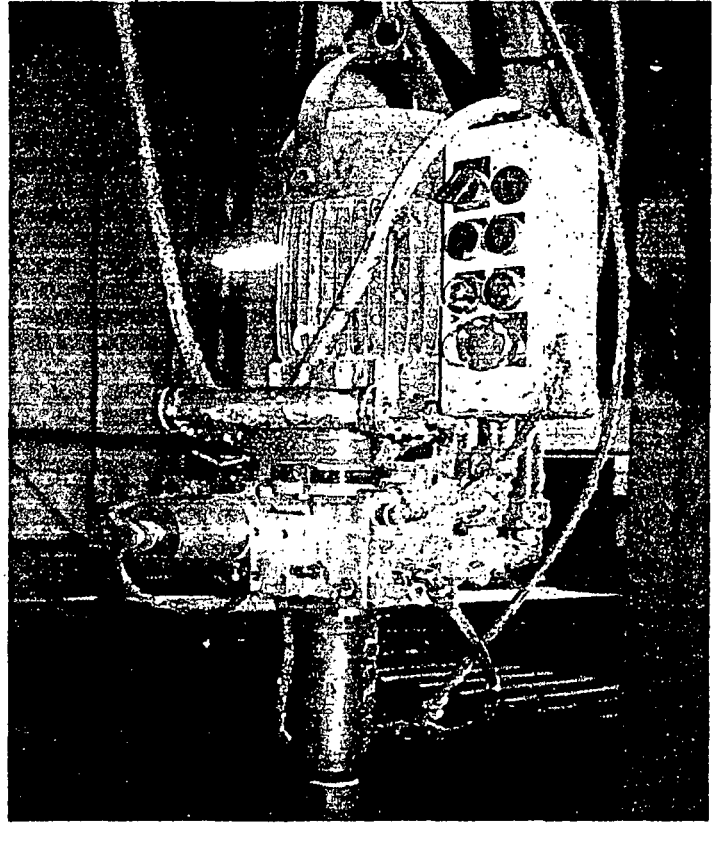
24. SAN TELMO EQUIPAMIENTOS S.A.

Injector, brand: CANNON, model: HC 100, capacity: 1.2 Kg. /sec. Year: 1990.



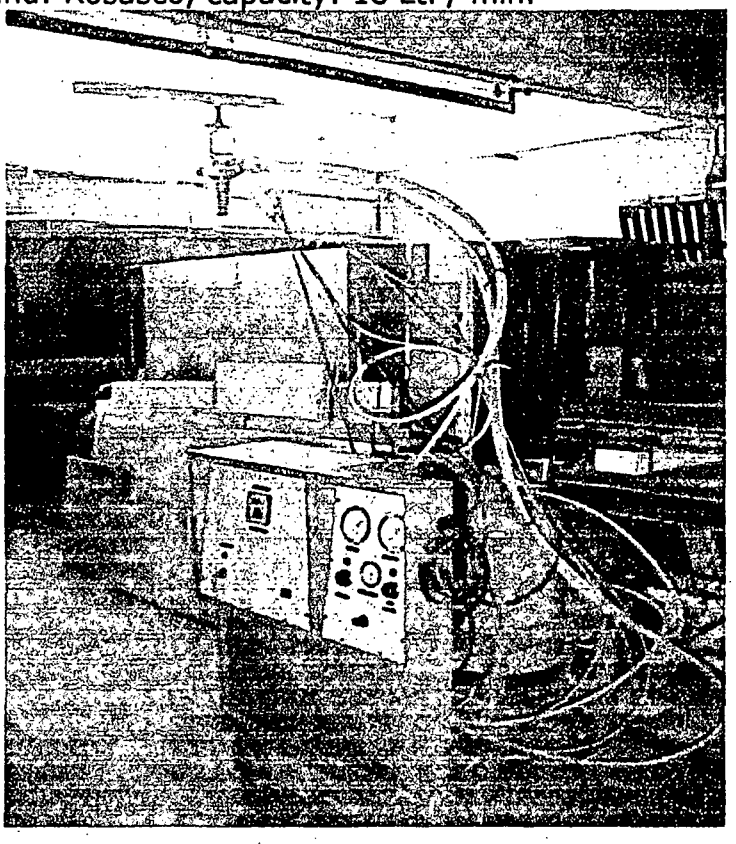
Injector, brand: CANNON, model: HC 100, capacity: 1.2 Kg. /sec. Year: 1990

Injector, brand: CANNON, model: HC 100, capacity: 1.2 Kg. /sec. Year: 1990

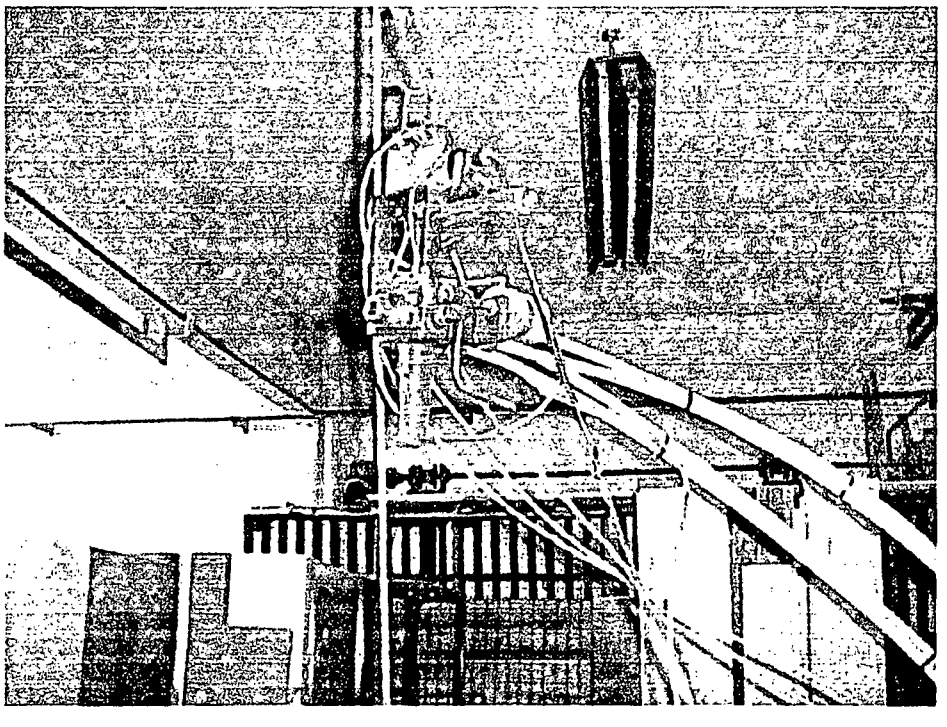


25. SIMAR

Injector, brand: Rosasco, capacity: 18 Lt. / min.



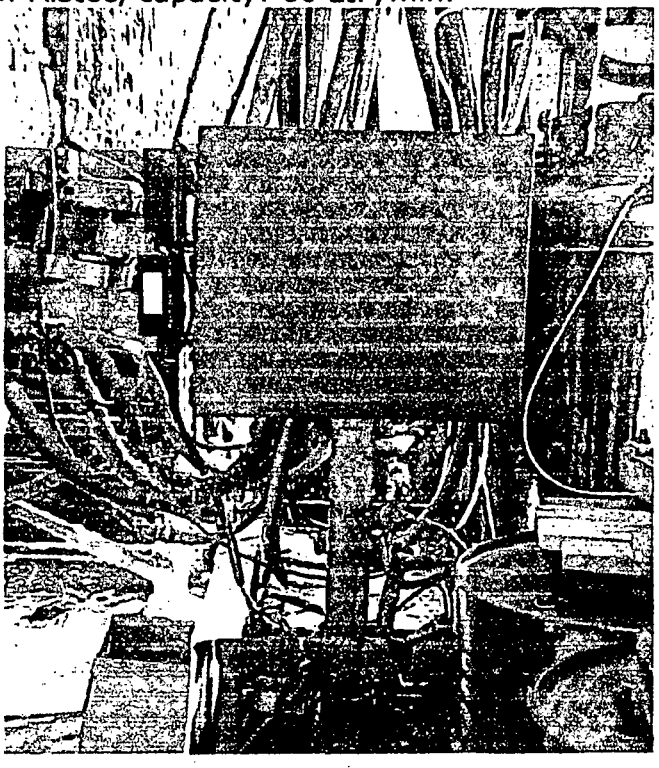
Injector, brand: Rosasco, capacity: 18 Lt. / min.



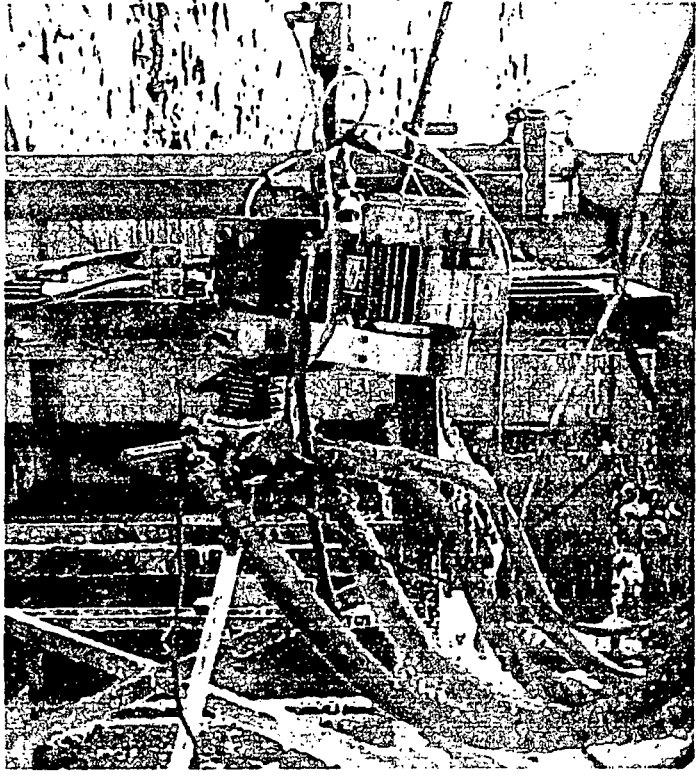
26. TECNOFRED

Company that is not interested in participating in this project.

