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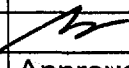
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	PLANT	PHASE OUT OF CFCs AT ELETROFRIO BRAZIL
	CUSTOMER CONTRACT N. JOB N.	ELETROFRIO 97/107 2297220040

# PHASE OUT OF CFCs AT ELETROFRIO BRAZIL

## FINAL REPORT


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0	19/12/2000	FIRST ISSUE	M.BARALE		
Revision	Date	Description	Drafted by	Checked by	Approved by

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## 1. INTRODUCTION

With the present document The Contractor wants to describe the works performed at the plant site for the conversion of Eletrofrio S/A to phase out the use of CFC11 in the production of Commercial Refrigeration Equipement

Here below it is briefly summarised the activities performed under the Contract step by step according to The terms of Reference

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**2- VISIT TO THE PROJECT SITE ,LAY OUT OF THE PLANT AND WORK PLAN (STEPS 1, 2, OF THE TERMS OF REFERENCE)**

After the award of the order, the Contractor visited the Counterpart on December 10<sup>th</sup> and 11<sup>th</sup> 1997 in order to verify the conditions of the site and to identify the best engineering solutions for the conversion of the existing foaming lines.

During the visit, the Contractor discussed and checked with the Counterpart the following main subjects:

A - Technical details regarding the supply of the equipment; in particular The Contractor emphasised the Premix Unit, the Polyol and Isocyanate Module, Safeties of the plant (as i.e.: gas sensors, exhaust system with fan groups), cyclopentane storage tank and relevant accessories .


B - The suitable site where the new equipment had to be installed and the required modification to the new layout.

Regarding the C5 storage tanks, the Contractor inspected and defined the area where it had to be positioned.

C.- The work plan of the project

After the visit the Contractor prepared the first progress report( January 1998) including the preliminary lay-out and the Basic requirements and specifications for the site Preparation.

The first progress report covered all the subjects listed during the discussion and gave to the Counterpart, as much as detailed as possible at that phase of the project, a list of all the works and materials to be provided by them.

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### **3 TECHNICAL SPECIFICATION AND ENGINEERING DESIGN FOR THE PLANT ERECTION AND IMPLEMENTATION OF THE SAFETY STRATEGY (STEPS 3÷5 OF THE TERMS OF REFERENCE)**

In July 1998<sup>1</sup> the Contractor provided the Final Technical Documentation for the Conversion of the plant.

The above mentioned documentation included the following kind of detailed drawings and specifications:

- civil works for the storage tank and foaming line
- grounding of the equipment
- piping arrangements and support details
- piping sketches
- box building construction
- ventilation construction
- cable run lay-out
- gas sensor positioning
- electrical drawings
- safety requirements

All the documentation was discussed with the Counterpart and some modifications have been agreed during the next period.

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#### **4. DELIVERY OF EQUIPMENT, INSTALLATION, COMMISSIONING, TRIAL PRODUCTION OF THE FIRST MODELS, TEST RUN OF PRODUCTION( STEPS 6÷9 OF THE TERMS OF REFERENCE)**

In July 1998 all the new equipment have been shipped.

Due to production problems of the Counterpart , the installation started only in May 1999 .

The Contractor engineers followed the installation phase including the supervision of the job at Counterpart charge.

The Contractor actions basically concerned the following zone of the modified plant:




- Cyclopentane storage tank area
- Wet area
- Process fluid connection piping between wet and dry area
- Cabinets /doors foaming area
- Safeties of the plants ( ventilation system, fire fighting system et cetera)

The installation phase was completed in March 2000

After the installation, the Contractor performed the Commissioning and start-up phase of the modified plant in accordance with the contract.

The commissioning , trial production and test run phases mainly concerned the following operations:


- Pneumatic and Electric circuit check
- Grounding check
- Flushing of the tanks and the piping with nitrogen
- Pressure test
- Check of the operating sequences
- Operating test
- Service simulation test
- Setting start-up parameters
- Foaming quality check

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- Performance test

The training on the job activities has been carried out at the beginning of commissioning phase (March 2000)

In April 2000 the commissioning phase was completed and the Counterpart started the production of the first models of freezers with cyclopentane as blowing agent

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## 5. SAFETY INSPECTION AND CERTIFICATION, FINAL REPORT

The safety inspection has been performed in April 2000 by TUV ULM; the TUV final report has been issued in December 2000.

TUV original certificate will be issue only after the confirmation by Eletrofrío. of installation of the new jigs.