

Japanese technologies and practices: environment-friendly casting production

24th January 2024 | Chennai, India

TERI and IGES organized a seminar-cum plant visit on 24th January, 2024 in Chennai titled 'Japanese technologies and practices: environment-friendly casting production'. In cooperation with The Institute of Indian Foundrymen (IIF), Chennai Chapter. The seminar aimed at creating awareness and strengthening knowledge among foundry managers and engineers on high quality and value-added green sand processes. About 20 participants attended the event, including representatives from IIF, foundry owners and managers, academic institutions and technology consultants.

Welcoming the participants, Mr R Palanimurugan, Hon. Secretary, IIF, Southern Region, appreciated the efforts made by TERI and IGES to promote awareness among foundry-based industries on improving energy efficiency, and noted that this seminar was the first program in this direction carried out in the Chennai foundry cluster. He assured support to TERI and IGES for promoting and scaling up energy efficient technologies across the cluster, and underlined the need to identify 'low hanging fruit' (i.e., easily adopted and affordable technologies and practices) that would improve productivity and energy efficiency, and to train shop-floor operators on deploying these technologies and practices effectively.

Dr Satoshi Kojima, Programme Director, IGES, underlined the need and potential to promote low carbon technology transfers from Japan to India in the context of the imperative to curb CO₂ emissions. He highlighted key features of the JITMAP initiative and its roll-out over the years, particularly its focus on the MSME sector, and reiterated the keenness of IGES and TERI to collaborate with IIF in undertaking initiatives in this direction in the Chennai foundry cluster.



Mr Prosanto Pal, Senior Fellow & Associate Director, TERI, elaborated on the various activities undertaken through JITMAP such as seminars and workshops, feasibility studies, awareness generation and technical training programs, and meetings with stakeholders at various levels. He also presented a few case studies to highlight the benefits brought by the adoption of low carbon technologies and practices for various industrial sectors and applications.

Mr Shinji Kasuya, Director, Sinto Bharat Manufacturing Pvt. Ltd, made a detailed presentation on 'Eco-Friendly Casting Production' from the perspective of energy saving, recycling, and improving the working environment. He described how automation of moulding process leads to several advantages, such as reduction in sand wastage, lower labour costs, less scrap generation, and so on. He highlighted the following technologies and practices that could improve energy efficiency in the foundry industry.



- Aeration sand filling—an innovative, advanced technology for better quality mould production. Aeration sand filling also allows a wider range of sands to be processed, compared to existing sand moulding systems.
- Servo cylinders—an innovative drive method that not only saves energy but also solves the problems faced with hydraulic and pneumatic driving in conventional moulding lines.
- Hybrid hydraulic systems— which reduce energy consumption during standby.
- Carrying out daily analysis of various data – production, energy consumption, raw materials, etc., for better monitoring and improving overall efficiency.
- Smart foundry practices— production & defect analyses, through which defects can be reduced by optimizing various parameters of casting production.
- Energy efficient recycling measures— such as sand reclamation, sand mould release machines, sand release machines.
- Improvements in working environment—through the identification of contamination locations and adoption of measures like dust collection systems, fume capture systems (tornado hood, suction hood), etc.



Following the discussions, the participants were taken on a tour of the Sinto Bharat Manufacturing plant located in Kanchipuram. At the end of the program, IIF proposed a vote of thanks for IGES, Sinto and TERI and reiterated their interest to organize similar capacity building events in Southern India.

