



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

23401

CAMEROON RMP

**PROJECT: MP/CMR/02/146 – AMENDMENT A TO UNIDO
CONTRACT No. 04/135, DRAFTED ON AUGUST 14, 2006**

FINAL REPORT

A. Upgrading of trainers in good refrigerant management practice

- **Necessity for additional national trainers for the project:**

Overall objectives:

- To improve the training standards across the country which are not adequate;
- To reduce the impact resulting from CFCs losses due to poor handling techniques and absence of appropriate equipment.
 - Number of national trainers certified: 8
 - Number of service technicians in the country: 1000
 - Target number of service technicians to be trained as per contract in reference: 150
 - Number of service technicians trained: 150
- **Target group for national trainers:**
 - Tutors in technical colleges, teacher training colleges offering refrigeration, polytechnic, and technical universities
 - Professionals in the cold chain industries

B Establishment of training centres

- **Location for national training centres**

Three training centers have been established in the following :

- Lycee Technique du Nkolbisson

- Lycee Technique du Charles Atangana
- Lycee Technique du Ekounou
- Each center offers formal training in refrigeration ;
- Have trained personnel in refrigeration technology practices;
- Have interest in the training trainers project and willing to accept short listed technician for training;
- Provided space and security of project equipment (Recovery and recycling) equipment provided

C National technicians training

Date of First Training workshop: 16 - 19 January 2007

Venue: Government Technical High School, Nkolbisson

Number of participants: 93

Programme of activities included: opening, theory, hand-on training, award of certificates, and closing sessions.

Date of Second Training workshop: 13-16 March, 2007

Venue: Government Technical High School Ekounou

Number of Participants: 64

Programme of activities: opening, theory, hand-on training, award of certificates, and closing sessions.

The opening ceremonies were widely broadcast through radio, TV and newspapers. The Recovery and Recycling equipment and accessories for the workshop was visited by the mass media for national news coverage and by national officials.

The workshops were held in 8 sessions, each day having two sessions, with one buffet and two coffee breaks.

The tutors for the training sessions included:

Mr. ZEBAZE David, Expert in refrigeration technology,
 Mr. LINDJECK Patrice, Expert in refrigeration technology,
 Mr BOULOLOGO Delphine, Expert in Refrigeration technology
 Mr ACHERE Mathias Oben, Expert History of ozone protection and legislation.

During the workshops, the following topics were covered:

- *A general introduction of ozone issues,*
- *Government regulations,*
- *Refrigeration technology with new alternative refrigerants, market trends,*
- *Lectures on recovery and recycling technologies,*
- *Hands-on training of recovery and recycling machines,*
- *Other items relevant to the refrigerant recovery and recycling technologies.*

The first sessions started with pre-test evaluation forms presented in French and English to evaluate the knowledge of participants . The training programme was reviewed based on the information collected from participants and adopted. Each day hand-out in French and English were distributed to participants.

During the practical sessions, the assembly of recovery and recycling machine and accessories were demonstrated . The instruction manual was translated in French was provided to participants in bags for future reference.

A certificate was prepared with the logos of the Ministry and UNIDO, that was signed by the Minister of Environment and Nature protection. Three evaluation tests were held during the training sessions and the performance of each participant was read during the closing ceremony.

The closing ceremonies were attended by the representative of the Minister of Technical Education who participated in the issuance certificates to successful participants.

At the end of the workshop a national network for used refrigerants was created.

Report of the last workshop is here attached.