Injector, brand: Aistec, capacity: 60 Lt. /min.

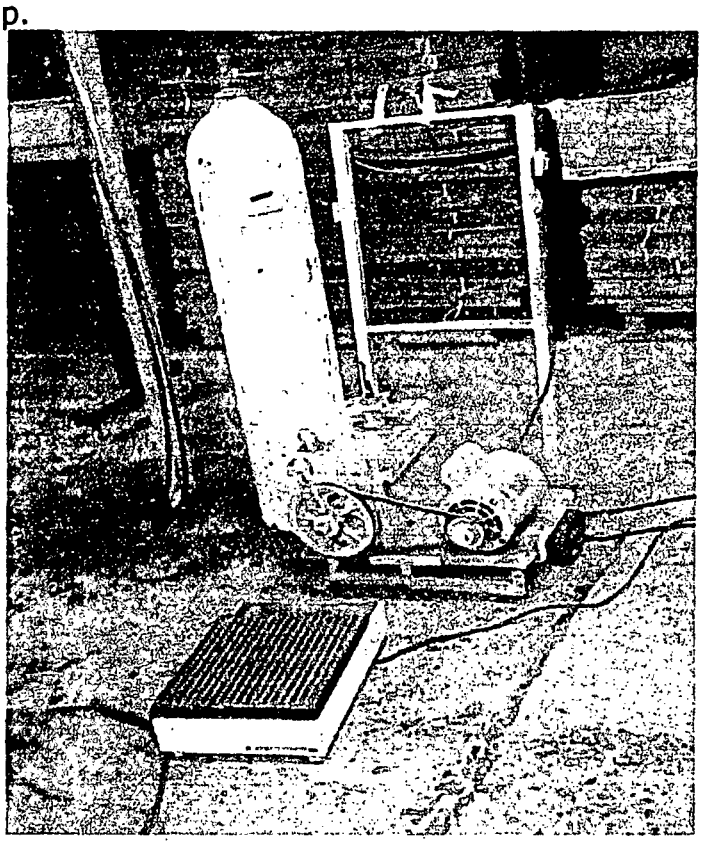


Injector, brand: Aistec, capacity: 60 Lt. /min.



27. TECNOLOGÍA EN REFRIGERACIÓN

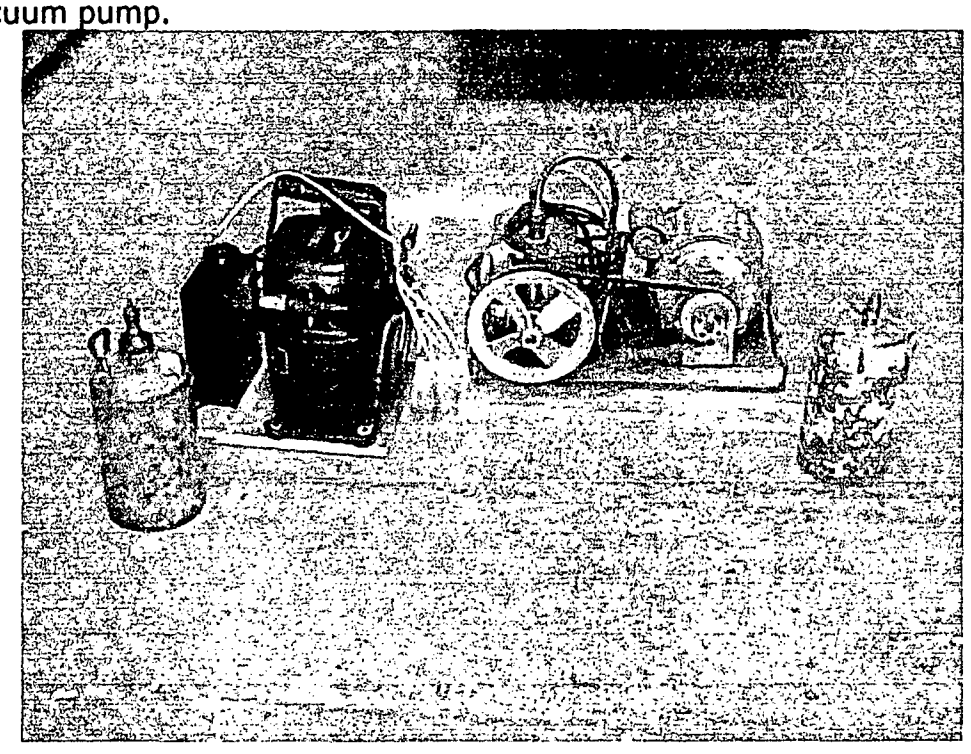
Vacuum pump.



Vacuum pump.

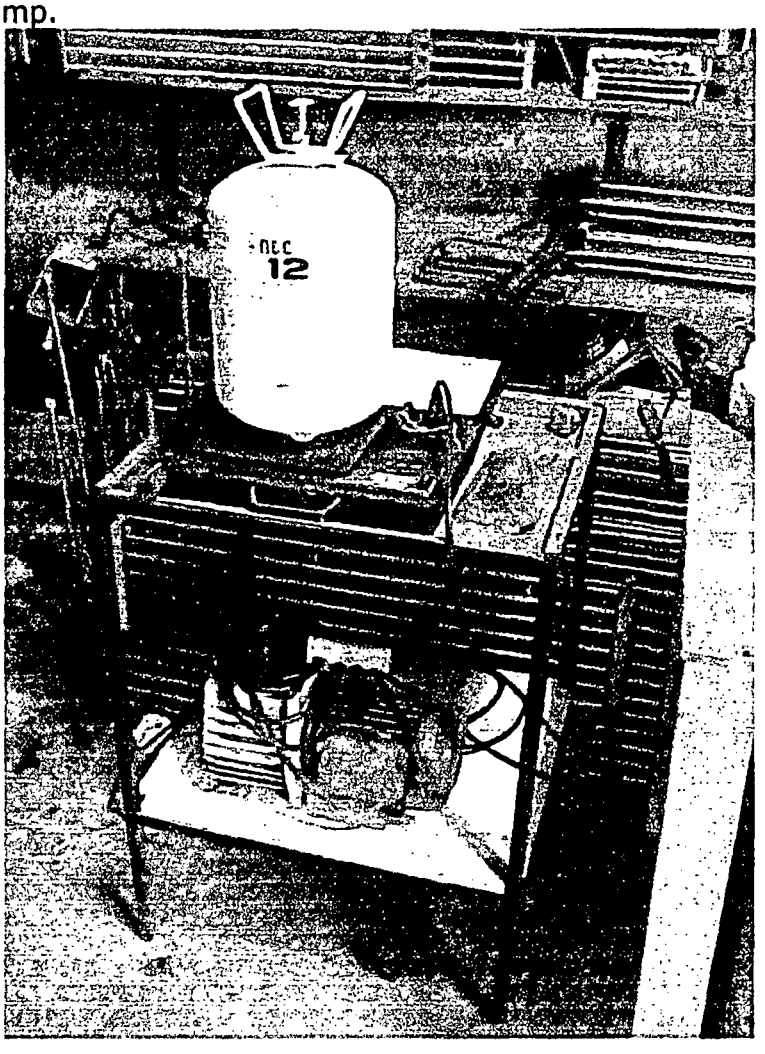
28. VICA

Vacuum pump.



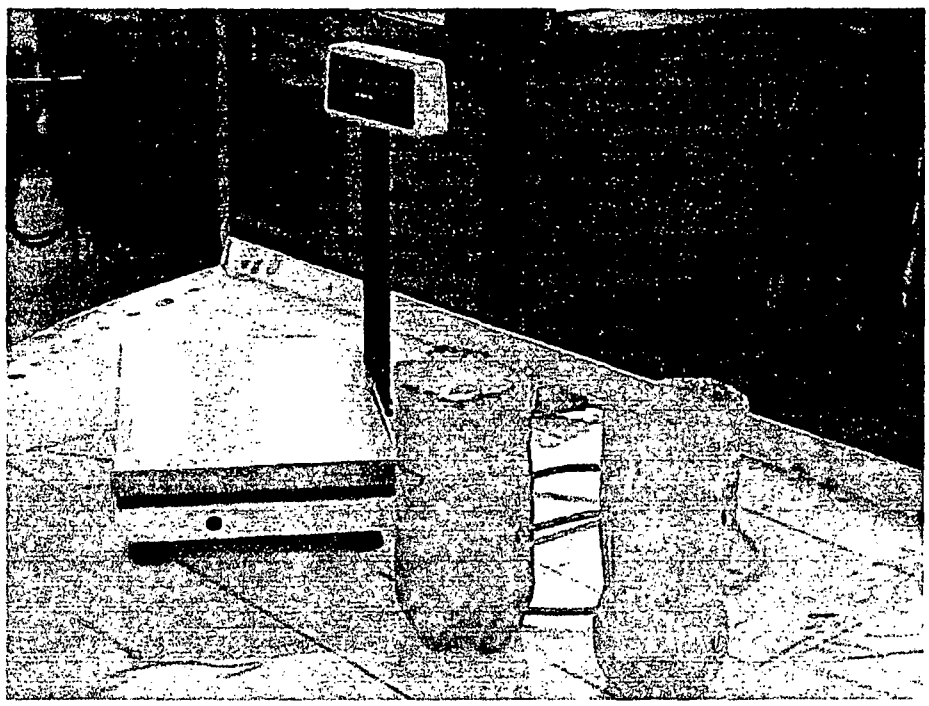
29. VINCER S.R.L.

