

Japanese low carbon technologies for foundry and textile sectors: Opportunities, barriers & remedial actions

May 18, 2022 | Webinar

The Energy and Resources Institute (TERI), and Institute for Global Environmental Strategies (IGES), Japan, organised a Webinar on Japanese low carbon technologies (LCTs) for foundry and textile sectors: Opportunities, barriers and remedial actions on 18th May 2022. The key objectives of the webinar were:

- To discuss the LCTs for the foundry and textile sectors (e.g. moulding machines for foundry, air jet looms for textile)
- To find opportunities, barriers and remedial actions to promote the technology transfer of Japanese LCTs in India.

Session 1: Inaugural session



Mr Girish Sethi, Senior Director, Energy Program, TERI, welcomed the participants and explained that TERI and IGES have been promoting many energy-efficient Japanese technologies under the JITMAP (Japan-India Technology Matchmaking Platform) initiative. He mentioned that Japan is a leader in energy management and energy-efficient technologies

for industries and India is committed to achieving the net-zero target announced during the COP (Conference of the Parties)-26 meeting in Glasgow last year. He pointed towards the fact that 50% of the total energy consumption is from industry sectors and textile and foundry sectors are major energy consumers.

Ms Roop Rashi, Textile Commissioner, Government of India, mentioned that India is 2nd largest producer of textile and garments in the world. The turnover of the sector is US \$140 billion, out of which exports are US \$40 billion. The sector provides employment to millions of people with a high percentage of MSMEs. Adoption of new technologies will lead to energy efficiency improvement and sustainability. New and efficient technologies need high



CAPEX which is a challenge for MSMEs. The government has launched schemes like MITRA (Mega Integrated Textile Region and Apparel) park and PLI (Production Linked Incentive) scheme for promoting investment in new plant and machinery. Japan can develop new technologies for the Indian

market, which is cost-sensitive. Development of pilot projects as well as model cost-benefit analysis will motivate industries to adopt new technologies.



Mr Toshinori Hamaguchi, Programme Manager, IGES made a detailed presentation on JITMAP activities. JITMAP was launched in July 2016 with the support of MOEJ (Ministry of the Environment, Japan) to promote LCTs transfer and diffusion in India. To match Japanese manufacturers to Indian businesses, a number of workshops/seminars have been organised. Additionally,

activities like feasibility studies, training of trainers and meetings with different stakeholders have been conducted. So far, the platform has facilitated more than 80 interactions (feasibility studies, awareness workshops, training of trainers, etc.) between Indian and Japanese businesses. He presented case studies of two activities undertaken under the platform on compressed air and steam management system.

Session 2: Background presentations

Mr Prosanto Pal, Associate Director, Industrial Energy Efficiency Division, TERI presented the results of a pilot study conducted among textile and foundry industries in the Ahmedabad cluster. Out of 2.8 million looms installed among textile units in India, only 5% are automatic high-speed types. Adoption of automatic looms in place of conventional looms will increase the productivity by upto 5 to 5.5 times. The adoption of automatic air jet looms can be accelerated with technical modifications to suit Indian MSMEs. Moulding is a highly labour intensive activity in non-mechanised foundries in India. The use of Japanese moulding machines requires high capital investment. There is scope for accelerated adoption of the technology in India if the capital cost can be brought down along with some technical modifications. Other barrier to increased adoption of Japanese technology are lack of awareness of full benefits amongst users, inadequate service network and lack of availability of skilled operators. Make in India will reduce the capital investment while JITMAP could help in awareness creation. The technology suppliers should strengthen the service network and help in establishment of operator training centres.

Mr Yogesh Pawar, Sales Manager, Sinto Bharat Manufacturing Pvt. Ltd. made a presentation of their moulding machines for foundries. The automatic moulding machine has advantages like increase in production capacity, reduction in labour cost, better and uniform mould strength and overall improvement in quality of castings. Automatic sand mixer with sand tester avoids sand wastage by promoting reuse. He explained their new automatic moulding machine provides single platform for making both the halves of mould (cope and drag), requires less compressed air and gives uniform hardness and finish which reduces rejections. Other advantages dust free environment, lower noise levels and overall better work environment. He also gave insights of Horizontal Parting Aeration Sand Filling Flaskless Moulding Machine (Model FBO-N) which can make upto 200 moulds per hour.



