

# CoSMiLE UPDATE

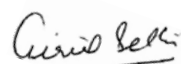
**A platform for learning and action for small and micro enterprises**

## Editorial

The Government of India is sharpening its focus on improving the competitiveness of the MSME sector, which according to the latest statistics employs an estimated 59.7 million persons spread over 26.1 million enterprises. This is reflected in the Union Budget for the year 2010-11, which proposes to increase the allocation for the MSME sector from Rs 1794 crores to Rs 2400 crores. Many of the concerned government agencies at the central and state levels have initiated developmental schemes that provide assistance to MSMEs in various spheres. At the same time, a number of multilateral/ bilateral organizations have either initiated programmes or started preliminary activities in the Indian MSME sector with a broader focus on energy and environment.

There is a clear need to coordinate and synergize the activities of the various organizations working in the MSME sector so as to improve the efficacy of various initiatives related to energy-efficiency and facilitate cross-learning between different stakeholders. A step in this direction was taken up by the Bureau of Energy Efficiency (BEE), Ministry of Power, in early 2009, when it organized the 1st Coordination Meeting of a number of agencies active in the MSME sector including SDC. In the light of its 15-year experience in the MSME sector, and its successful track record in demonstrating and disseminating energy efficient technologies in a few small-scale industry sectors in partnership with TERI, SDC offered to facilitate the setting up of a coordination mechanism among relevant stakeholders.

In the Advisory Group meeting of the TERI-SDC Partnership (TSP) project held on 31st July 2009, SDC reiterated its proposal to set up a secretariat to coordinate activities and facilitate knowledge exchange among various stakeholders in the MSME sector. BEE has now approved the setting up of the secretariat at TERI. The proposed secretariat will in essence be a 'Coordination Platform' for stakeholders in the MSME sector. A core committee has been formed with senior representatives from BEE, SDC and TERI to provide direction to the activities of the proposed secretariat. The activities would focus on knowledge sharing and learning among various key stakeholders in energy efficiency in the MSME sector.



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## **DBC makes headway in Coimbatore**

The REEEP project focuses on implementation of three energy efficiency projects in Coimbatore foundry cluster. Towards this, TERI is interacting with the local industry association and progressive entrepreneurs for adopting energy efficient DBC technology. These efforts were rewarded when one of the most progressive metal casting units in the cluster, Aquasub Engineering, showed interest in adopting DBC technology. This unit was earlier using an electric induction furnace for melting metal.

Based on the requirements of the unit, TERI prepared design drawings for two 27-inch DBCs, which were fabricated and installed at Aquasub by a Pune-based fabricator. The TERI team successfully commissioned the DBCs during the period 9–11 March 2010. The DBCs are performing well and the temperature of molten metal is about 1400 °C. The quality of the molten metal was tested and found satisfactory by making sample moulds. The commissioning was accompanied by hands-on training to the



*DBC commissioned at Aquasub Engineering, Coimbatore*

furnace operators and workers on operational procedures, best practices and safety measures.

Two more foundry units have been identified that are keen to adopt two DBCs each: (1) Eltex Super Cast and (2) Nirmal Pumps (a sister concern of CRI Pumps Ltd, which was the first unit in Coimbatore to adopt the TERI-design DBC).

## **Seeds of innovation in brick firing: Follow up session with master firemen**

As reported earlier (see Cosmile Update 4(3), September 2009), TERI has been engaged in efforts to enhance the capacities of master firemen and firemen who work on brick kilns, through a participatory technical training programme. The programme comprises two phases: (1) classroom sessions and (2) field sessions. In the first phase, a total of eight classroom sessions were conducted in eastern Uttar Pradesh (four each in Rae Bareilly and Allahabad) covering over 200 participants—mainly, master firemen. These sessions synergized traditional knowledge with scientific knowledge; they enabled the master firemen to share and discuss their traditional knowledge, skills and operating practices, and to understand them better in the context of scientific knowledge on brick-making and kiln firing techniques. In essence, the master firemen have been able to strengthen their traditionally acquired practical knowledge of ‘how’ to make good bricks, with scientific inputs that have enabled them to understand ‘why’ their traditional brick-making practices work. This deeper understanding has empowered the master firemen to evolve a number of innovations and improvements in kiln operation practices through discussions and debate.

In the second phase of the programme, TERI is observing and mentoring selected master firemen at their kiln sites during the current brick-making season (January–June 2010). The objective is to find out how the master firemen implement the improved/innovative practices that they have evolved during the training sessions, and to enable



Follow-up with master firemen – Adalaj, Gujarat

them to evolve further improvements/ innovations in practices where necessary through training in situ.

In January 2010, TERI observed and mentored a few master firemen in their brick kilns in Adalaj, near Ahmedabad in Gujarat. Major observations during the field visit included the adoption of improved operating practices by the master firemen mainly in three key areas: (1) improved fuel feeding patterns, (2) control of heat leakages; and (3) improved insulation at the kiln top. While detailed studies are required to quantify the exact benefits of these improved practices (e.g., in terms of fuel savings/energy efficiency), the kiln owners expressed their satisfaction with the innovative practices being deployed. Furthermore, the trained master firemen are disseminating the knowledge of these improved practices to other firemen and workers in their charge—as envisaged at the start of this programme—thereby sowing the seeds for capacity-building and further innovation on a wider scale.