Vacuum pump.



30. WALTER GROSSO

Scale



NATIONAL CFC Phase-out Plan
Venezuela

MP/VEN/04/033

Manufacturing Sector
Service Workshops
Potential Equipment for the companies

Final Report as of 10 February 2005
According to sub-paragraph 2.06
Contract No. 2004/195
Unido Purchase order No. 16000731
PROJECT DEVELOPED BY UBAJAY S.A.

Head of the Project: Juan Carlos Reinhardt
Tel/Fax: 54 -11- 4343 - 4127
Mobile: 54 – 911 – 4490 - 2782
E-mail: ubajayingenieria@ciudad.com.ar

CARACAS-VENEZUELA

Buenos Aires, 10 February 2005

From: Juan Carlos Reinhardt
To: UNIDO General Services Branch
Attn.: Mr. V. Koloskov - Chief, Procurement Services
Ms. Guillian Ocampo

Ref.: Manufacturing Sector RMP Venezuela Final Report 02-10-05
Project MP/VEN/04/033 - Contract UNIDO No. 2004/195
Purchase Order No. 16000731

SUMMARY

Jointly with FONDOIN personnel, the following tasks were performed:

1.- Revision Proj. VEN/REF/22/TAS/58
Verification of the quantity of recuperation equipments distributed, and verification of the situation as to 12-31-04.
See Attachment I

2.- Service Workshops
Updating of Venezuela Service Workshops data base and Service Workshops poll, in order to define the type of equipment they have to allow a better selection of the new equipments to be delivered.
See Attachment II

3.- Manufacturing Sector
See Attachment III.
3a.- Foam sector.
14 companies approved in the project document were visited again to check if they were still active or not.

3b.- Refrigeration Sector.
13 companies approved in the project document were visited again to check if they were still active or not.

To see the summary of the companies that participate in this project refer to Attachment III, Tables I and III.

4.- Meetings UNIDO/FONDOIN/B&S Consultant
We attended FONDOIN/B&S Consultant meetings held in Caracas during the week starting on 2nd. August 2004.
We attended UNIDO/FONDOIN/B&S Consultant meetings held in Caracas during the week starting on 27 Sept. 2004.
We also attended FONDOIN/B&S Consultant meeting on Training Courses held in Caracas. December 2004.

Attached find Final Report MP/VEN/04/033 – Manufacturing Sector - (42 pages).

Sincerely,

Juan Carlos Reinhardt
UBAJAY S.A.

Index

ATTACHMENT I

VEN/REF/22/TAS/58
10 February 2005

Scope:

I. Recovery units revision

II. Recovery centers revision

Information about Project VEN/REF/22/TAS/58. PNUD
10 February 2005

1. Total received gases recovery equipment: 471.
2. Distributed gases recovery equipment: 410. (see note 1)
3. Gases recovery equipment to be distributed: 21
4. Faulty recovery equipment: 40

Distribution according to city can be seen in ANNEX II.

Note 1:
After analyzing the situation, it is believed that NOT all the potential companies could be considered to be included in the new project due to the fact that 215 companies were included before year 2004; - information about company INGARSICA, (SEE ANNEX I).
Notwithstanding, some workshops have disappeared, some equipments have been discontinued and some others are difficult to obtain.

Considering the abovementioned, and in order to avoid creating false expectations, it is expected to work with **195 companies adequate** for the new project, which are the ones included in 2004, most of them, by FONDOIN promoting team.

ANNEX I

DISTRIBUTION OF EQUIPMENT BY YEAR (1999-2004) PROJ. VENREF22TAS58-PNUD

	1999	2000	2001	2002	2003	2004	TOTAL.
INGARSICA	18	87	39	19	52	68	283
FONDOIN promotional equipment	Not operative	Not operative	Not operative	Not operative	Not operative	127	127
Companies included by year	18	87	39	19	52	195	410
						Total I	410

	1999	2000	2001	2002	2003	2004	TOTAL.
Damaged equipment							40
Equipment to be asigned							21
						Total II	61
						Total (I+II)	471

Source: FONDOIN

ANNEX II

DISTRIBUTION OF EQUIPMENT BY CITY (1999-2004) PROJ. VENREF22TAS58-PNUD

CITIES	Total per city.	Delivered before 2004	Deliverd in year 2004
BARCELONA	1	0	1
EL TIGRE	2	0	2
PUERTO LA CRUZ	19	12	7
MARACAY	5	2	3
TURMERO	1	1	0
BARINAS	2	0	2
PUERTO ORDAZ	18	17	1
SAN FELIX	3	0	3
VALENCIA	58	22	36
CARACAS	198	99	99
PUNTO FIJO	3	1	2
SAN JUAN DE LOS MORROS	1	0	1
BARQUISIMETO	16	12	4
CAJA SECA	1	0	1
EL VIGIA	3	0	3
CHARALLAVE	3	1	2
GUARENAS	2	0	2
LOS TEQUES	5	0	5
OCUMARE DEL TUY	1	0	1
PARACOTOS	1	1	0
SAN ANTONIO DE LOS ALTOS	1	0	1
MATURIN	7	4	3
PORLAMAR	12	12	0
ACARIGUA	1	1	0
GUANARE	1	0	1
CUMANA	2	1	1
LA FRIA	1	0	1
SAN CRISTOBAL	11	3	8
TARIBA	1	1	0
MAIQUETIA	1	0	1
MACHIQUES	1	0	1
MARACAIBO	28	25	3
TOTAL:	**410**	**215**	**195**
CITIES	Total per city.	Delivered before 2004	Deliverd in year 2004

Source: FONDOIN

ATTACHMENT II

SERVICE WORKSHOPS (SW)
10 February 2005

Scope:

I. To contact 5000 SW to poll them and define their equipment needs.

II. To define SW's equipment existence

III. To specify the equipment to be submitted to ONUDI's approval

Report Objective

To inform the state of planned and performed activities to the present, within the frame of the National CFC Phase-out Plan- Service Workshops Sub-Sector jointly carried out by FONDOIN, UNIDO and UBAJAY S.A.

Summary of the activities performed

Below you will find a list of the relevant activities for this first stage of gathering information about target public on which there will be actions taken within the frame of the present project. The numbering of such activities does not necessarily relate always to a sequence of events since some of them have taken place simultaneously.

1. Revision and adjustment of the model questionnaire to be used for gathering information from the potential beneficiaries of this project.

2. Validation of the final questionnaire to be used in the information gathering (See Annex "A")

3. Design of the data base where all the information surveyed will be processed.

4. Collection of general information (name of the business / company, location, phone and contact name) on establishments which could be potentially eligible beneficiaries of this project.

5. Data loading of the general information on establishments which could be potentially eligible beneficiaries of this project.

6. Questionnaire printing. It was deemed convenient to print initially 5,000 copies. All of them were distributed.

7. Making up of informative leaflets (See Annex "B") to be placed in distributors of spare parts and gases related to the refrigeration sector, so as to inform the interested people and thus support their work in handing out the questionnaire.

8. Telephonic contact with establishments located in the Capital Region for the information collection.

9. Telephonic contact with small and big distributors of spare parts and gases related to the refrigeration sector in the Capital Region and nearby cities (especially Cúa, Maracay and Valencia).

10. Questionnaires distribution in the country's major cities (Maracaibo, Porlamar, Puerto la Cruz, Cumana, Puerto Ordaz, Ciudad Bolívar, Maturín, Higuerote, Río Chico, Gran Caracas, Valles del Tuy, Maracay, Valencia, Puerto Cabello, Barquisimeto, San Juan de los Morros, Calabozo, Acarigua, Araure, Guanare, Valera, San Cristóbal, Mérida, Punto Fijo, Coro) through compromise and agreement with small and large distributors of spare parts and gases related to refrigeration sector which operate at national level.

11. Delivery of questionnaire lots to small and big distributors of spare parts and gases related to the refrigeration sector, which operate in the country's major cities.

12. Deployment of informative posters in the establishments that are willing to collaborate.

13. Follow up of the support work performed by small and big distributors of spare parts and gases related to the refrigeration sector at a national level.

14. Processing of all the questionnaires duly filled in.

15. Negotiation of an advertising space in a Web page devoted to refrigeration sector.

RESULTS

Table I: Summary

Detail	Quantity
Quantity of Workshops contacted	5,000
Quantity of workshops that answered the survey	1,057
Quantity of Workshops that are not interested in this project	12
Quantity of informal Workshops that have been processed	319

Regarding the number of questionnaires collected to this date, we have got the following data:

Table II: Distribution of surveys according to method of collection

Detail	Quantity	%
Number of telephone surveys	137	13
Number of surveys done in person	95	9
Number of surveys compiled from the refrigerants and spare parts stores	825	78
TOTAL OF SURVEYS ACCOMPLISHED	**1,057**	**100**

Note: From the 1,057 companies surveyed, there are 12 which expressed their wish not to participate in this program.

