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for a sustainable future

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TOGETHER
for a sustainable future

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JIANGSU BANSHEN APPLIANCES CO., LTD

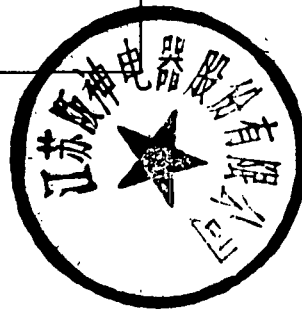
Messrs
United Nations Industrial Development Organization
(UNIDO)
Director
General Service
Financial Performance Control Branch
Field Operations and Administration Division
P.O. Box 300
A-1400 VIENNA
AUSTRIA

Contract No.: 01/240

Date: 2003/3/19

Object: Vacuum pump retrofit and laboratory upgrade
Project No.: MP/CPR/99/122-Replacement of CFC-11 and CFC-12 with
Cyclopentane and R134a in the Production Refrigerators at Banshen Electrical
Appliances Co., People's Republic of China

Final Report



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FINAL REPORT

Index

1. Introduction

2. Implementation situation and date of completion

3. Financial report

4. Annex (photographic evidence and laboratory testing reports)

FINAL REPORT

1.Introduction:

In line with the Montreal Protocol for the phase out Ozone Depleting Substance, Banshen will phase out the use of CFCs in the production of domestic and commercial refrigeration appliances with the replacement of CFC-11 and CFC-12 with cyclopentane and R134a.

The work for retrofitting vacuum pumps and laboratory upgrading under UNIDO contract 01/240 will be implemented by Banshen Company.

This report should be submitted to UNIDO before Nov.30, 2002 and was delayed due to moving of Banshen's Main Plant and putting off of the conversion project.

In November of 2002, Banshen began to produce in New Main plant. To fit for the requirement of production lines in new plant, Banshen has purchased 128 PCS of vacuum pumps model GLD-201 from Linbo Aikefa vacuum Co., the cost of USD80, 000 has been carried by Banshen Company itself.

2. Implementation situation and date of completion:

(1). Retrofitting of vacuum pumps:

(A) New vacuum pumps have arrived in the beginning of Oct 2001. (See Annex 1)

a. Model: TRIVAC D16C

Manufacturer: LEYBOLD (TIANJIN) VACUUM GmbH

Pump rate: 16m³/h (50Hz)

Power: 550W(three phase)

Vacuum level: 6.10⁻³ mbar

b. Quantity: 25 pieces

(B) Ester oil E68N purchased from LEYBOLD (TIANJIN) VACUUM GmbH has arrived in August 2001.

a. Quantity: 380L

(C) Detergent purchased from Changshu Donghu Chemical Co. has arrived in August 2001.

a. Model: RR

b. Quantity: 4000Kg

Banshen Company has finished retrofitting for 100 existed pumps in September of 2001 and the left 145 PCS have been completed in the end of October 2001. (See Annex 2)

(2). Upgrading of laboratory:

(A) We have signed the contract with our sub-supplier on 1 September 2001 for the upgrade of our laboratory.

a. At the beginning of October 2001, the purchased test equipment arrives at our plant site.

b. 5 October – end of October 2001, installation.

c. Beginning of November 2001, commission, start up and test of equipments.

(B) 2003 October, the upgraded laboratory has been moved to New Main Plant and completed the installation and commissioning work in the end of 2003 Jan. (See Annex 3; Annex 4 is the laboratory test report, 5 pages for 5 models)

Banshen Company itself has carried the cost for these.

