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**FINAL REPORT OF THE PROJECT RELATING TO THE  
TRAINING OF TRAINERS IN GOOD REFRIGERANT  
MANAGEMENT PRACTICES.**

**UNIDO CONTRACT NO: 02/176**

**PROJECT NO: MP/OMA/01/146**

**ACTIVITY CODE: 460D31**

**INTRODUCTION:**

In accordance with the requirements of sub-paragraph 2.05(d), clause no: 2.05 and clause no: 2.01 of the contract no: 02/176, this final report is prepared to highlight the successful completion of various activities and achieving the objectives as laid down in this project documents, e.g., Terms of Reference and contract contents of this project.

The campaign was initiated to identify the technicians, resource persons and technical facilities in local technical colleges. The public awareness ODS phase out and refrigeration management Plan(RMP) was created among the general public, particularly, the workshop technicians who are involved in the replacement and charging operations for R12, R11(for cleaning & purging purposes) and R34a etc.

Survey to various workshops were carried out by NOU officials to evaluate the technical skill levels of these technicians and possibilities to improve their skills for such practices by providing them further training in this field so that there should not be any release of ODS or refrigerants during replacement or charging of such substances in MACs or stationary sources.

In order to train the trainers who can provide further training to these workshop technicians, academically and technically qualified personnel were identified in the local technical colleges in various regions as well as the private companies dealing with these substance which were found to have trained technicians and basic training facilities.

Two workshops were conducted for the training courses involving the UNIDO experts, project manager(Mr.Ahmed Malayeri), Montreal Protocol Branch, UNIDO along with the trainees/trainers.

## **TRAINING COURSES AND ACTIVITIES CARRIED OUT DURING THIS PROJECT PERIOD:**

The training program included class room presentation, practical demonstrations(60%) and hands on training. Following course contents(broadly) were covered in this training program:

- 1) *Background to Ozone Layer, chemistry of Ozone Layer depletion and its causes, the Vienna Convention, the Montreal Protocol and its amendments, the freeze and phase- out requirements for ODS/CFCs.*
- 2) *Why the Refrigeration sector is important*
- 3) *Leaks detection, replacement/recharging of refrigerants, how to avoid the fugitive releases of refrigerants during the replacement and recharging operations.*
- 4) *Installation of Equipment.*
- 5) *System operation and maintenance.*
- 6) *Preventive inspection and maintenance.*
- 7) *Properties of different refrigerants and lubricants.*
- 8) *Proper handling and storage of refrigerants.*
- 9) *Safety requirements.*
- 10) *Retrofitting, redesign and alternatives.*
- 11) *Equipment demonstration and hands on training in the proper use of equipment for recovery and recycling machines.*
- 12) *Discussion on the existing Regulations in Oman for the Control and Management of Ozone Depleting Substances, Ministerial Decision: 37/2001. How Oman Government can meet its objectives under the Montreal Protocol.*
- 13) *Discussion on developing the national code of good practices in the refrigerants management plan.*

14) Question and answer session for the workshop participants.

15) Distribution of Certificates to the successful participants.

### **OUTCOME ACHIEVED:**

a) Number of Certified participants: 57

It includes technical teachers from vocational/technical training colleges, engineers/technicians from the companies dealing with refrigerants distribution/storage management. All these participants(trainers) already have basic theoretical and technical training related to the practical maintenance business in refrigeration and air conditioning systems in Oman.

b) These trainers will be responsible to act as instructors/trainers to train other instructors/technicians from the other vocational training Centers/ workshops in various regions in Oman.

c) Established the regular use of good refrigerants management services and maintenance practices for using ozone friendly substances and correct handling of new replacement refrigerants.

### **SUPPORT AND FOLLOW UP ACTIONS(POST TRAINING MONITORING ACTIVITIES & EVALUATION OF TRAINERS PERFORMANCE):**

1) NOU is supporting the training centers efforts to ensure the ongoing training program for the technicians in the country and monitoring the progress of the outcome of this project.

2) NOU is monitoring the Service Companies progress in complete phasing-out the CFCs.

3) The public awareness campaign for refrigerants phase-out is be followed up by mass contact program, brochures, lectures, media(print as well as electronic) presentations.

- 4) The Regulations for the control and management of Ozone Depleting Substances(ODS) have been updated to enhance the efficiency of the system in order to achieve the compliance target for ODS phase out in accordance with the requirements of Montreal Protocol and the objectives of this project.
- 5) The Licensing/certification procedures for service companies are planned.
- 6) The NOU is monitoring the efficient operation of the refrigerants equipment distributed to the training centers in order to ensure their optimum usage.
- 7) It is being ensured that the Service Companies and Workshops dealing with the refrigerants must have the trained(certified) technicians.
- 8) NOU is coordinating with the custom officials in order to prevent the illegal trade of ODS in Oman by providing them latest technical information and public awareness material from time to time in order to improve their(custom officers) detection efficiencies for illegal ODS import and thereby developing the institutional strengthening national capacity building in this sector.

## **CONCLUSIONS:**

The objectives of this project have been successfully achieved and the follow up action and monitoring progress of the outcome products of this project are being monitored in accordance with clause 2.01 and 2.05 of contract no: 02/176 and TOR of project:  
MP/OMA/01/146