Table III: 100% of the compiled surveys have been introduced in the data base obtaining the following results:

Detail	Quantity
Total of processed surveys	**1,045**
Total of officially legal service workshops identified	**726**
Total of independent workshops or persons which work informally	**319**

Table IV: Present status of the companies included in data base

Detail	%
Officially legal service workshops	**70**
Informal independent service workshops or persons	**30**

Table V: From the total number of legally accepted identified workshops, we obtained the following results:

Detail	Quantity
Total of identified service workshops which are interested in this program	**1,045**
Total of workshops with recovery equipment	**233**
Total of service workshops with rechargeable cylinders	**591**
Total of service workshops with vacuum pump	**502**
Total of service workshops with leak detector	**390**
Total of service workshops with portable scale	**145**
Total of service workshops with pressure gauge kit and hoses	**683**
Total of service workshops with portable welder	**515**
Total of service workshops with a complete basic tools box	**349**

Table VI: Geographic distribution of the technicians interested in this program

Geographic Zone	Nº of technicians	Subtotal	%
Departamento Capital	1,215		
Miranda	130		
Vargas	27		
		1,372	57
Carabobo	188		
Aragua	16		
Yaracuy	1		
		205	8
Falcón	20		
Zulia	408		
		428	18
Amazonas	0		
Delta Amacuro	0		
Bolívar	0		
		0	0
Guárico	6		
Lara	212		
Apure	0		
Cojedes	0		
Portuguesa	3		
		221	9
Nueva Esparta	0		
Anzoátegui	120		
Sucre	26		
Monagas	4		
		150	6
Trujillo	0		
Mérida	34		
Barinas	0		
Táchira	13		
		47	2
TOTAL	**2,423**	**2,423**	**100**

Sources: UBAJAY S.A. – FONDOIN

ANNEX A

PROGRAMA PARA MEJORAMIENTO DE LA CALIDAD DEL SERVICIO EN SISTEMAS DE AIRE ACONDICIONADO Y REFRIGERACION

FONDOIN

UNIDO

Av. Libertador Centro Comercial Los Cedros Piso 5, La Florida, Sur, Caracas Tlf. (0212)-731.39.32/ 731.29.92, Fax. (0212) 731.00.15. E-mail: fondoin@cantv.net

Si no estuviera interesado en el programa, por favor indique las causas:

.....

.....

.....

.....

.....

El Fondo Venezolano de Reconversión Industrial y Tecnológica (FONDOIN), está adelantando las acciones en el país para implementar un programa de mejoramiento de la calidad del servicio en el sector de refrigeración y aire acondicionado mediante la capacitación del personal técnico y el fortalecimiento del componente tecnológico a través del apoyo institucional.

Dicha asistencia esta dentro del marco de acción del *Protocolo de Montreal* para la protección de la capa de ozono y *FONDOIN* por medio del apoyo de las *Naciones Unidas* se ha planteado esta misión que permitirá a los técnicos en refrigeración incrementar sus habilidades y acceder a las herramientas que le permitan aplicar buenas prácticas en la prestación de sus servicios.

En dicho programa se tiene previsto contemplar las siguientes actividades:

1. Cursos sobre Buenas Prácticas en Refrigeración, a dictarse, por personal calificado y certificado internacionalmente, a partir del año 2005 en las principales ciudades, sin costo alguno para los participantes.
2. Certificación de los técnicos y Talleres participantes en los cursos de Buenas Prácticas en Refrigeración.
3. Programa para dotación de equipos y herramientas para realizar Buenas Prácticas en Refrigeración, de acuerdo a las necesidades de los participantes.

Si usted o su empresa están interesados en incorporarse al programa, sírvase completar el siguiente formulario con el fin de registrarlo y así disponer de sus datos oportunamente:

Nombre de la Empresa:			Fecha:
Persona Contacto:		Cargo:	
Dirección:			Ciudad: Estado:
Telfs.:( )	Fax:( )	Correo electrónico:	
Número de Técnicos de Refrigeración que trabajan en la empresa:			
Sector de Servicio:	? Aire acondicionado	? Refrigeración	? A/A Automotriz ? Transporte refrigerado

Nº	*Descripción de Equipo*	*¿Lo tiene?*		*¿Lo usa?*		*En caso de tener el equipo y no utilizarlo, explique las causas*
		SI	*NO*	*SI*	*NO*	
1	Equipo recuperador de gas refrigerante					
2	Cilindro recargable					
3	Bomba de vacío					
4	Detector de fugas (CFCs, HCFCs y HFCs)					
5	Balanza portátil					
6	Juego de Manómetros y mangueras					
7	Soldador de autógena portátil					
8	Caja de herramientas con termómetro de contacto, pinza para estrangular tuberías de cobre, pinza pinchadora de tubería, cortadora de tubería, herramienta para hacer acoples, guantes y lentes de seguridad.					? Todas ? Algunas

FONDOIN y las NACIONES UNIDAS (UNIDO) diseñaron conjuntamente un Programa de Mejoramiento de la Calidad de Servicio para Técnicos y Talleres que trabajan en el mantenimiento y reparación de aires acondicionados, neveras y equipos de refrigeración, el cual tiene previstas las siguientes actividades.

CURSOS GRATUITOS DE ACTUALIZACION EN CONOCIMIENTOS PRACTICOS DE REFRIGERACION

- CERTIFICACION A TODOS LOS TALLERES Y TECNICOS PARTICIPANTES (DE FORMA TOTALMENTE GRATUITA)
- INSCRIPCION AUTOMATICA EN UN PROGRAMA DE DONACION DE EQUIPOS Y HERRAMIENTAS

COMPLETA EN ESTE ESTABLECIMIENO LA PLANILLA QUE DARA LA OPORTUNIDAD DE PARTICIPAR EN ESTE PROGRAMA

TENTATIVE SERVICE WORKSHOPS EQUIPMENT SPECIFICATIONS

REFRIGERATION EQUIPMENT MP/VEN/04/033

RECOVERY AND FILLING EQUIPMENT FOR SMALL SERVICE WORKSHOPS

RECOVERY UNIT FOR DOMESTIC REFRIGERATION SERVICE
Compressor: 1/3 HP oilless
Refrigerants: for multiple refrigerants
Air-cooled condenser
Pressure gauges
Oil separator and drain
Weight: To be reported
Case: metal or plastic rugged molded ergonomical and portable gauges built in
Hoses: set of 3 with small ball valve
Safety devices: inlet pressure regulator
Vapor & liquid operation with automatic changeover
Automatic shut off
Recovery rates: vapor 20kg/h liquid 50kg/h
Power supply: 110 V - 60Hz

RECOVERY AND FILLING EQUIPMENT FOR MEDIUM SIZED SERVICE WORKSHOPS

RECOVERY UNIT FOR STATIONARY AA SERVICE
Compressor: 1/2 HP oilless
Refrigerants: for multiple refrigerants including 410A
Air-cooled condenser
Pressure gauges
Oil separator and drain
Weight: To be reported
Case: metal or plastic rugged molded ergonomical and portable gauges built in
Hoses: set of 3 with small ball valve
Safety devices: high pressure shut off switch
Vapor & liquid operation with automatic changeover
Automatic shut off
Filter: part of the equipment and easy to clean and replace.
Power supply: 110V - 60Hz

RECOVERY AND FILLING EQUIPMENT FOR MAC SERVICE WORKSHOPS

RECOVERY UNITS FOR AUTOMOTIVE AA SERVICE

Compressor: 1/2 HP oilless
Refrigerants: for multiple refrigerants including 410A
Weight: To be reported
Case: metal or plastic rugged molded ergonomical and portable gauges built in
Hoses: set of 3 with small ball valve
Safety devices: high pressure shut off switch
Filter: part of the equipment and easy to clean and replace; and oil separator
Power supply: 110V - 60Hz

RECOVERY CYLINDERS

Must comply with international standards
Valves: Two (2); one for liquid and one for vapor plus relief valve
Leak tested to 300 psi
Capacity: 13 Kg

SERVICE TOOLS

RECOVERY PIERCING PLIER (Only for refrigerators service and replaces piercing valve. It is very useful for refrigerants recovery)
Material: Chrome vanadium steel with changeable piercing needle 6mm

SERVICE MANIFOLD FOR THE SERVICE OF REFRIGERATORS AND DOMESTIC AND COMMERCIAL AA

Complete manifold set 2 way standard manifolds
Aluminum body without sight glass; bourdon type gauges; hanging hook
3 hoses (blue, red, yellow) 36 " 1/4 SAE
Units: BAR PSI AND CENTIGRADES

SERVICE MANIFOLD FOR AUTOMOTIVE AA SERVICE

Complete manifold set 2 way standard
Aluminum body with sight glass
Bourdon type gauges
Hanging hook
3 hoses (blue red yellow) 72" with automotive quick couplings.

VACUUM PUMP (Only for refrigerators and AA small systems service)
Stages: Two (2)
Displacement: 35 l/min
Engine: 1/5HP
Back-flow prevention valve
With gas ballast valve, oil trap, thermal overload protection
Power supply 110 V – 60Hz

VACCUM PUMP (For bigger stature equipment service)
Stages: Two (2)
Displacement: 65 l min to 140 l min
Back-flow prevention valve
With gas ballast valve, oil trap, thermal overload protection
Power supply: 110 V – 60Hz

PIECE SCALE
Fully Automatic and Programmable
Capacity 20 Kg.
Digital display
Auto zero and Tara
Automatic shut off
Units: Pounds and Kilos
Accuracy: 2 grams
Up and down counter
With solenoid valve for automatic charge
Sturdy Construction Metallic Cabinet

PIECE PORTABLE DETECTOR
Cord less, hand held, electronic leak detector for fluorine based refrigerants with
Automatic background compensation suitable for HFC 134 a duty, with a minimum sensitivity < 3 gr. (0, 1 oz/yr)
Controls: Power on/off
Technology: Heated Diode
Sensitivity: Small, medium and large
Contamination adjustment: Automatic and manual Background Adjust
Sensing Probe: Flexible sensing probe of 1 feet
Carrying Case: Part of unit
Sensor adjustment: Manual and Automatic Adjustment control by Standard bottle
Power Supply: Rechargeable Battery. Battery charger 110 Volts - 60Hz

General conditions for all the abovementioned
One (1) year full warranty
Service facilities-repair center in the territory
Spare parts for one-year operation
Assistance for equipment's starting up.
Operative and maintenance manuals in Spanish.