3. Financial report:

(1). Purchase 25 PCS new vacuum pump cost 27,542 USD

(2). Ester oil E68N 380L cost 18,865 USD

(3). Detergent 4000Kg cost 5,796 USD

(4). Cost of labor, transportation, spare parts and accessories for retrofitting the vacuum pumps is 15,304 USD

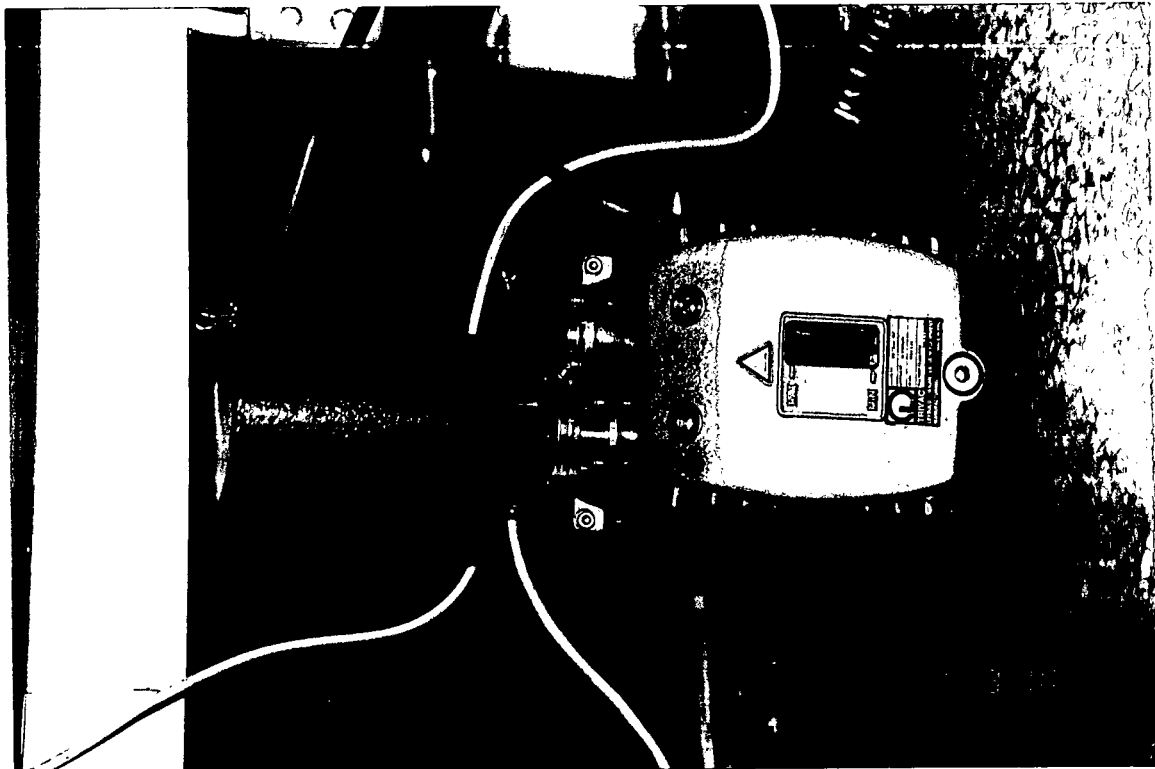
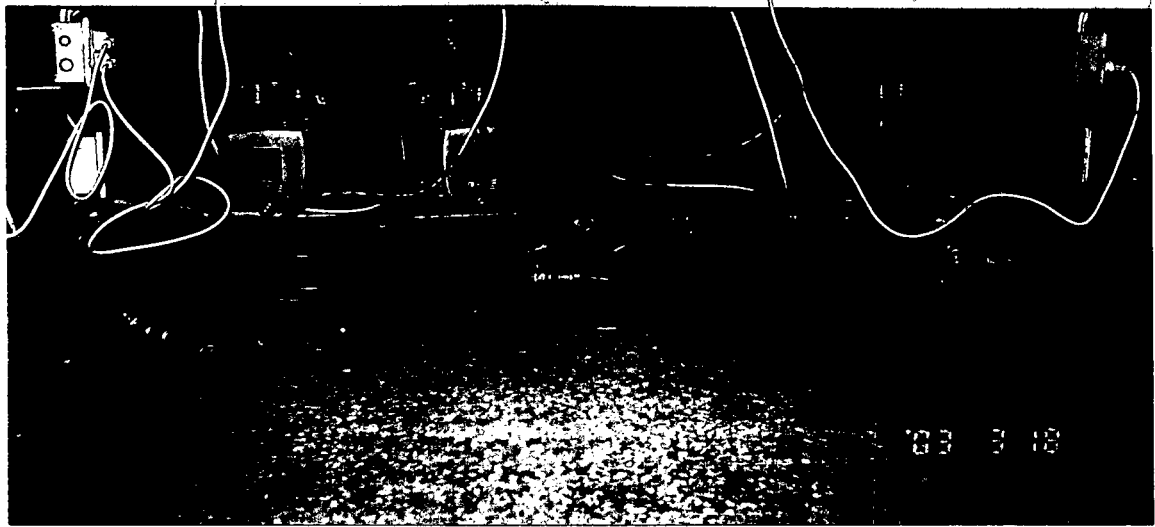
(5). Laboratory upgrading cost 34,672 USD

Totally cost is 102,179 USD.

J. P. R. 3/4-2003

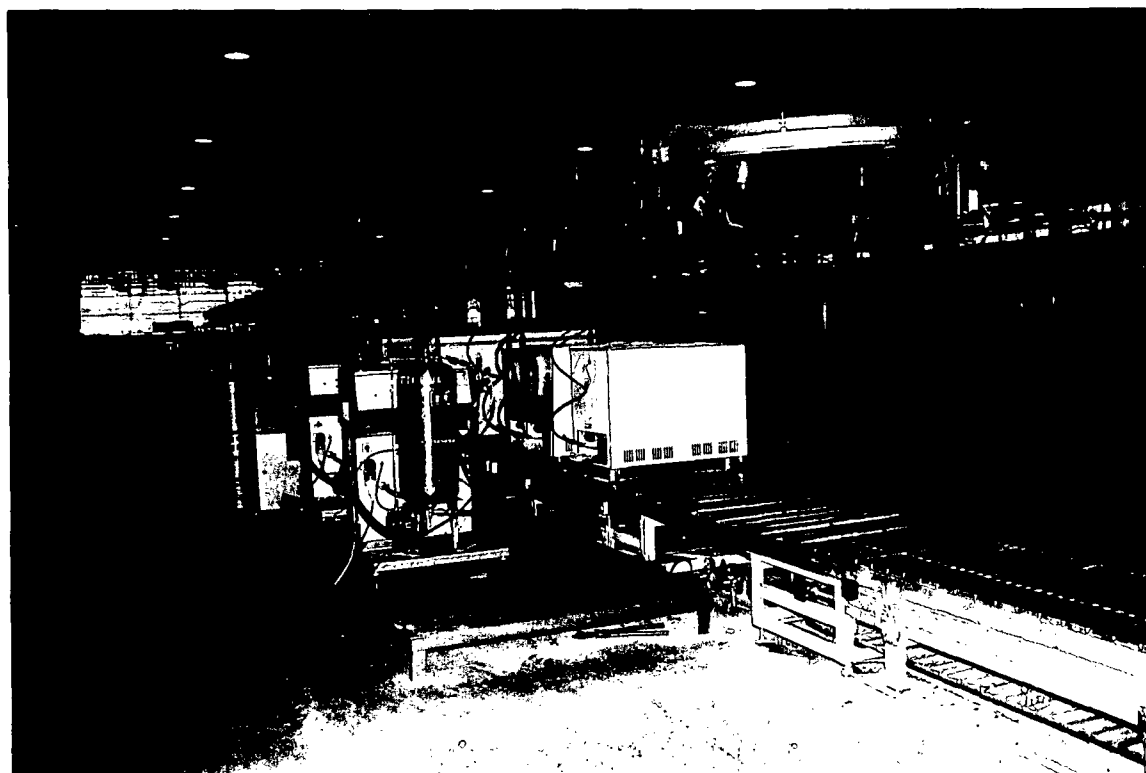
Annex 1

New pumps from Leybold



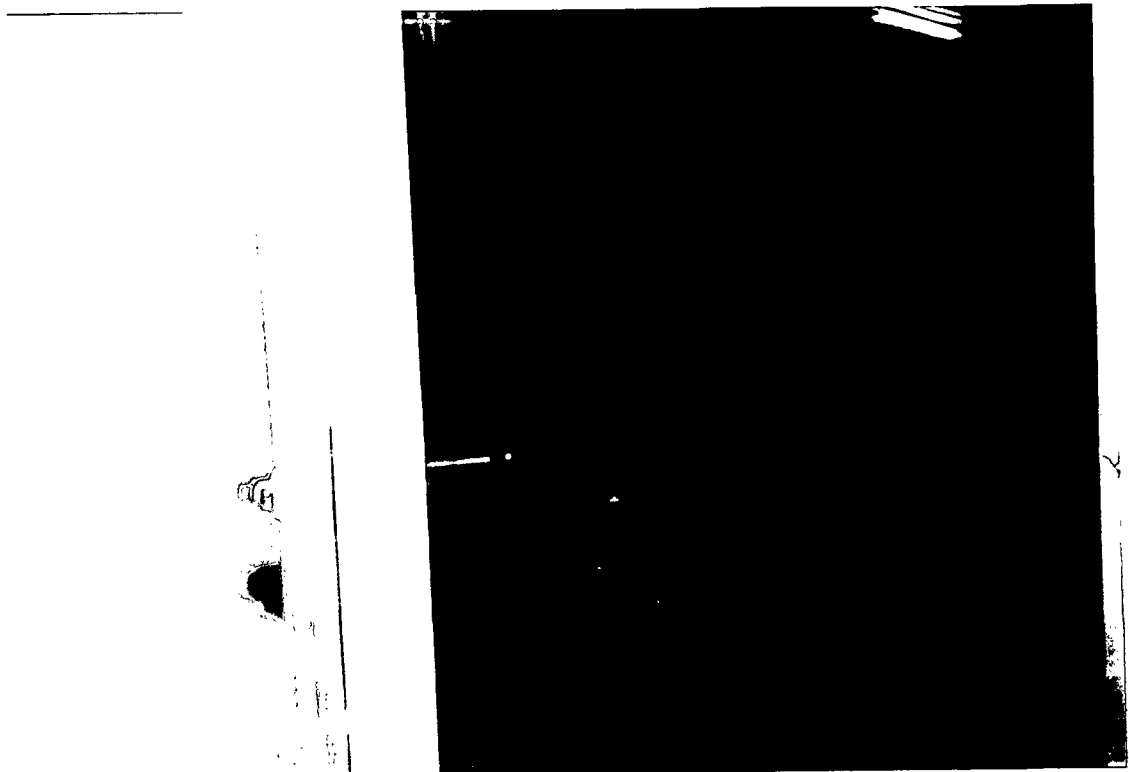
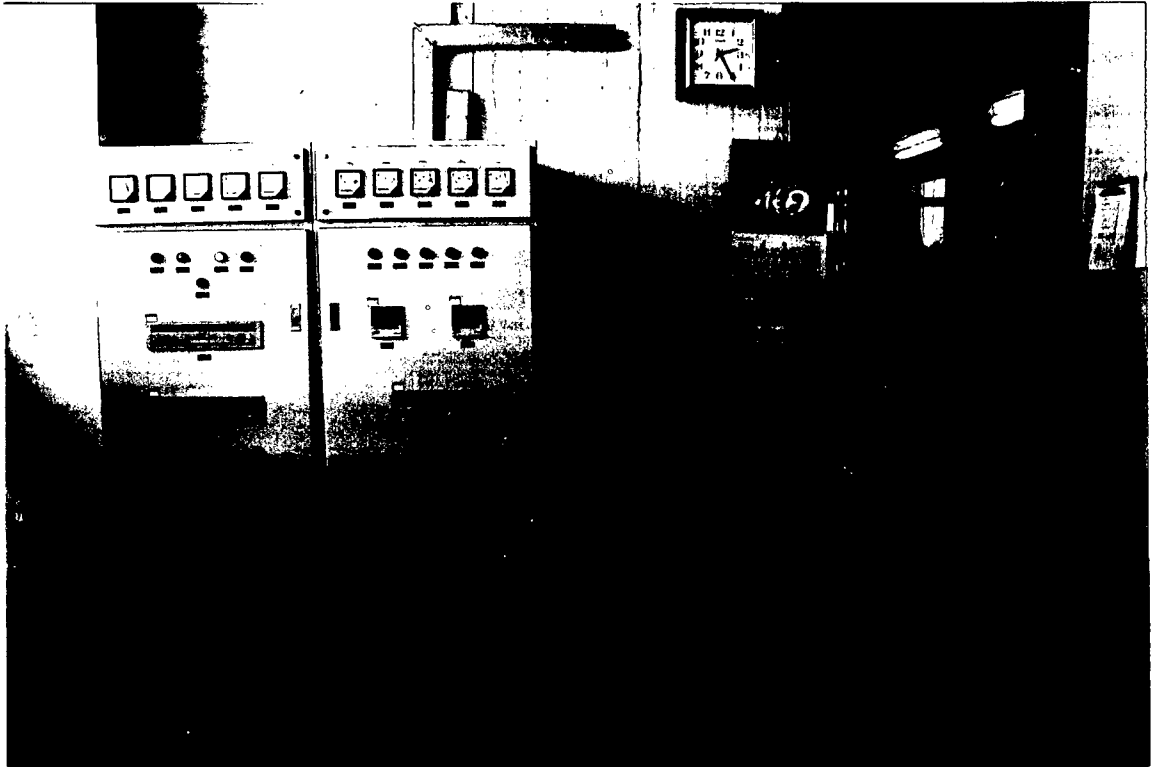
Annex 2

Vacuum pump line



Annex 3

Laboratory



Annex 4

Laboratory testing report

5 pages for 5 models

阪神冷冻箱出厂抽样记录单

规格型号: SD-208

相对湿度: 75%

开始时间: 2003年03月06日 18时12分

编号: 097648

环境温度: 32℃

结束时间: 2003年03月06日 19时40分

序号	温 度 (℃)										
	测试时间	T41	T42	T43	T44	T45	T46	T5	T6	功率	功耗
1	2003-03-06 18:26:17	31.54	31.44	31.41	31.57	31.59	31.59	31.24	37.83	189	001
2	2003-03-06 18:31:27	31.38	31.31	31.31	27.45	28.05	27.23	31.3	-115.22	193	016
3	2003-03-06 18:36:38	30.94	31.08	31.01	11.9	13.4	15.72	31.63	-200	186	031
4	2003-03-06 18:41:48	28.32	29.12	28.7	-8.86	4.48	4.96	31.88	-130.14	163	046
5	2003-03-06 18:46:58	25.6	26.41	26.03	-8.04	-6.83	-2.89	32.08	-200	148	061
6	2003-03-06 18:52:09	23.36	24.09	23.86	-12.67	-11.51	-8.39	32.13	-72.07	139	076
7	2003-03-06 18:57:19	21.61	22.19	22.02	-15.86	-14.74	-12.3	32.12	-136.25	134	091
8	2003-03-06 19:02:30	19.9	20.39	20.21	-18.08	-16.99	-15.06	32.13	-120.2	130	106
9	2003-03-06 19:07:40	18.19	18.67	18.43	-19.62	-18.56	-16.97	32.13	-200	127	121
10	2003-03-06 19:12:51	16.52	17.08	16.68	-20.73	-19.69	-18.41	32.14	42.26	125	136
11	2003-03-06 19:18:01	14.93	15.58	15.11	-21.54	-20.56	-19.48	32.08	28.28	124	151
12	2003-03-06 19:23:11	13.5	14.11	13.65	-22.2	-21.21	-20.32	32.08	-63.65	123	166
13	2003-03-06 19:28:22	12.15	12.78	12.33	-22.71	-21.72	-20.93	32.04	10.62	122	181
14	2003-03-06 19:33:32	10.95	11.56	11.15	-23.06	-22.09	-21.41	32.05	-60.96	121	196
15	2003-03-06 19:38:43	9.87	10.51	10.02	-23.35	-22.41	-21.81	32	98.53	121	211
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											