**SECOND WORKSHOP ON THE TRAINING OF SERVICE
TECHNICIANS IN GOOD REFRIGERATION
MANAGEMENT PRACTICES FOR THE REFRIGERANT
MANAGEMENT PLAN,mp AMENDMENT A,
CONTRACT, No. 04/135,
PROJECT No. MP/CMR/02/146**



**REPORT OF THE SECOND TRAINING WORKSHOP FOR SERVICE
TECHNICIANS IN GOOD REFRIGERATION MANAGEMENT PRACTICES,
LYCEE TECHNIQUE EKOUNOU CAMEROON
13-16 MARCH 2007**

The training workshop for service technicians on good refrigeration management practices was held at the conference hall of Government Technical High School, Ekounou, from 13-16 March, 2007. The workshop was organized by the Ministry of Environment and Nature Protection with the collaboration of the United Nations Industrial Development Organization (UNIDO).

The workshop was attended by 60 participants drawn from refrigeration service shops nation wide and some institutions offering courses in refrigeration. The list of participants is here attached.

The programme of activities included opening, theory, hands-on training, award of certificates and closing sessions.

The workshop was aimed at building capacities of refrigeration technicians in good refrigerant practices as required by the Montreal Protocol on substances that deplete the ozone layer. Furthermore the training is expected to enhance good servicing and business practices in the refrigeration sector, assisting the sector to switch over to non-CFC equipment in a smooth way without causing unnecessary burden to the consumers.

The workshop started on 13 March, 2007 at 9:00 am with the arrival and registration of trainees.

Opening statements at the workshop were presented by the Director of the Technical High School Ekounou, who expressed his appreciation to the Government and UNIDO for organizing the training on improving skills of refrigeration technicians. His presentation was followed by that of the Coordinator of the Ozone Office who expressed thanks to the participants. The official opening address of the Minister of Environment and Nature Protection, H.E. Mr. HELE Pierre was presented by the Secretary General, Mr. AKWA Patrick KUM. In his opening remarks he thanked the international community and UNIDO for their continued cooperation with the Government of Cameroon in promoting ozone layer protection issues. He called on the

participants to take the workshop seriously as the skills of good refrigerant management practices are required for the protection of the ozone layer that protects life on earth.

The opening ceremony was widely broadcasted through national and provincial radio stations, TV and newspapers. The laboratory established at Ekounou for the workshop was visited by officials and mass media representatives followed by a television slot and interview in which appreciation for the equipment and workshop were expressed. With a special television slot highlighting the equipment prepared

The tutors for the training workshop included:

Mr. ZEBAZE David, Expert in refrigeration technology,
Mr. LINDJECK Patrice, Expert in refrigeration technology,
Mr BOULOLOGO Delphine, Expert in Refrigeration technology
Mr ACHERE Mathias Oben, Expert History of ozone protection and legislation.

The workshop was held in eight sessions, each day having two sessions, two coffee breaks and a buffet. Training manual on good refrigeration management practices as well as different working materials were used as resource documents and passed on to the trainees for future references and studies. In starting the course, the participants were briefed on the objectives and the outcome of the previous training. Each day handouts in English and French were distributed to the participants

The following topics were covered during the course;

- A general introduction of ozone issues,
- Government regulations,
- Refrigeration technology with new alternative refrigerants, market trends,
- Lectures on recovery and recycling technologies,
- Hands-on training of recovery and recycling machines,
- Other items relevant to the refrigerant recovery and recycling technologies.

At the start of the course the trainees were required to take a pre-test evaluation in English and French to evaluate the knowledge of participants. The training was then reviewed based on the results obtained and the course adopted. In all sessions, the animators promoted participatory learning in order to encourage a wider comprehension of the course. This was followed by a series of theoretical sessions on the principles and practice of good refrigeration.

Thursday the 16 March, 2007 was devoted to practical or hands-on training session. Participants were conducted on:

- The use of the ODS identifier machine (RI2002PA)
- Recovery and recycling equipment, KENOMAC-2G and the "VAN STEENBURGH RV220 (VS RV220)". The use in terms of recovery, repair, evacuate, recharge and set into operation. The trainees were

exposed to various equipments that could be used to minimize loss of refrigerants and to eliminate venting and as well as the proper handling of tools in the field of refrigeration and air-conditioning repairs.

A final assessment exam was conducted after the practical training session. Although its results were not quite satisfactory, the trainers were motivated by the improvement realized in terms of increasing performance at the different examinations, demonstrating that the course was well digested by the participants. The results of these examinations were used as a measure to award certificates of participation to the trainees. At the end of the workshop, time was allocated for discussions between the participants, the facilitators and the national Ozone office.

Friday, 16 March, 2007 marked the end of the course. The closing ceremony was characterized by speeches, certificates award to 90 participants, souvenir photographs and a lunch.

The Principal of Government Technical High School, Ekounou in his closing statement expressed much joy and satisfaction for a successful workshop and for choosing his school as a training center for good refrigerant management practices. He pledged to cooperate in the implementation of activities in this sector. His statement was followed by a declaration from the trainees with special thanks to the National Ozone Office, the Government of Cameroon and the International Community especially the Multilateral Fund and UNIDO for according them the opportunity to receive sound training in good refrigeration management practices.

The representative of the trainees, Mr. Mbaraga in concluding statement requested on behalf of the trainees requested that more fund be provided to the National Ozone Office to organize very often this type of training, for they are helpful in their daily professional practice and the protection of the environment.

In reply to the declaration of the trainees, Mr. ENOH Peter congratulated them for their brilliant performance and counseled them to use the acquired knowledge and skills in their various establishments to promote and assist the government in its fight to eliminate consumption of ODS. He also thanked the school and its administration for their hospitality. He said the workshop was just the beginning of a series of workshops that targets the training of refrigeration service technicians nation-wide and that it was the beginning of an extension mission to disseminate information on good refrigeration management practices so that they too can contribute in the struggle to reduce CFC emissions to the atmosphere.

The closing statement of the workshop was delivered by the representative of the Minister of Environment and Protection of Nature Mr. Akwa Patrick Permanent Secretary of the Ministry who thanked the organizers and participants of the training workshop and re-affirmed Government's determination to stay in compliance with the obligations of the Vienna Convention, the Montreal Protocol and its Amendments.

REPUBLIQUE DU CAMEROUN

REPUBLIC OF CAMEROON

Paix – Travail – Patrie

**MINISTERE DE L'ENVIRONNEMENT ET DE
LA PROTECTION DE LA NATURE**

SECRETARIAT GENERAL

**DIRECTION DES NORMES ET DU
CONTROLE**

BUREAU NATIONAL DE L'OZONE

Peace – Work – Fatherland

**MINISTRY OF ENVIRONMENT
AND NATURE PROTECTION**

SECRETARIAT GENERAL

**DEPARTMENT OF STANDARDS
AND CONTROL**

NATIONAL OZONE OFFICE



**Atelier de formation des techniciens de froid aux bonnes
pratiques de gestion des réfrigérants, Lycée Technique
d'Ekounou,
13-16 March, 2007**

N°	NOMS ET PRENOMS	ADRESSE
	DOUALA	
1.	BONDI TSIMI	ETS TALESS FROID ET COMPAGNIE
2.	AMATABINA FRANCINE LAURE	FROIDCAM DOUALA
3.	CHOUPO TCHUENTE HUGUES	FROIDCAM DOUALA
4.	BOAH NOEL SYMPHORIEN	ETS NEMALIEU FROID
5.	JIEUTEU PETER STEPHEN	FROIDCAM DOUALA
6.	KALI YOLANDE	FROIDCAM DOUALA
7.	FOGANG NDEFFO BRICE	ETS NEMALIEU FROID
8.	HANMBOCK RAPHAEL	FROIDCAM DOUALA
9.	KAMGANG TCHOUAPE OLIVIER	FROIDCAM DOUALA
10.	ATANGANA TSANGA FELIX	ETS LIHEP DOUALA
11.	BISSUE SIMON DESIRE	ETS LIHEP DOUALA

12.	DOOH ALBAN HERMANN	ETS AFT DOUALA
	LIMBE	
13.	MAGA FILS RICHARD	
14.	MAGAING NGUIATE CLEMENCE	ETS NEMALIEU FROID
15.	GOUNOU TECTUENG EDWIGE	
16.	MATIKE NKARE FLORENT	
	KUMBA	
17.	MBALLA GENEVIEVE NADINE	SAM'S SHOP
18.	MADI ZOURBA	PHIL & CO STORE
19.	NDZIE NKOLO ALAIN GEORGE	PHIL & CO STORE
20.	OUM BINJAMIN	
21.	OUEDOGO	
	YAOUNDE	
22.	POUTOUGNIGNI EMMANUEL	STE FOKOU YAOUNDE
23.	SOH KENGNE ROLAND	STE FOKOU YAOUNDE
24.	TAKOUGANG KUETE SERVAIS	ETS RENO MEGA YAOUNDE
25.	TAGUETIEU ERIC GHISLAIN	STE FOKOU YAOUNDE
26.	SAMSON MPINDA	STE MILLENAIRE YAOUNDE
27.	TACHE KUIATE ERNEST DUTRO	STE CONGELCAM YAOUNDE
28.	ZEBE MESSANGA PASCAL GERMAIN	STE MILLENAIRE YAOUNDE
29.	TIKI ALAIN BRICE	STE MILLENAIRE YAOUNDE
30.	WEMBE DAVID	STE FOKOU YAOUNDE
31.	NANFACK JEAN PAUL	STE CONGELCAM YAOUNDE
32.	NDJOMGOUE JOSEPH	ETS RENO MEGA YAOUNDE
33.	NEMBOU NGALLE ANDREA MAXIME	STE FOKOU YAOUNDE

	KRIBI	
34.	NDZIE NKOLO ALAIN GEORGE	STE CONGELCAM KRIBI
35.	NDOKI ETONDE NDOUMBE JEAN	ETS CLIMAST KRIBI
36.	NGO NDIKI ODILE	CAMINFROID KRIBI
37.	NDEMANOU MARTEL	CAMINFROID KRIBI
	MBALMAYO	
38.	MAGAING NGUIATE CLEMENCE	ETS CLIMAST
39.	EKWALLA EWANE	
40.	FEGUE ELYSEE BERTRAND	ETS CLIMAST
41.	BIKOK GNYENGUE JEAN MARIE	
42.	BADJECK ROBERT FEERDINAND	
43.	BADJECK ROBERT FEERDINAND	
44.	ETOGO ADALBERT GHISLAIN	
	BERTOUA	
45.	FEGUE ELYSEE BERTRAND	CLIMFEP BERTOUA
46.	BOUSSIOMO STEVE BERTRAND	ETS AFT BERTOUA
47.	BOUSSIOMO STEVE BERTRAND	ETS AFT BERTOUA
48.	ESSOLA WUMEN GAEL	ETS AFT BERTOUA
49.	AMILENE REBECA	ETS FOKOU BERTOUA
50.	KOMPIDIA TIAKO ALEX	LIFROICAM BERTOUA
	EBOLWA	
51.	MBOUM ALEXANDRE	STE FOKOU
52.	MAGA FILS RICHARD	ETS CLIMAST
53.	MATIKE NKARE FLORENT	CLIMFEP YAOUNDE
54.	TSALA MVONDO RAPHAEL	ETS AFT

55.	TCHOULA KAMEDJE GEDEON	
56.	WATA A NANG AIME PATRICE	ETS CLIMAST
57.	TSHOMB NGUIDJO PHILIPPE	
58.	ONGUENE MENYE JEAN BAPTISTE	ETS CLIMAST
59.	ONGUENE ANGOULA STEPHANE	ETS KOLOL ET CIE
60.	KAMTO ISIDORE	
61.	NGO NDIKI ODILE	
62.	NGONO BENOIT JOEL CORNEIL	
63.	NKOUSSA BELIBI PAUL	