ATTACHMENT III

MANUFACTURING SECTOR
Potential Equipment for the companies

Scope:

I. Recommendation of equipment necessary for the companies

II. Cost analysis by company vs. project cost

III. Equipment specification. Refrigeration and Foam

IV. Summary of companies data and photographs

SUMMARY OF EQUIPMENT UP TO 31-December

Table I - POLYURETHANE INJECTION EQUIPMENT AND U$S BY COMPANY

N°	COMPANY	11 Lt/min Spray - Inyection *	15 Lt/ min.	30 Lt/ min.	40 Lt/ min.	60 Lt/ min.	80/100 Lt/ min.	U$S Required by the company	Electric Power		
									Volt	Phases	Hz.
1	CAFRICA				1			22000	220	three	60
2	DEINBO **							7000			60
3	DEINCOPA			1				20000	220	three	60
4	FRIGE HERVEN		1					15000	220	three	60
5	FRIMETAL			1				18000	220	three	60
6	MERCANTIL SOL Y AIRE		1					15000	220	three	60
7	METALCENTRO				1			22000	220	three	60
8	REFRICENTRO				1			22000	220	three	60
9	REFRIG. DURAN						1	27000	220	three	60
10	REFRISERVICE		1					15000	220	three	60
11	RSM						1	27000	220	three	60
12	SIHERNA			1				20000	220	one	60
13	AISLANTES TERMICOS	1						12000	220	one/ three	60
14	DURECA REFRIG.					1		25000	220	three	60
15	REFRIG-TUY S.A.	1						12000	220	one/ three	60
	TOTAL	2	3	3	3	1	2	279000			

Source: FONDOIN
*With hoses 4units x 15 m Modular heatable.
**Mold Manufacturing Technical Assistance

Table II – SUMMARY OF POLYURETHANE INJECTION EQUIPMENT

SUMMARY	QUANTITY	Electric Power		
		Volt	Phases	Hz
11 Lt/min Spray -Inyection	2	220	one/three	60
15 Lt/min	3	220	three	60
30 Lt/min	2	220	three	60
	1	220	one	60
40 Lt/min	3	220	three	60
60 Lt/min	1	220	three	60
80/100 Lt/min	2	220	three	60
TOTAL	14			

Source: FONDOIN

Table III – REFRIGERANT GASES FILLING EQUIPMENT AND U$S BY COMPANY

N°	COMPANY	R-134 Filling and Exhaustion Equipment	Leak detector *	U$S Assigned to the company	Electric Power for Filling and Exhaustion Equipment		
					Volt	Phases	Hz.
1	FRIGE HERVEN Å	1	1	8100	220	three	60
2	MERCANTIL SOL Y AIREÅ	1	1	8100	220	three	60
3	METALCENTRO Å	1	1	8100	220	three	60
4	REFRIG. DURAN ©	1	1	8100	220	three	60
5	REFRISERVICE Å	1	1	8100	220	three	60
6	FRIMETAL Å	1	1	8100	220	three	60
7	REFRICENTRO Å	1	1	8100	220	three	60
8	SIHERNA Å	1	1	8100	220	one	60
9	OTHER EQUIPMENT**	4	4	32400	220	three	60
	TOTAL	**12**	**12**	**97200**			

Source: FONDOIN
*Electric Power 110 volt-60 Hz.
**Consigned to FONDOIN
Å Equipment with 2 stage vacuum pump 9 m^3/hr.
© Equipment with 2 stage vacuum pump 12 m^3/hr.

Table IV – U$S REQUIRED BY THE COMPANY vs. U$S ACCORDING TO PROJECT

N°	COMPANY	U$S assigned to the Company	According to project			Difference
			CFC-11	CFC-12	Total	
1	CAFRICA	22000	4610,96	1729,11	6340,07	-15659,93
2	DEINBO	7000	6916,44	1729,11	8645,55	**1645,55**
3	DEINCOPA	20000	5763,7	1729,11	7492,81	-12507,19
4	FRIDGE HERVEN	23100	2881,85	1729,11	4610,96	-18489,04
5	FRIMETAL	26100	5763,7	1729,11	7492,81	-18607,19
6	MERCANTIL SOY Y AIRE	23100	6916,44	1729,11	8645,55	-14454,45
7	METALCENTRO	30100	9221,92	1729,11	10951,03	-19148,97
8	REFRICENTRO	30100	19596,58	1729,11	21325,69	-8774,31
9	REFRIG. DURAN	35100	47838,71	3458,22	51296,93	**16196,93**
10	REFRISERVICE	23100	13832,88	2881,85	16714,73	-6385,27
11	RSM	27000	25360,28	1729,11	27089,39	**89,39**
12	SIHERNA	28100	5763,7	1729,11	7492,81	-20607,19
13	AISLANTES TERMICOS	12000	5763,7	0	5763,7	-6236,3
14	DURECA REFRIGERACIÓN	25000	10374,66	0	10374,66	-14625,34
15	REFRIG.-TUY S.A.	12000	5763,7	0	5763,7	-6236,3
16	OTHER REQUIREMENT	32400				-32400
	TOTAL	**376200**	**176369,22**	**23631,17**	**200000,39**	**-176199,61**

Source: FONDOIN – UBAJAY S.A.

Table V – COMPARISON: TOTAL FUNDS ASSIGNED TO THE COMPANIES vs. TOTAL PROJECT FUNDS (U$S)

TOTAL PROJECT	201,500
TOTAL ASSIGNED TO COMPANIES	376,200
DIFFERENCE *	-174,700

*FONDOIN will inform from which other budget allocations, the funds to cover manufacturing sector needs will be transferred.

Table VI – LIST OF PRESENT POLYURETANE INJECTION EQUIPMENT OF THE PROJECT COMPANIES

Nº	COMPANY	20 lt./ min.	30 lt./ min.	40 lt./ min.	60 lt./ min.	80 lt./ min.	100 lt./ min.	MANUAL
1	CAFRICA							1
2	DEINBO			1				
3	DEINCOPA		1					
4	FRIDGE HERVEN							1
5	FRIMETAL		1					
6	MERCANTIL SOL Y AIRE							1
7	METALCENTRO							1
8	REFRICENTRO				1			
9	REFRIG. DURAN							1
10	REFRISERVICE							1
11	RSM							1
12	SIHERNA							1
	TOTAL	0	2	1	1	0	0	8

Table VII – LIST OF PRESENT REFRIGERANT GASES FILLING EQUIPMENT OF THE PROJECT COMPANIES

Nº	COMPANY	Filling and Exhaustion equipment	Leak Detector	Vacuum Pump	Manual Filling	Pressure gauge kit
1	FRIDGE HERVEN			2	1	2
2	MERCANTIL SOL Y AIRE			1	1	1
3	METALCENTRO			2	1	2
4	REFRIG. DURAN			2	1	3
	TOTAL	0	0	7	4	8

TENTATIVE MANUFACTURING SECTOR EQUIPMENT SPECIFICATIONS

Refrigeration Equipments MP/VEN/04/033

One piece production, evacuation and refrigerant charging board, with vacuum pump, refrigerant supply pump and vacuum check. (Refrigerant HFC-134a)

Machine specifications outline:

2 stage vacuum pump 9 m3/hr. (For eleven (11) equipment)
4 charging channels-built in supply pump.
Refrigerant HFC 134a
Charges: Min 50 gr-Max.1,000 gr. +/- 1% or 1 gr.
Charging speed: 20 gr. /sec
Accuracy: Charges < 100+/- 1 gr. or 1 %
Operation temperature: 10-45 °C
Connections 2 m evacuation and charging hose with ¼" quick release couplings
Control: Microprocessor
Alarm: Alarm at empty refrigerant and faulty pressure rise (acoustic and visual)
Timers: Timers for evacuation/vacuum
Language: Spanish
Indicators lamps: Lamps indicating state of process
Automatic process: Fully automatic. Evacuation/vacuum Check/refrigerant charge
Temperature control: required for accuracy of refrigerant charge

General conditions

TOTAL QUANTIY: Twelve (12) equipments, as following:

One (1) year full warranty
Service facilities-repair center in the territory
Spare parts for one-year operation
Operative and maintenance manuals in Spanish.
Assistance for equipment's starting up.

Total 12 equipment units distributed as follows:

Eleven (11) equipment units (vacuum pump 9 m^3/h)
Electric power:
220 volts - 60 Hz - Three phases: Quantity of equipment units: 10 (Ten)
220 volts - 60 Hz - One phase : Quantity of equipment units: 1 (One)

One (1) equipment unit (2 stage vacuum pump 12 m^3/h)
Electric power: 220 volts - 60 Hz –Three phases

PROVISION OF EQUIPMENT (DDU) Delivery Duty Unpaid
Source: Supplier

One piece portable detector

Machine specifications outline

Cord less, hand held, electronic leak detector for fluorine based refrigerants with automatic background compensation suitable for HFC 134a duty, with a minimum sensitivity of 1.5 gr. /yr. (0.05 oz/yr).
Control: Power: ON/OFF
Sensitivity: Small, medium and large
Contamination adjustment: Automatic and manual background adjust.
Power supply: One seal lead rechargeable lead acid.
Sensing probe: Flexible sensing probe of 4 feet.
Reliability: Sensor life 500 hrs. Probe 5000 Bends
Carrying case: Part of unit
Sensor adjustment: Manual adjustment control

General conditions

Total quantity: Twelve (12) equipments
One (1) year full warranty
Service facilities-repair center in the territory
Operative and maintenance manuals in Spanish.
Assistance for equipment's starting up.
Electric power: Rechargeable Battery. Battery charger 110 Volts-60 Hz

PROVISION OF EQUIPMENT (DDU) Delivery Duty Unpaid

Source: Supplier

RIGID PU FOAM
HCFC-141b BASED

Description of basic unit:
Mobile high pressure two component dispenser to produce rigid PU foam for spray foam and pour-in-place applications
Capacity: Approximately 12 Lt./min.