检验员: 20

气候类型: N

冷凝器:

电气强度: 通过

日期: 03.03.06

制冷剂: R134a

蒸发器:

低压启动: 通过

压缩机:

温控器:

接地电阻: 0.096Ω

泄漏电流: 0.043mA

绝缘电阻: > 50MΩ

阪神冷冻箱出厂抽样记录单

规格型号: BD/BC-190

相对湿度: 75%

开始时间: 2003年02月14日 16时48分

编号: 070575

环境温度: 32℃

结束时间: 2003年02月14日 16时48分

序号	温 度 (℃)										
	测试时间	T35	T36	T37	T38	T39	T40	T3	T4	功率	功耗
1	2003-02-14 13:25:11	32.54	32.46	32.5	32.5	32.41	32.37	31.96	32.1	0	0
2	2003-02-14 13:30:21	30.06	29.62	30.23	29.98	29.95	29.86	32.12	32.34	196	014
3	2003-02-14 13:35:32	21.62	19.76	21.77	19.11	17.94	19.38	32.8	33.11	203	029
4	2003-02-14 13:40:42	11.98	9.46	12.2	.54	.75	3.51	33.2	33.42	191	044
5	2003-02-14 13:45:53	4.01	1.36	4.16	-8.73	-8.82	-7.03	33.26	33.36	169	059
6	2003-02-14 13:51:03	-2.2	-4.56	-2	-13.46	-13.95	-12.7	33.13	33.29	155	074
7	2003-02-14 13:56:13	-6.94	-8.98	-6.73	-16.75	-17.35	-16.2	33	33.05	145	089
8	2003-02-14 14:01:24	-10.6	-12.44	-10.39	-19.18	-19.92	-19.06	32.77	32.88	138	104
9	2003-02-14 14:06:34	-13.58	-15.17	-13.34	-21.15	-21.92	-21.16	32.66	32.72	132	119
10	2003-02-14 14:11:45	-15.99	-17.48	-15.75	-22.81	-23.6	-22.98	32.59	32.67	128	134
11	2003-02-14 14:16:55	-17.98	-19.29	-17.73	-24.12	-24.94	-24.32	32.45	32.55	124	149
12	2003-02-14 14:22:06	-19.63	-20.87	-19.39	-25.25	-26.1	-25.51	32.36	32.41	121	164
13	2003-02-14 14:27:16	-21	-22.16	-20.76	-26.19	-27.05	-26.52	32.16	32.28	119	179
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15	2003-02-14 14:37:37	-23.15	-24.14	-22.89	-27.7	-28.54	-28.09	32.09	32.2	0	208
16	2003-02-14 14:42:47	-22.75	-23.4	-22.51	-24.5	-26.21	-26.24	31.89	31.99	0	208
17	2003-02-14 14:47:58	-21.74	-22.23	-21.51	-22.05	-23.51	-23.68	31.81	31.96	113	22
18	2003-02-14 14:53:08	-22.11	-22.57	-21.76	-21.23	-22.98	-22.9	31.85	32.09	116	235
19	2003-02-14 14:58:19	-22.72	-23.44	-22.46	-25.33	-25.8	-25.13	31.95	32.12	115	25
20	2003-02-14 15:03:29	13.88	12.71	12.5	14.35	11.16	13.35	24.84	22.74	0	251
21	2003-02-14 15:08:40	26.18	25.79	26.08	26.39	24.66	25.56	28.68	28.16	0	251
22	2003-02-14 15:13:50	28.47	28.4	28.01	25.61	24.39	25.55	29.84	29.15	0	251
23	2003-02-14 15:19:00	29.7	29.92	29.18	27.21	26.07	27.03	30.64	30.08	0	251
24	2003-02-14 15:24:11	30.14	30.52	29.67	27.88	26.75	27.71	30.81	30.29	0	251
25	2003-02-14 15:29:21	30.39	30.8	29.92	28.19	27.06	28	30.95	30.39	0	251