Mr Varishensagar Shah, Sagar Group of Companies presented about the Toyota air jet loom technology. The latest version of Toyota air jet loom consumes 20% less air. Air pressure requirement is also reduced by 10-20%. New advancements like automatic adjust of the air pressure and little or no human intervention are other advantages of the technology. He presented a case study about the new software and how it helps

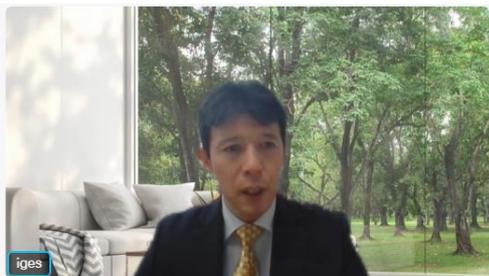
to reduce the air pressure and quantity. He also briefed about how hybrid E-shed technology help achieve high speed by improving parts and shedding angle when maximum 8 shafts are used.

Mr Ghanshyam Sutar, Tsudakoma India made a presentation on their airjet looms. The latest Tsudakoma machines has neo valve system integrated with auxiliary main nozzle which reduced air consumption by 20%. These machines have valve arrangement close to sub nozzle along with new manifold to monitor air passage. Operating time of these machines can be tracked through the AJC S+ software. He presented case study on air saving comparison between older and new machines.



Session 3: Panel discussion

A panel discussion was arranged to address the opportunities and barriers to adopting these technologies in textile and foundry industry.



The session was chaired by **Dr. Satoshi Kojima, Programme Director, Kansai Research Centre, IGES**. The panelist were asked to give their perspectives on challenges/barriers to adoption of Japanese technologies.

Mr Sanjeev Arora, Reliance Industries, spoke about the need to improve the connection between Japanese OEM (Original Equipment Manufacturer) and the Indian customer. Training centres could be established near textile clusters for training of operators of these machines. Knowledge sharing platforms could be strengthened which would encourage more MSMEs to adopt the new technologies. Collaboration with technical research institutes would help in knowledge sharing.

Mr S P Verma, Additional Textile Commissioner expressed the need for collaborative R&D projects between Japan and Indian counterparts. Power loom service centres across the country should be used for training. Affordable technology for MSME is essential. **Mr Humayun K, Assistant Director, Office of Textile Commissioner** stressed over the need to adopt energy efficient motors in existing shuttle looms.



Mr Ravi Dhawan, Additional Executive Director, IIF (Indian Institute of Foundrymen) stressed that there is need to identify the benefits of automated systems and quantify energy savings and emission reduction. The issues facing MSMEs need to be addressed.

Mr Sham Arjunwadkar, Chairman, National Centre for Technical Services, IIF spoke about the need to evaluate automation with the production requirement. He agreed that greater awareness of new technological advancements is needed for foundry industries which is at a threshold of increasing their production capacities. He suggested that flexibility in mould size, sand to casting ratio, sand to melt ratio are important considerations for industry. The focus of technology suppliers should not be to sell their product only but to sell the overall technology concept of higher plant efficiency and productivity. The life cycle cost needs to be considered for selling a new technology. Continuous training should be provided to the workforce by the technology supplier which will encourage correct use of the equipment.

A message on behalf of **Mr Yuki Yoshida, Secretary, Embassy of Japan** was read out. As per the decision made by Japan and India in energy dialogue in 2006, Japan has been providing some support relating to Energy Efficiency (e.g. EC guideline and Energy Management manual by Ministry of Economy, Trade and Industry). And during the budget session in this year, Finance Minister, Mr. Sitharaman told that “energy efficiency and savings measures including the Energy Service Company (ESCO) business model will be promoted. It will facilitate capacity building and awareness for energy audits, performance contracts, and common measurement & verification protocol.”

Since India clearly focuses on Energy Efficiency and Energy Conservation, Japan can contribute to this target by using Japanese technologies and experiences.

Session 4: Closing Session

In closing remarks, Dr. Satoshi Kojima thanked Ms Roop Rashi for her valuable inputs and involvement throughout the session along with other participants. He appreciated the suggestions made by the distinguished panellists. He acknowledged the importance of sustainability in the textile and foundry sector, and that the cost-benefit of new technologies need to be studied. The idea of not only selling the product but the whole technology concept was welcomed. Overall resource accounting will help reduce ecological and environmental imbalance.