General features:
As a minimum, the unit must be equipped with:

- Opposite or parallel piston pumping system capable to handle viscosities up to 1,000 cPs. The cylinders must be exchangeable to allow change in component ratio
- Isocyanate pump lubrication
- Safety valves or rupture disks to safeguard against over-pressure

Applicator(s):
Spray gun:

- Automatic air cleaning
- Working pressure approximately 100 bar at gun exit

Pouring gun: To be offered, including timer

Hoses: 4 x 15 m, modular heatable

Barrel pumps:

- For the polyol blend
- For the isocyanate

One (1) year full warranty
Service facilities-repair center in the territory
Spare parts for one-year operation
Assistance for equipment's starting up.
Operative and maintenance manuals in Spanish.

Quantity of Equipments and Electric Power

Quantity of Equipments	Electric Power		
	Volt	Phases	Hz
2	220	one/three	60

Recommended bidders:

Gusmer	USA	Graco	USA
Glass Craft	USA	Intergun	ESP
Transtecnica	BRA		

MEDIUM-SIZED LOW PRESSURE FOAM DISPENSER
RIGID OR FLEXIBLE PU FOAM, HCFC-141b

Description of basic unit:

Low pressure dispenser with variable output between 3 and 15 l/min to produce rigid or flexible PU foam for the manufacturing of refrigeration equipments.

Output range at mixing ratio 1:5/ 5:1. An output range at mixing ratio 1:1 should be quoted as alternative.
3-15 l/min (approximately)
..... - .... g/sec (approximately)

General features:

As a minimum, the unit must be equipped with:
Filters before the component pumps
Recirculation adjustment and gauge
Gauge for adjustment of pouring pressure

Pumps:

To be equipped with two (2) variable output metering pumps
Leak control: Equipped with individual drip pans
Pump capacity: Suitable for the machine rating
To be equipped with two (2) drums product transference pumps

Mixing head:

Mechanical agitator (approximately 7,000 rpm) guaranteeing correct foam mixing and laminar output over the entire working range.
Size: Suitable for entire output range
Working pressure: Up to 13 bar (equivalent of 200 psi)
Cleaning: Automatic and manual flushing and drying of the mixing chamber, with timers, for cleaning with either solvent or hot water solution, and air drying cycles.
Support: Vertically mounted on a boom of standard (2,000-4,000 mm) length allowing a 180^0 working radius and a minimum of 500 mm vertical movement

Working tanks: 2 working tanks (polyol blend, isocyanate) to serve the dispensing unit
Tank volume: 50 l each
Controls:
Min. /max. level control with alarm function
Temperature control system to maintaining tank temperatures of 15-40 $\pm$ ^{0}C, combined with a hot and cold water source of adequate capacity and a double walled tank or heat exchangers in the recirculation combined with a hot and cold water sources of adequate capacity.
Other features:
Allowing pressure up to 2.5 bar (35 psi equivalent)
Pressure gauge
Pressure relief
Mounted on separate drip pans of sufficient capacity
Equipped with low rpm agitators

Control panels:

Shot timers:
Minimal 10 individual shot timers to be included
0.1 seconds precision
Reading error display
PLC unit: Preferably included
Operator panel: A separate operator panel to be mounted on the mixing head with buttons for Start/Stop, Pour and Emergency Stop, interlocked with the mixing head cleaning system

One (1) year full warranty
Service facilities-repair center in the territory
Spare parts for one-year operation
Assistance for equipment's starting up.
Operative and maintenance manuals in Spanish.

Quantity of Equipments and Electric Power

Quantity of Equipments	Electric Power		
	Volt	Phases	Hz
3	220	three	60

Recommended bidders:

Edge-Sweets	USA	Cannon	ITA	Kymofoam	USA
Decke	USA	SAIP	ITA	Hi-Tech	USA
Elastogran	GER	Cosmic	ITA	Sulpol	BRA
Transtecnica	BRA	Fibermaq	BRA	GFT	THA
Tecnomix	MEX	OMS	ITA		

MEDIUM-SIZED LOW PRESSURE FOAM DISPENSER
RIGID OR FLEXIBLE PU FOAM, HCFC-141b

Description of basic unit:

Low pressure dispenser with variable output between 6 and 30 l/min to produce rigid or flexible PU foam for the manufacturing of refrigeration equipments.

Output range at mixing ratio 1:5/ 5:1. An output range at mixing ratio 1:1 should be quoted as alternative.
6-30 l/min (approximately)
..... - .... g/sec (approximately)

General features:

As a minimum, the unit must be equipped with:
Filters before the component pumps
Recirculation adjustment and gauge
Gauge for adjustment of pouring pressure

Pumps:

To be equipped with two (2) variable output metering pumps
Leak control: Equipped with individual drip pans
Pump capacity: Suitable for the machine rating
To be equipped with two (2) drums product transference pumps

Mixing head:

Mechanical agitator (approximately 7,000 rpm) guaranteeing correct foam mixing and laminar output over the entire working range.
Size: Suitable for entire output range
Working pressure: Up to 13 bar (equivalent of 200 psi)
Cleaning: Automatic and manual flushing and drying of the mixing chamber, with timers, for cleaning with either solvent or hot water solution, and air drying cycles.
Support: Vertically mounted on a boom of standard (2,000-4,000 mm) length allowing a 180^0 working radius and a minimum of 500 mm vertical movement

Working tanks: 2 working tanks (polyol blend, isocyanate) to serve the dispensing unit
Tank volume: 100 l each
Controls:
Min. /max. level control with alarm function
Temperature control system to maintaining tank temperatures of 15-40 $\pm$ ^{0}C, combined with a hot and cold water source of adequate capacity and a double walled tank or heat exchangers in the recirculation combined with a hot and cold water sources of adequate capacity.
Other features:
Allowing pressure up to 2.5 bar (35 psi equivalent)
Pressure gauge
Pressure relief
Mounted on separate drip pans of sufficient capacity
Equipped with low rpm agitators

Control panels:

Shot timers:
Minimal 10 individual shot timers to be included
0.1 seconds precision
Reading error display
PLC unit: Preferably included
Operator panel: A separate operator panel to be mounted on the mixing head with buttons for Start/Stop, Pour and Emergency Stop, interlocked with the mixing head cleaning system

One (1) year full warranty
Service facilities-repair center in the territory
Spare parts for one-year operation
Assistance for equipment's starting up.
Operative and maintenance manuals in Spanish.

Quantity of Equipments and Electric Power

Quantity of Equipments	Electric Power		
	Volt	Phases	Hz
1	220	one	60
2	220	three	60

Recommended bidders:

Edge-Sweets	USA	Cannon	ITA	Kymofoam	USA
Decke	USA	SAIP	ITA	Hi-Tech	USA
Elastogran	GER	Cosmic	ITA	Sulpol	BRA
Transtecnica	BRA	Fibermaq	BRA	GFT	THA
Tecnomix	MEX	OMS	ITA		

MEDIUM-SIZED LOW PRESSURE FOAM DISPENSER
RIGID OR FLEXIBLE PU FOAM, HCFC-141b

Description of basic unit:

Low pressure dispenser with variable output between 12 and 60 l/min to produce rigid or flexible PU foam for the manufacturing of refrigeration equipments.

Output range at mixing ratio 1:5/ 5:1. An output range at mixing ratio 1:1 should be quoted as alternative.
12-60 l/min (approximately)
..... - .... g/sec (approximately)

General features:

As a minimum, the unit must be equipped with:
Filters before the component pumps
Recirculation adjustment and gauge
Gauge for adjustment of pouring pressure

Pumps:

To be equipped with two (2) variable output metering pumps
Leak control: Equipped with individual drip pans
Pump capacity: Suitable for the machine rating
To be equipped with two (2) drums product transference pumps

Mixing head:

Mechanical agitator (approximately 7,000 rpm) guaranteeing correct foam mixing and laminar output over the entire working range.
Size: Suitable for entire output range
Working pressure: Up to 13 bar (equivalent of 200 psi)
Cleaning: Automatic and manual flushing and drying of the mixing chamber, with timers, for cleaning with either solvent or hot water solution, and air drying cycles.
Support: Vertically mounted on a boom of standard (2,000-4,000 mm) length allowing a 180^0 working radius and a minimum of 500 mm vertical movement

Working tanks: 2 working tanks (polyol blend, isocyanate) to serve the dispensing unit
Tank volume: 100 l each
Controls:
Min. /max. level control with alarm function
Temperature control system to maintaining tank temperatures of 15-40 $\pm$ ^{0}C, combined with a hot and cold water source of adequate capacity and a double walled tank or heat exchangers in the recirculation combined with a hot and cold water sources of adequate capacity.
Other features:
Allowing pressure up to 2.5 bar (35 psi equivalent)
Pressure gauge
Pressure relief
Mounted on separate drip pans of sufficient capacity
Equipped with low rpm agitators

Control panels:

Shot timers:
Minimal 10 individual shot timers to be included
0.1 seconds precision
Reading error display
PLC unit: Preferably included
Operator panel: A separate operator panel to be mounted on the mixing head with buttons for Start/Stop, Pour and Emergency Stop, interlocked with the mixing head cleaning system

MEDIUM-SIZED LOW PRESSURE FOAM DISPENSER
12 - 60 Lt. /min - continuation

Quantity of Equipments and Electric Power

Quantity of Equipments	Electric Power		
	Volt	Phases	Hz
4	220	three	60

Recommended bidders:

Edge-Sweets	USA	Cannon	ITA	Kymofoam	USA
Decke	USA	SAIP	ITA	Hi-Tech	USA
Elastogran	GER	Cosmic	ITA	Sulpol	BRA
Transtecnica	BRA	Fibermaq	BRA	GFT	THA
Tecnomix	MEX	OMS	ITA		

MEDIUM-SIZED LOW PRESSURE FOAM DISPENSER
RIGID OR FLEXIBLE PU FOAM, HCFC-141b

Description of basic unit:

Low pressure dispenser with variable output between 20 and 100 l/min to produce rigid or flexible PU foam for the manufacturing of refrigeration equipments.

Output range at mixing ratio 1:5/ 5:1. An output range at mixing ratio 1:1 should be quoted as alternative.
20-100 l/min (approximately)
..... - .... g/sec (approximately)

General features:

As a minimum, the unit must be equipped with:
Filters before the component pumps
Recirculation adjustment and gauge
Gauge for adjustment of pouring pressure

Pumps:

To be equipped with two (2) variable output metering pumps
Leak control: Equipped with individual drip pans
Pump capacity: Suitable for the machine rating
To be equipped with two (2) drums product transference pumps

Mixing head:

Mechanical agitator (approximately 7,000 rpm) guaranteeing correct foam mixing and laminar output over the entire working range.
Size: Suitable for entire output range
Working pressure: Up to 13 bar (equivalent of 200 psi)
Cleaning: Automatic and manual flushing and drying of the mixing chamber, with timers, for cleaning with either solvent or hot water solution, and air drying cycles.
Support: Vertically mounted on a boom of standard (2,000-4,000 mm) length allowing a 180^0 working radius and a minimum of 500 mm vertical movement

Working tanks: 2 working tanks (polyol blend, isocyanate) to serve the dispensing unit
Tank volume: 200 l each
Controls:
Min. /max. level control with alarm function
Temperature control system to maintaining tank temperatures of 15-40 $\pm$ ^{0}C, combined with a hot and cold water source of adequate capacity and a double walled tank or heat exchangers in the recirculation combined with a hot and cold water sources of adequate capacity.
Other features:
Allowing pressure up to 2.5 bar (35 psi equivalent)
Pressure gauge
Pressure relief
Mounted on separate drip pans of sufficient capacity
Equipped with low rpm agitators

Control panels:

Shot timers:
Minimal 10 individual shot timers to be included
0.1 seconds precision
Reading error display
PLC unit: Preferably included
Operator panel: A separate operator panel to be mounted on the mixing head with buttons for Start/Stop, Pour and Emergency Stop, interlocked with the mixing head cleaning system

MEDIUM-SIZED LOW PRESSURE FOAM DISPENSER
20 - 100 Lt. /min – continuation

Quantity of Equipments and Electric Power

Quantity of Equipments	Electric Power		
	Volt	Phases	Hz
2	220	three	60

Recommended bidders:

Edge-Sweets	USA	Cannon	ITA	Kymofoam	USA
Decke	USA	SAIP	ITA	Hi-Tech	USA
Elastogran	GER	Cosmic	ITA	Sulpol	BRA
Transtecnica	BRA	Fibermaq	BRA	GFT	THA
Tecnomix	MEX	OMS	ITA		

DATA OF REFRIGERATION AND FOAM COMPANIES
PROJECT MP/VEN/04/033

A. DATA OF REFRIGERATION COMPANIES

1. Cafrica

Address : Urbanización Industrial El Recreo A.C. Batalla de Carabobo, galpón C5.
City / Location: Valencia
State: Carabobo
Phone : 0241-8780693 / 0414-4208803
Contact: Alejandro García

Available equipment

Foam process	Refrigerants management	CFC consumption (Ton/year)		
		CFC11	CFC12	Total
Manual	Non Applicable	0.8	0.3	**1.1**

This company is active and manufacturing panels for cold rooms. Production shows a relevant increment, reaching a 27,000 Kg polyol and a 3.5 Tons CFC 11consumption.

Panels dimensions are 6x1.17x0.08 m equivalent to 22 Kg and they are made of polyurethane. Therefore, the equipment required would be an injection one with a 40 Kg/min capacity.

Power supply type: 220V Three-phase
Source: FONDOIN
Pictures sent to UNIDO.

2. Deinbo

Address : Av. Patrocionio Peñuela, entre 3ra y 4ta Transversal, Nº42. Boleita Sur.
City/Location: Caracas
State: Miranda
Phone : 0212-239.60.57
Fax: 0212-238.02.03
Contact: Arq. Alfredo Abdul Hadi

Available equipment

Foam process	Refrigerants management	CFC consumption (Ton/year)		
		CFC11	CFC12	Total
Manual	1 Vacuum pump 1 Pressure gauge kit	1.2	0.3	**1.5**

This company manufactures commercial refrigerators for bakery equipment furnishing. They have presently little activity and their polyurethane

consumption has decreased substantially compared to the last report. They only use R22 as refrigerant.

Isocyanate and polyol consumption is 5,000 Kg/year, equivalent to 0.65 Tons of CFC11. Taking into account that this company has a good equipment, brand Decker, with a 40 kg/min capacity, year 1998; and that the conversion contribution would be inferior to their equipment's value, their representative would not be willing to substitute this equipment for another of a lesser capacity. On the contrary, he expressed his interest in receiving technical assistance regarding the manufacturing of molds to inject coolers that have been manufacturing in a handcraft fashion.

Source: FONDOIN
Pictures sent to UNIDO.

3. Deincopa

Address : Av. Sucre, Edif. Deincopa. Los Dos Caminos
City/Location: Caracas
State: Miranda
Phone: 0212-2857986 / 2855669
Fax: 0212-284.56.69
Contact: Italo Talucci

Available equipment

Foam process	Refrigerants management	CFC consumption (Ton/year)		
		CFC11	CFC12	Total
Cannon 30 kg/min low pressure injection machine	2 Vacuum pumps 3 Pressure gauge kits	1,0	0	**1,0**

This company provides equipment for bakeries. They manufacture display fridges and refrigerated counters injected with polyurethane with a low pressure machine. These units are cooled with R22 refrigeration units.

Isocyanate and polyol consumption is 8,000 Kg/year, equivalent to 1 Ton of CFC11. The greater capability mold for injection contains polyurethane 42 Kg. The injection equipment required would have to be an 80 Kg/min capacity one. Their representative stated they are working well with their present equipment capacity but they would be willing to provide themselves the difference, in case there would be one, between the assistance provided and the equipment value, so as to count with suitable equipment.

Power supply type: 220V Three-phase
Source: FONDOIN
Pictures sent to UNIDO.

4. Fridge Herven

Address : Autopista vía Quibor, Km. 7, Sector California I.
City/Location: Barquisimeto
State: Lara
Phone: 0251-7170828
Contact: Hermes Contreras

Available equipment

Foam process	Refrigerants management	CFC consumption (Ton/year)		
		CFC11	CFC12	Total
Manual	2 Vacuum pumps 2 Pressure gauge kits	0.5	0.3	**0.8**

This company has incremented their production since the last contact. They produce commercial refrigeration equipment and cold rooms. Refrigerant used: R12 and R22.

Isocyanate and polyol consumption is 12,000 Kg/year, equivalent to 1.56 Ton of CFC11 and 480 Kg of R12. Injected molds dimensions are equivalent to 10 Kg of polyurethane. The equipment indicated to cover their needs should be an injection machine with 20 Kg/min capacity. Concerning equipment for refrigerant management, since they do work with assembly line production, a unit for refrigerant filling and a low capacity vacuum pump and a leak detector.

Power supply type: 220V Three-phase.
Source: FONDOIN
Pictures sent to UNIDO.

5. Frimetal

Address : Zona Industrial Las Minas Norte.
City/Location: San Antonio de los Altos
State: Miranda
Phone: 0212-372.92.35
Fax: 0212-372.99.17
e-mail: decoracionyfrio@cantv.net
Contact: Rodolfo Cacique

Available equipment

Foam process	Refrigerants management	CFC consumption (Ton/year)		
		CFC11	CFC12	Total
Low pressure injection machine Decker 30	1 Vacuum pump 4 Leak detectors burner type 6 Pressure gauge kits	1	0.3	**1.3**

This company is operative and recovering from the economic crisis suffered in the country for the last two years. They are presently reaching production

levels originally reported and, during our visit, we could confirm they are working at full capacity.

Their production is devoted to commercial refrigeration equipment, the majority of which have no cooling unit; they only produce one model with cooling. Refrigerators are injected in molds with a polyurethane low pressure injection machine.

Isocyanate and polyol consumption is 8,000 Kg/year, equivalent to 1 Ton of CFC11 and 250 Kg of R12. They have not experienced any change regarding equipment or facilities.

The biggest mold hold 16 Kg of polyurethane, therefore, conversion equipment required would be a polyurethane injection machine with 30 Kg/min capacity. Due to plan budget limitation, their representative informed us they are more interested in affording these equipment requirements than in receiving aid for refrigerant filling equipment, since the latter is a secondary activity in their production scheme. Consequently, assistance would be centered in the foam sector.

Power supply type: 220V Three-phase
Source: FONDOIN
Pictures sent to UNIDO.

6. Mercantil Sol Aire

Address :	Mercado Metropolitano, local L-M 12, Diagonal al Banco Banfoandes. La Concordia. Fabrica: Sector Lagunillas, Carretera Vía Rubio, Vereda 2 Bis El Sol.
City/Location:	San Cristóbal
State:	Táchira
Phone:	0276 - 3472547
Fax:	0276 - 3472547
Contact:	Homero Rodríguez

Available equipment

Foam process	Refrigerants management	CFC consumption (Ton/year)		
		CFC11	CFC12	Total
Manual	1 Vacuum pumps 1 Pressure gauge kit	1.2	0.3	**1.5**

This company manufactures commercial refrigeration equipment and cold rooms. Polyurethane injection process is manually performed in molds for such purpose.
Isocyanate and polyol consumption is 5,000 Kg/year, equivalent to 0.65 Ton of CFC11. As refrigerant, they use both R12 and R22, depending on the case, with a consumption of 350 Kg/year of R12.

Their biggest panel dimensions are 6 x 1.17 x 0.10 m, and it holds 24 Kg of polyurethane but produces little quantities. For this value, it would be necessary an injection machine over 40 Kg/min, but, considering that the company's consumption is quite reduced and that this option is not

favorable for the project calculations, a lesser capacity machine is recommended.
As far as refrigerant management equipment is concerned, since they do not work with line assembly, it is recommended refrigerant filling equipment, a low capacity vacuum pump and a leak detector.