检验员: 20

气候类型: N

冷凝器:

电气强度: 通过

日期: 03.02.14

制冷剂: R134a

蒸发器:

低压启动: 通过

压缩机:

温控器:

接地电阻: 0.096Ω

泄漏电流: 0.044mA

绝缘电阻: > 50MΩ

阪神冷冻箱出厂抽样记录单

规格型号: BD/BC-138

相对湿度: 75%

开始时间: 2003年03月18日 13时37分

编号: 135703

环境温度: 32℃

结束时间: 2003年03月18日 15时31分

序号	温 度 (℃)										
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3	2003-03-18 14:05:31	23.93	23.52	22.67	20.71	21.03	19.95	27.95	28.11	125	031
4	2003-03-18 14:10:41	16.22	15.46	14.32	11.44	12.08	10.67	27.75	27.89	127	046
5	2003-03-18 14:15:52	8.48	7.28	5.86	3.09	3.47	2.37	27.51	27.64	127	061
6	2003-03-18 14:21:02	1.62	.22	-1.42	-4.22	-4.34	-4.58	27.37	27.49	122	076
7	2003-03-18 14:26:12	-3.85	-5.39	-7.03	-9.5	-9.28	-9.84	26.78	26.99	110	091
8	2003-03-18 14:31:23	-8.32	-9.85	-11.41	-13.65	-13.14	-13.78	26.77	26.89	104	106
9	2003-03-18 14:36:33	-11.73	-13.2	-14.6	-16.59	-15.9	-16.64	26.84	26.91	100	121
10	2003-03-18 14:41:44	-14.47	-15.92	-17.2	-18.86	-18.1	-18.94	26.76	26.82	96	136
11	2003-03-18 14:46:54	-16.74	-18.16	-19.3	-20.77	-19.98	-20.79	26.75	26.79	93	151
12	2003-03-18 14:52:05	-18.64	-20	-21.02	-22.35	-21.5	-22.32	26.65	26.7	90	166
13	2003-03-18 14:57:15	-20.29	-21.51	-22.5	-23.71	-22.79	-23.62	26.61	26.62	88	172
14	2003-03-18 15:02:25	-21.56	-22.72	-23.65	-24.74	-23.86	-24.74	26.56	26.59	87	172
15	2003-03-18 15:07:36	-22.31	-23.26	-24	-24.87	-23.39	-24.7	26.45	26.51	0	172
16	2003-03-18 15:12:46	-20.72	-21.37	-21.77	-22.37	-20.34	-22.04	26.38	26.39	92	176
17	2003-03-18 15:17:57	-20.29	-20.89	-21.23	-21.68	-20.27	-21.6	26.33	26.36	85	176
18	2003-03-18 15:23:07	-21.17	-21.83	-22.21	-23.09	-22.09	-23.1	26.38	26.38	85	176
19	2003-03-18 15:28:18	-22.44	-23.14	-23.68	-24.56	-23.74	-24.59	26.35	26.35	0	176
20											
21											
22											
23											
24											
25											

检验员: 20

气候类型: N

冷凝器:

电气强度: 通过

日期: 03.03.18

制冷剂: R134a

蒸发器:

低压启动: 通过

压缩机:

温控器:

接地电阻: 0.097Ω

泄漏电流: 0.043mA

绝缘电阻: > 50MΩ