MONTREAL
PROTOCOL

Demonstration Sub-Project for Conversion From HCFC-22 to Propane at Midea Room Air-Conditioner Manufacturing Company nd Demonstration Sub-Project for Conversion Of Room Air-Conditioner Compressor Manufacturing From HCFC-22 to Propane at Guangdong Meizhi Company

Context

In line with the obligations of the Montreal Protocol, China has to freeze in 2013 its HCFC production and consumption at the baseline level of 2009-2010 and by 2015 to reduce it by 10%. The preparatory activities of the HCFC Phase-out Management Plan (HPMP) in China started in 2008 in the room air-conditioning (RAC) sector. The HPMP itself was approved in July 2011 at the 64th Meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol.

Being the largest consumer of HCFCs with rising tendency in recent years, China made a historical landmark agreement in 2011, obliging itself not only to cut off significantly its HCFC consumption, but also to implement new technologies, which also notably contribute to global efforts to combat climate change by reducing the emission of greenhouse gases as compared to the technologies currently in use in China. Nonetheless, to be in compliance with the HCFC phase-out target of the Montreal Protocol, China should freeze its HCFC consumption by 1 January 2013 at the baseline level, which is the average consumption of 2009 and 2010.

Strategy

Midea:

The impact of the project is the phase-out of 240 metric tonnes of HCFC-22, which equals to 13.2 ozone-depleting potential (ODP) tonnes, by converting a production line to propane (HC-290), a kind of hydrocarbon. This will lead to an estimated 967,490 metric tonnes of CO2 equivalent annual greenhouse gas (GHG) emission reductions.

Meizhi:

The project has aimed to convert a production line with an annual capacity of 1,830,000 HCFC-22-based compressors to HC-290-based. This will result in 8,852,533 metric tonnes of CO2 equivalent GHG emission reductions.

The two projects have been assisting China to demonstrate a globally novel technology in the RAC sector. The first project has helped Midea group to convert one production line manufacturing annually 200,000 split air- conditioners from HCFC-22 to propane refrigerant, which is a benign, ozone and climate friendly natural gas. In the course of the second project a large compressor line of Meizhi, subsidiary company of Midea, have been converted to propane technology. This is of outstanding importance to promote HCFC-22 phase-out in the RAC sector in China by ensuring timely availability of compressors for the split RAC lines planned to be converted to HC-290.

The experiences learnt in these projects can thus significantly influence mass production. This can enable several Chinese room air-conditioner manufacturers to convert their products and production lines to propane. Thanks to this, there will be significant reduction of GHG emissions in the RAC sector. In addition, the projects have also offered information, technical and financial references for the implementation of the HPMP in the sector.

Results:

Projects underway (Midea) and completed (Meizhi)

The two companies signed contracts with the Foreign Economic Cooperation Office (FECO) of the Ministry of Environmental Protection of China. Upon the data verification, designing and testing of the prototypes, the bidding was initiated and the contracts were awarded to the selected suppliers. The delivery of equipment was carried out in the second quarter of 2012. The conversion activities at the compressor project were compeleted by the end of 2012. Two types of R290 compressors (fixed and variable frequency) with 1 HP and COP of 4.12-4.33 are available for mass production.

The project will be completed upon national acceptance and final verification of the project site. For the conversion project at Midea procurement of equipment was finished and main components of the R-290 line were installed by November 2012. Installations for power supply, compressed air, oxygen gas supply are in the process. The project is also expected to be completed soon, once TUV certification is issued and trial production is completed. The projects are contributing towards China's compliance with the freeze target of the HCFC consumption by 1 January 2013 in line with the country's obligations under the Montreal Protocol.

In addition, the projects have very important long-term and global impact as well: thanks to the new technology, alternative solution with minimal climate impact can be provided to RAC manufacturers in mass production. The project has also significant demonstration value on the safe manufacturing, installation and servicing of flammable alternatives.

At a Glance

MDGs:	MDG7: "Ensure environmental sustainability" MDG8: "Develop a global partnership for development"
DONORS:	Multilateral Fund for the Implementation of the Montreal Protocol (MLF)
PARTNERS:	Foreign Economic Cooperation Office, Ministry of Environmental Protection of the People's Republic of China (FECO/MEP), Chinese Household Electric Appliances Association (CHEAA)
BUDGET:	USD 4,026,507 and USD 1,875,000
DURATION:	01/2011 – 12/2013

For more information on the project contact: a.koeszegvary@unido.org For more information on UNIDO: www.unido.org

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION