



NATIONAL CFC CONSUMPTION PHASE-OUT PLAN FOR THE REFRIGERATION SERVICE SECTOR
A project of the Government of India in collaboration with the Government
of Germany, the Government of Switzerland, UNEP, UNDP and UNIDO

Report on
Refresher Workshop for Trained Trainers
at Delhi
under NCCoPP Project

August 31 – September 3, 2006

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1. Introduction

A Refresher Workshop for Trained Trainers was conducted at IIT Delhi under NCCoPP project from August 31 to September 3, 2006. The key objective of the Workshop was to enhance the understanding of the trained trainers on the topics covered in the RSE training as well as to provide knowledge about good service practices and retrofitting of MAC & OTC (Ice-candy plants). The trained trainers were drawn from the training cells and industry partners who will be conducting training programmes during this calendar year as well as in the subsequent years. ***The trainers were drawn from the training cells like Chandigarh, Madhya Pradesh, Rajasthan, Uttar Pradesh, Bihar, Orrisa, Assam (North East), Gujarat, Maharashtra and Industry partner (Whirlpool).*** Another objective was to strengthen the practical aspects for RSE training as well as MAC servicing and retrofitting. The trainers were given hands-on practice on both appliances as well as car air-conditioner.

This report briefly summarises the salient features of the Refresher Programme.

2. Faculty and Programme Outline

The lead faculty for the programme was Prof. R. S. Agarwal, IIT Delhi. He was supported by Mr. Anshu Wadhwa (Chandigarh Cell). The practical sessions were also supported by Mr Mata as well as Technical staff of IIT Delhi and SGTB. The Workshop program was especially developed to meet the requirements of the trained trainers. The Programme Schedule is given in Appendix A of this report.

3. Participants

A ***total of 14 trainers from different training cells*** attended the workshop. These included two trainers each from Madhya Pradesh, Orrisa & Assam and one each from Chandigarh, Rajasthan, Uttar Pradesh, Bihar, Gujarat & Maharashtra. In addition, there were one trainer from Industry (Whirlpool) and one from Centre for Interactive Management India (CIMI).

Appendix B also gives the participants details.

4. Training Material

The workshop folder provided to the participants included: (a) MAC technician handbook, (b) A CD containing updated slides on MAC & OTC and (c) other relevant material like ECO-COOL etc.

5. Programme Methodology

The program methodology was evolved through consultations among Prof. Agarwal, Mr. Stefan Kessler (INFRAS) and Ms. Smita Vichare (GTZ) for the refresher program of trained trainers.

An innovative approach was followed to develop the workshop program. A session was conducted on the first day of the workshop to identify the topics in which most of the participants were looking for inputs and detailed discussions. The topics identified were taken for further discussions. A similar approach was also used for RSE part of practical session. The sessions were organised in an interactive mode so that the trainers can draw maximum benefit and

overcome their short comings This would help the trained trainers in better understanding of the subject and it is expected that it would improve the quality of future training programmes.

The MAC and OTC standard programmes were followed including the hands-on practice and visit to retrofitted ice-candy plant with HCFC-22. Further the topics like maintenance of evacuation & charging unit, recovery machine and introduction to reclamation centres were discussed in detail. The participants were also updated on the status of CFC phase out in India.

The last day (day 4) was devoted for presentations by the participants. Each participant was given a topic out of the RSE, MAC and OTC topics to present. The topics were assigned one day earlier so that they have time to prepare. I am happy to mention that most of the trainers presented well and answered to most of the questions put to them. This gave further opportunity to clarify some of their doubts and also to address frequently asked questions.

6. Participants Feedback

The programme received excellent feedback from the participants. On most of the parameters, the rating of the Refresher programme by the participants was rated very good to excellent.

Generally, all participants were happy with facilities at the classroom and the practical classes in the workshop. The feedback on duration and clarity/ understanding of almost all lectures was positive. There were no negative feedback on training methodology, daily revisions, facilitation at the workshop and size of the group for practical classes.