Power supply type: 220V Three-phase.
Source: FONDOIN
Pictures sent to UNIDO.

7. Metalcentro Barquisimeto

Address :	Calle 22 entre 3 y 4, Nº 3-48, Zona Industrial 1.
City/Location:	Barquisimeto
State:	Lara
Phone:	0251-2376570 / 7179245
Fax:	0251-2376570
Contact:	Cruz Alberto Oropeza

Available equipment

Foam process	Refrigerants management	CFC consumption (Ton/year)		
		CFC11	CFC12	Total
Manual	2 Vacuum pumps 2 Pressure gauge kits	1.6	0.3	**1.9**

This company is still manufacturing commercial refrigeration equipment for bakeries. They keep consuming a similar amount as the one registered in our last report – some 12,000 Kg of Isocyanate and polyol equivalent to 1.56 Tons of CFC11 and 250 Kg of CFC12.

Their biggest mold holds 20 Kg of polyurethane, which means that the equipment necessary would be an injection machine with 40 Kg/min capacity. Concerning refrigerant management equipment, refrigerant filling equipment, low capacity vacuum pump and a leak detector are recommended, since they do not work with assembly line.

Power supply type: 220V Three-phase.
Source: FONDOIN
Pictures sent to UNIDO.

8. Refricentro

Address : Av. Vencedores de Araure a 1.400 m. de la redoma.
City/Location: Araure
State: Portuguesa
Phone: 0255-6652123 / 6651423
Fax: 0255-6651427
Contact: José Gregorio Zulli

Available equipment

Foam process	Refrigerants management	CFC consumption (Ton/year)		
		CFC11	CFC12	Total
Low pressure injection machine Decker 60	Non Applicable	3.4	0.3	**3.7**

This company manufactures commercial refrigeration equipment and panels for cold rooms. Their production is based on individual panels injected by a low pressure machine and assembled according to their needs. Refrigerators cold units are not installed in their factory.

Updated consumption would be 3 Tons of CFC11. There have been no changes regarding equipment or installations. The bigger panels hold approximately 25 Kg; therefore recommended option would be an injection machine with a capacity between 40 and 50 Kg/min. Their representative said that, if it were possible, they would prefer equipment of the same brand as the one they already have even though it implied their paying corresponding value difference.

Power supply type: 220V Three-phase
Source: FONDOIN
Pictures sent to UNIDO.

9. Refrigeración Duran

Address : Calle 6 entre Carrera 1 y Avenida Los Horcones, Pueblo Nuevo.
City/Location: Barquisimeto
State: Lara
Phone : 0251-266.92.46
Fax: 0251-266.92.46
Contact: Wenceslao Duran

Available equipment

Foam process	Refrigerants management	CFC consumption (Ton/year)		
		CFC11	CFC12	Total
Manual	2 Vacuum pumps 3 Pressure gauge kits	8.3	0.6	**8.9**

This company manufactures commercial refrigeration equipment and cold rooms, with a great production volume. Polyurethane injection process is

manually done, poured in molds available for each model. They use R12 and R22 as refrigerant for condensing units.

There has been an increment in the isocyanate, polyol and R12 consumption compared to their last report, obtaining an average of 86,400 Kg for the isocyanate and polyol, 11.2 Tons of CFC11 and 4,320 Kg of R12.

Molds for refrigeration equipment hold a maximum of 14 Kg of polyurethane; while the 6 x 2 x 0.10 m panels reach 45 Kg. Equipment suitable for these applications should have 80 Kg/min capacity. Regarding refrigerant management equipment, it is recommended to specify either one for refrigerant filling and high capacity vacuum pump, or two ones with lesser capacity and a leak detector.

Power supply type: 220V Three-phase.
Source: FONDOIN
Pictures sent to UNIDO.

10. Refriservi-GEP

Address :	Calle Zamora Nº 9. Urbanización Santa Rita
City/Location:	Maracay
State:	Aragua
Phone:	0243-2713126 / 0412-4330329 / 0416 3421956
Fax:	0243-2713126
Contact:	Gustavo Perdomo

Available equipment

Foam process	Refrigerants management	CFC consumption (Ton/year)		
		CFC11	CFC12	Total
Manual	1 Vacuum pump 2 Pressure gauge kits	2.4	0.5	**2.9**

This company, formerly called Refriservide, changed activity which is presently oriented to cold rooms. Commercial equipment production stopped due to difficulties to compete in the market and, for that reason, they do not use R12. They are using R22 as refrigerant instead.

Isocyanate and polyol consumption is substantially lower: 7,000 kg/year; which corresponds to 0.9 Tons of CFC11. Their panels' dimensions are 2.4 x 1.17 x 0.10 m, equivalent to approximately, 10 Kg of polyurethane. In consequence, the required equipment should have a 20 Kg/min capacity.

Taking the abovementioned parameters into consideration, the company would choose, if possible, either polyurethane injection equipment with a capacity between 15 and 20 Kg/min or polyurethane spray equipment.

Power supply type: 220V Three-phase.
Pictures sent to UNIDO.

11. Refrigeración y Servicios Múltiples RSM

Address : Av. Intercomunal Barquisimeto Duaca. Km. 10
City/Location: Barquisimeto
State: Lara
Phone: 0414-5334006 / 0414-5094579
Fax: 0414-5334006
Contact: Jorge Olavarrieta

Available equipment

Foam process	Refrigerants management	CFC consumption (Ton/year)		
		CFC11	CFC12	Total
Manual	Non Applicable	4.4	0.3	**4.7**

This company manufactures cold rooms with glass fiber lining for freezing processes. Polyurethane injection process is manually done in a press. Isocyanate and polyol consumption has substantially dropped in the last years due to economic recession, reaching 20,000 Kg/year, equivalent to 2.6 Tons of CFC11.

Their panels' dimensions are 6 x 1.19 x 0.15 m and hold 43 Kg of polyurethane, consequently, they will need a machine with an 80 Kg/min capacity.

Power supply type: 220V Three-phase
Source: FONDOIN
Pictures sent to UNIDO.

12. Siherna

Address : Calle 16 Nº 16-60.
City/Location: San Cristóbal
State: Táchira
Phone: 0276-3554350 / 3947895 / 0414-7075604
Fax: 0276-3554350
Contact: Siervo Hernández

Available equipment

Foam process	Refrigerants management	CFC consumption (Ton/year)		
		CFC11	CFC12	Total
Manual	1 Vacuum pump 2 Pressure gauge kits	1	0.3	**1.3**

This company manufactures cold rooms. Commercial equipment production was eliminated due to their impossibility to compete in the market. Polyurethane injection process is manually performed in a press. Cold rooms are installed to work with refrigerant R22.

Isocyanate and polyol consumption is 12,000 Kg/year, equivalent to 1.56 Tons of CFC11. Their panels' dimensions are 3 x 1.17 x 0.1 m and each one

is injected with 12.5 Kg of polyurethane. Recommended equipment would be an injection one with 30 Kg/min capacity.

Power supply type: 220V One-phase
Source: FONDOIN
Pictures sent to UNIDO.

B. DATA OF FOAM COMPANIES

1. Aislantes Térmicos

Address : Sector 05, Calle 4 Nº 10 Urb. Las Mercedes
City/Location: La Victoria
State: Aragua
Phone: 0244-3220980/0193/0176-3218221
Fax: 0244-3220980/0193/0176-3218221
Contact: Yurina Rondon/Freddy Cova

Available equipment

Foam process	Refrigerants management	CFC consumption (Ton/year)		
		CFC11	CFC12	Total
		1	0	**1**

This company manufactures, provides and installs isolating materials and performs finishing for pipes and both fluids and high temperature valves for industry.
There are two ways of doing the process. One of them consists of the manufacturing of polyurethane blocks of 2m x 1m x 0.5m; and the posterior creation of pre-manufactured shells to be installed on site. The other consists of the assembly of metallic shells in the pipe and polyurethane injection on site.
Recommendation for this company: a dual machine, capable of performing polyurethane projection and injection. The equipment should be a portable one, with long hoses and the projection/injection pistol should be as light as possible. Capacity: 11 Lt/min.

Power supply type: 220V. One or Three-phase

2. Dureca Refrigeración

Address : Calle Ribas Nº 61
City/Location: Los Teques
State: Miranda
Phone: 0212-3225998
Fax: 0212-3217526
Contact: José de Freitos/Carolina Fernández

Available equipment

Foam process	Refrigerants management	CFC consumption (Ton/year)		
		CFC11	CFC12	Total
		1.8	0	**1.8**

This company manufactures, distributes and commercializes commercial and industrial refrigeration equipment, apart from manufacturing isolated panels for modular cold rooms.
The process consists basically of setting up the panels structures in a 6m long by 1.2m width press with thickness varying from 2.5cm to 8cm; which

are later injected with polyurethane inside the sheets perfectly secured to the press.
The bigger panels they could manufacture would have the press dimensions and a thickness of 8cm. Such panel is made in four injections.

Recommendation for this company: a low pressure equipment with dynamic header with a capacity of 60Kg/min.

Power supply type: 220V. Three –phase.

3. Refrig.-Tuy S.A.

Address :	Calle Ppal. La Acequia. C. Comercial Ocumare Country. P. B. Local Nº4
City/Location:	Ocumare del tuy
State:	Miranda
Phone:	0239-2257333
Fax:	0414-2626059
Contact:	Mauricio Biella

Available equipment

Foam process	Refrigerants management	CFC consumption (Ton/year)		
		CFC11	CFC12	Total
		1	0	**1**

This company manufactures, distributes and commercializes commercial refrigeration equipment.
The process consists of, basically, setting up the cooling equipment metallic structures and posterior manual pouring through several points.

Recommendation for this company: a dual machine, capable of performing polyurethane projection and injection. The equipment should be a portable one, with long hoses and the projection/injection pistol should have a capacity of 11 Lt/min.

Power supply type: 220V. One or Three –phase.