

Workshop on Japanese Experience on Promoting Heat Pump Systems for Energy Efficiency in India

Executive summary

Industry lies at the heart of economic development. It drives the processes of growth in all sectors of the economy—commerce, agriculture, transport, infrastructure, and household. It also consumes huge amounts of energy: in India, the industrial sector accounts for more than half of the total energy consumed in the country. Industrial energy consumption can be reduced by 10–20% through better energy management practices and by the adoption of suitable energy-efficient technologies. At the unit level, better utilization of energy will reduce operating costs and improve profitability and competitiveness—both vital in an increasingly globalized market.

Domestic policies, especially the National Mission for Enhancing Energy Efficiency (NMEEE) have given a boost to promotion of energy efficiency in the industry sector. The Government of India (under NMEEE) has estimated that energy saving opportunities of about 10 mtoe (million tonnes of oil equivalent) exist in industry sector. The Bureau of Energy Efficiency (BEE) has already initiated the process by introducing a market-based mechanism called PAT (Perform, Achieve and Trade) in India for promoting energy-efficiency among large-scale industries.

Japan has been a pioneer in the development and commercialization of low carbon energy-efficient technologies for a range of applications in the industrial sector. A number of Japanese low carbon technologies such as electric/gas heat pumps, inverter type air compressors, industrial fans, blowers, waste heat recovery systems, etc., have good potential for adoption among energy-intensive industries in India. The adoption of such low carbon technologies from Japan by Indian industries will help in reducing their carbon footprint, and also enable energy-intensive large-scale industries to meet their targets under PAT.

There is also considerable scope for adoption of these clean, energy-efficient Japanese technologies in the commercial and residential building sectors. The energy demand of these important sectors is increasing by leaps and bounds as India continues on a path of rapid economic development and growing urbanization. Heat pump systems, in particular, can bring about huge energy savings while meeting the space heating and cooling needs of buildings like offices, hotels, malls, hospitals, auditoriums, supermarkets, and residential apartment complexes, in addition to meeting hot water requirements.

TERI and ECCJ (Energy Conservation Center, Japan) have commenced a programme to promote energy efficient low carbon heat pump Japanese technologies in industry and building sectors in India. TERI and ECCJ organized a workshop in New Delhi on 4 February 2015 in collaboration with the Bureau of Energy Efficiency (BEE) and the Ministry of Economic Trade and Industry (METI), Japan.

The objectives of the workshop were to: (i) share knowledge and experiences on the application of heat pump technology for meeting heating and cooling applications in the industrial and building sectors; (ii) raise awareness levels on the benefits that heat pump systems offer in terms of energy savings and reduced carbon emissions; and (iii) motivate potential users and other stakeholders to adopt the technology. About 57

participants from government, industry, consultancy agencies, and donor organisations participated in the event.

Way forward for energy efficient heat pump technology

Japan is a global leader in the development and deployment of heat pump technology, which brings about considerable energy savings as well as reduction in carbon emissions compared to conventional heating and cooling technologies. Clean, energy efficient heat pump systems have been adopted on a large scale in Japan for a range of applications in industry, commercial and residential buildings, and other sectors. A few pilot Japanese heat pumps systems have also been successfully adapted and demonstrated in Indian industries such as dairy and investment casting, under a collaborative project involving Indian and Japanese partners, supported by JICA and JST and implemented by IGES and TERI. This workshop has clearly brought out the enormous potential that exists for energy conservation in the Indian industrial and building sectors, through the widespread dissemination of Japanese heat pump technology through similar collaborative business models. Promotion of heat pump technology would be beneficial to both countries, and can be catalyzed through bilateral funding support from the governments of India and Japan. On India's part BEE could support the initiative by providing funds through state designated agencies (SDAs) for two demonstration projects of Japanese heat pump systems-one each in the industrial and building sectors. It is hoped that METI and ECCJ will provide similar supports to spur the initiative from the Japanese side. ECCJ agreed with BEE that the energy management is very important and key issue to promote energy efficiency in proper manner especially for high efficient introduction like HP.