7. Overall Effectiveness

Mr. Markus Wypior, Ms. Smita Vichare from GTZ were present during first half of the first day of the programme while Mr. V. Subramaniam from QUEST was present all the four days and actively interacted with the participants and also helped in making arrangements for the refresher programme. Overall the Refresher programme appeared to have been very effective.

Appendix A: Workshop Program

NATIONAL CFC CONSUMPTION PHASE-OUT PLAN		
Refresher Training Program for Trained Trainers		
Time	Topics	Faculty
Day 1 – Review of Specific Topics of RSE Training		
09:15 - 09:30	Registration	
09:30 – 10:00	Introduction to ToT – Refreshers	Prof. R. S. Agarwal Mr. Markus Wypior Mr. V. Subramaniam Ms. Smita Vichare Mr. Anshu Wadhwa
10:00 – 10:45	Identification of Specific topics form RSE/ ToT Training and practical sessions	Prof. R. S. Agarwal
10:45 – 11:00	Tea	
11:00 – 13:00	Presentation and discussions on specific topics of RSE/ ToT	Prof. R. S. Agarwal
13:00- 14:00	Lunch	
14:00 – 17:00	Practical Session <ul style="list-style-type: none"> • Servicing of HFC based Appliances • Retrofitting of CFC based appliance using HC Blend 	Mr. Anshu Wadhwa Mr. Mata Mr. K. D. Khurana Mr. Prem Singh
17:00 – 17:30	Questions & Answers	
Day 2 – Mobile Air Conditioning		
09:00 – 09:45	Alternative Refrigerants for MAC	Prof. R. S. Agarwal
09:45 – 10:30	Good Servicing Practices for MAC	Mr. Anshu Wadhwa
10:30 – 10:45	Tea	
10:45 – 11:30	Retrofitting of MAC from CFC-12 to HFC-134a	Mr. Anshu Wadhwa
11:30 – 12:30	Retrofitting of MAC from CFC-12 to HC Blend	Prof. R. S. Agarwal
12:30 – 14:00	Lunch (and then transport to SGTB for MAC practical & visit to retrofitted Ice-candy Plant)	
14:00 – 16:30	Practical Session	Mr. Anshu Wadhwa

	<ul style="list-style-type: none"> • Servicing of HFC based MAC Unit • Retrofitting of MAC using HC Blend 	Mr. Mata Mr. Suhail
16:30 – 18:00	OTC Retrofitted appliance – Visit	Mr. Anshu Wadhwa Mr. Mata Mr. Suhail
Day 3 – OTC Retrofitting and Recovery & Recycling, Reclamation, ESS, Maintenance		
9:00 – 9:30	Revision	Prof. R. S. Agarwal
9:30 – 10:00	Alternative refrigerants to CFC-12 for Ice candy plants	Prof. R. S. Agarwal
10:00 – 11:00	Retrofitting of Ice candy plants with HCFC-22	Mr. Anshu Wadhwa
11:00 – 11:15	Tea	
11:15 – 12:00	Recovery and Recycling / Reclamation units Feedback	Mr. Anshu Wadhwa
12:00 – 12:30	Status of phase out of ODS in India	Prof. R. S. Agarwal
12:30 – 13:00	Discussions	
13:00 – 14:00	Lunch	
14:00 – 14:30	Information about Equipment Support Scheme (ESS)	Ms. Smita Vichare
14:30 – 15:30	Importance of checking the E&C unit - Maintenance	Mr. Anshu Wadhwa
15:30 – 15:45	Tea	
15:45 – 16:30	R & R - Importance of checking the R&R unit - Maintenance	Mr. Anshu Wadhwa
16:30 – 16:45	Question and answers	
16:45 – 17:45	Test for Participants	
Day 4 – Refreshing, training competence		
09:00 – 09:30	Revision	Prof. R. S. Agarwal
09:30 – 11:30	Presentation by Trainers	
	Tea	
11:45 – 13:00	Presentation by Trainers	
	Lunch	
14:00 – 16:00	Presentation by Trainers	
	Tea	
16:45 – 17:00	Observations by observers / Lead faculty	
17:00 – 17:15	Feedback from Participants	
17:15 – 17:45	Valedictory	

Appendix B: List of Participants

S. No	<u>NAME</u> S/Sh.	FIRM NAME M/s.	ORGANIZER ADDRESS
1	Kuldeep Singh	Anant Enterprises	# 5397/1, Modern Housing Complpex, Manimajra-160101. Chandigarh
2	Arun Mishra	Divyansh Services	B-15, MIG Colony, Opp. Alok Pathalogy, Indore (MP)
3	Pramod Baviskar	Divyansh Services	B-15, MIG Colony, Opp. Alok Pathalogy, Indore (MP)
4	Arun Sylvester Lall	Bohra Services	60, Gem Enclave, Pradhan Marg, Malviya Nagar, Jaipur
5	Mohd. Alim Hussain	Isha Enterprises	B-1/56, Sector-B, Aliganj, Lucknow
6	Denish Lal	Loyola Industrial School	Kurji, Patna-800010
7	P. Rana	Mr. L. N. Dash	B-12, BJB Nagar, Bhubneshwar
8	D. Talukdar	Kwality Coolers	Das Complex, R. G. Barua Road, Guwhati-781024
9	Pradip Majumdar	Kwality Coolers	Das Complex, R. G. Barua Road, Guwhati-781024
10	Rajeev Lochan Sharma	Whirlpool of India Ltd.	28, N.I.T., Faridabad
11	Mohammed Fayaz	Mr. L. N. Dash	B-12, BJB Nagar, Bhubneshwar
12	Hasmukhbhai Patel	Kirti Freeze	Kirti House, Ashirwad Complex, Ashram Road, Ahmedabad
13	Prabodh Kumar Singh	Max Cool Refrigeration	2, Bhutte Patil Residencey, 363/5, Shivaji Nagar, Pune-411005
14	M. M. Nayyar	CIMI	5/11, West Patel Nagar, New Delhi-110008

Appendix C: Analysis of Participants Feedback

I. ORGANISATION

Qn.#		Opinion	Comments
1	Directions/arrangements to reach the location/venue of the training programme	<input type="checkbox"/> Clear <input type="checkbox"/> Manageable <input type="checkbox"/> Difficult	1,1,1,1,1,1,1,7= 14
2	Did the program begin at the correct time on all four days?	<input type="checkbox"/> Yes <input type="checkbox"/> Delayed (less than 1 hour) <input type="checkbox"/> Delayed (more than 1 hour)	1,1,1,1,1,1,1,7= 14
3	Lectures were followed as per schedule	<input type="checkbox"/> Yes <input type="checkbox"/> Some minor changes <input type="checkbox"/> Not followed	1,1,1,1,1,1,1,7= 14
4	Practicals were followed as per schedule	<input type="checkbox"/> Yes <input type="checkbox"/> Some minor changes <input type="checkbox"/> Not followed	1,1,1,1,1,1,1,7= 14
5	Overnight Accommodation provided <u>if any</u>	<input type="checkbox"/> Good <input type="checkbox"/> Okay <input type="checkbox"/> Unsatisfactory	1,1,1,1,1,6 = 11 1= 1 NA-1,1= 2
6	Lunch, snacks, etc.	<input type="checkbox"/> Good <input type="checkbox"/> Okay <input type="checkbox"/> Unsatisfactory	1,1,1,1,1,1,E-1,7= 14 sometime tawa chapatti may be served

II. FACILITIES

Qn.#		Your rating	Comments
7	Facilities at the class room including overhead projection, audio facilities	<input type="checkbox"/> Good <input type="checkbox"/> Okay <input type="checkbox"/> Unsatisfactory	V Good-1,1= 2 G-1, ,1,1,1,1,7= 12
8	Power supply during the program	<input type="checkbox"/> Always available <input type="checkbox"/> Occasional Power failure <input type="checkbox"/> Frequent Power failures	1,1,1,1,1,1,1,7= 14

III. PROGRAM CONTENT

Qn.#		Your Rating	Comments
9	Alternative Refrigerants for MAC	<input type="checkbox"/> Good <input type="checkbox"/> Okay <input type="checkbox"/> Not clear	1,1,1,1,1,1,1,7= 14

10	Good Servicing Practices for MAC	<input type="checkbox"/> Good <input type="checkbox"/> Okay <input type="checkbox"/> Not clear	1,1,1,1,1,1,7= 14
11	Retrofitting of MAC from CFC-12 to HFC-134a	<input type="checkbox"/> Good <input type="checkbox"/> Okay <input type="checkbox"/> Not clear	1,1,1,1,1,1,7= 14 Practical was a real learning
12	Retrofitting of MAC from CFC-12 to HC Blend	<input type="checkbox"/> Good <input type="checkbox"/> Okay <input type="checkbox"/> Not clear	1,1,1,1,1,1,7= 14
13	Alternative refrigerants to CFC-12 for Ice candy plants	<input type="checkbox"/> Good <input type="checkbox"/> Okay <input type="checkbox"/> Not clear	1,1,1,1,1,1,7= 14
14	Retrofitting of Ice candy plants with HCFC-22	<input type="checkbox"/> Good <input type="checkbox"/> Okay <input type="checkbox"/> Not clear	1,1,1,1,1,1,7= 14
15	Recovery and Recycling / Reclamation units Feedback	<input type="checkbox"/> Good <input type="checkbox"/> Okay <input type="checkbox"/> Not clear	1,1,1,1,1,7= 13 1= 1
16	Status of India in phase out of ODS in India	<input type="checkbox"/> Good <input type="checkbox"/> Okay <input type="checkbox"/> Not clear	1,1,1,1,1,7= 13 1= 1
17	Information about Equipment Support Scheme (ESS)	<input type="checkbox"/> Good <input type="checkbox"/> Okay <input type="checkbox"/> Not clear	1,1,1,1,1,6= 12 1,1= 2
18	Importance of checking the E&C unit - Maintenance	<input type="checkbox"/> Good <input type="checkbox"/> Okay <input type="checkbox"/> Not clear	1,1,1,1,1,1,7= 14
19	R & R - Importance of checking the R&R unit - Maintenance	<input type="checkbox"/> Good <input type="checkbox"/> Okay <input type="checkbox"/> Not clear	1,1,1,1,1,1,6= 13 1= 1
20	Question , Answers and discussions	<input type="checkbox"/> Good <input type="checkbox"/> Okay <input type="checkbox"/> Not clear	E-1= 1 G-1,1,1,1,1,6= 12 1= 1
21	MAC practical on car & test rigs	<input type="checkbox"/> Good <input type="checkbox"/> Okay <input type="checkbox"/> Not clear	1,1,1,1,1,1,6= 13 1= 1
22	Quality of hand outs and manuals	<input type="checkbox"/> Good <input type="checkbox"/> Okay <input type="checkbox"/> Not clear	1,1,1,1,1,1,7= 14

23	Facilitation at the workshop	<input type="checkbox"/> Good Guidance <input type="checkbox"/> Poor Guidance	1,1,1,1,1,1,1,7= 14
24	Visit to Ice Candy Plant & Demonstration and Hands on practice of Retrofitting of units	<input type="checkbox"/> Sufficient <input type="checkbox"/> Not sufficient	1,1,1,6= 9 <i>for ice candy plant they want more time</i> 1,1,1,1,1= 5
25	Language for communication at the program	<input type="checkbox"/> I could easily understand <input type="checkbox"/> I had difficulty (comment) <input type="checkbox"/> Used local language	1,1,1,1,1,1,1,7= 14

IV. MORE OPINIONS

22	How much would you be willing to pay if it is a paid program	Rs.	
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YOUR OVERALL EVALUATION OF THIS PROGRAM	<input type="checkbox"/> Excellent <input type="checkbox"/> Very Good <input type="checkbox"/> Good <input type="checkbox"/> OK <input type="checkbox"/> Poor
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E=1,1,1,1,1,1,1,7==**14**

- 'E' means excellent

Sign:

Date: 03rd September 2006

Place : IIT DELHI