### **TERI-SDC Partnership: Advisory Group meeting**

The second Advisory Group meeting of the TERI-SDC Partnership (TSP) project was held on 12<sup>th</sup> March 2010 at TERI. The participants included representatives from BEE, PCRA, UNIDO, MNRE, office of the Development Commissioner, MSME (DC-MSME), TIFAC, and the GEF-World Bank Program. TERI provided a summary of

progress made since the first Advisory Group meeting (held on 31<sup>st</sup> July 2009), highlighting in particular TERI's partnership with other organizations—such as BEE, UNIDO, PCRA, REEEP, UNDP, and CPCB—that are engaged in improving energy efficiency in the MSME sector. The group focused on finding ways to mainstream improved technologies for MSMEs and accelerate the pace of their adoption. The following important points were discussed:

- There are about 400 energy intensive MSME clusters in the country, of which at present only about 10% (around 50 clusters) are being covered by initiatives of different agencies. Under the circumstances, government policies must play a key role in facilitating the promotion and adoption of improved technologies.
- There is a paucity of technically competent human resources—for instance, agencies who could identify and implement energy efficient solutions for MSME units. In this regard, the activities of the TSP project and that of the BEE-SME scheme related

#### **Safety session on use of natural gas**

GAIL and TERI jointly organized an 'Interactive session on natural gas (NG) usage and safety practices for Firozabad



glass industries' on 6<sup>th</sup> March 2010 in the Firozabad glass cluster. The session was attended by about 60 participants comprising owners of pot and tank furnace units as well as other small-scale entrepreneurs such as muffle furnace operators. Mr B Barik, Deputy Manager (Fire & Safety), GAIL, Agra, provided details on various issues related to fire safety and firefighting, including the 'anatomy' of a fire, different kinds of fires, methods to prevent or contain fires, and various fire extinguishing systems and their operation. Carbon dioxide type and/or dry chemical powder type fire extinguishers must be used to put out fires caused by NG. The session concluded with a firefighting drill.

to the strengthening of local service providers (LSPs) in different clusters are expected to play a significant role in the long-run.

- The Credit Linked Capital Subsidy Scheme (CLCSS) of the Ministry of MSME provides subsidy for technology upgradation. More MSME units could be encouraged to avail of the benefits under CLCSS. However, it was felt that there is a need to expedite decisions on subsidy claims by individual units. There is also need for flexibility in implementing subsidy schemes—as in the case of rice mills in Bihar, which were encouraged to adopt biomass gasifiers for power applications by modifying existing subsidy schemes.
- BEE confirmed its support to TERI in undertaking a project in the Firozabad glass cluster, which would focus on systems other than pot furnaces (as these are being covered under the TSP project).
- An estimated 100 new foundry units will be established in the upcoming industrial park in Howrah cluster by the year 2014, with a total installed capacity of about one million tonnes. It was felt that it is important to integrate energy efficiency aspects at the technology design stage itself to ensure that these new foundry units operate at highest possible efficiencies from day one.
- R&D based technology solutions must be evolved at local level by working along with local institutions. An example is the Ahmedabad foundry cluster, where TERI has worked closely with GITCO as well as helped build the capacities of an LSP (a local fabricator) in order to provide energy-efficient solutions for local foundry units—namely, small size (18 inch) DBCs.

### **UNDP-GEF project: PSCST workshop to promote energy efficiency in brick industry**

A workshop titled ‘Energy efficiency improvements in Indian brick industry’ was organized at Bathinda, Punjab on 19<sup>th</sup>

February 2010 by the Punjab State Council for Science and Technology (PSCST) in collaboration with the Bathinda Brick Kiln Owners Association. PSCST is one of the Local Resource Centres (LRCs) under the ongoing UNDP-GEF project to promote new and improved technologies for encouraging the manufacture and use of resource-efficient bricks (REBs) in the country. The aim of the workshop was to sensitize the brick fraternity about the UNDP-GEF project and the benefits likely to accrue from it. The event was attended by about 150 brick kiln owners, mainly from the districts of Bathinda, Muktsar, Mansa, Barnala, Ferozepore and Ludhiana, along with office bearers of district-level associations from all the districts of Punjab.

Mr Paramjit Singh Sandhu, President, Bathinda Brick Kilns Owners Association urged fellow brick kiln owners to explore mechanization of certain processes so as to improve brick quality and reduce losses. Mr M S Jaggi, Director (PSCST) stressed the potential benefits for brick entrepreneurs in adopting new and efficient technologies for manufacturing REBs such as hollow bricks and perforated bricks. REB manufacture will also reduce the consumption of precious raw materials like clay and fuel. Mr A K Banerjee from Walter Craven Ceramic Projects (India) Ltd—which has set up a modern plant to manufacture REBs in Uttarpara, (near Kolkata)—elaborated on the plant’s technologies.

Mr Rakesh Johri, Senior Fellow, TERI explained how in Europe and other developed countries, manufacturers as well as end-



*Workshop on REBs, Bathinda*

users have facilitated the transition from conventional solid bricks to perforated/ hollow bricks. For the existing small brick kiln owners in India, this transition will take place in stages and be driven by three major factors: (1) shortage of manpower (2) demand for better quality products (3) shortage of raw materials. He observed that 12 REB demonstration units would be set up in the country. The project is also coordinating with the Bureau of Indian Standards (BIS) for establishing standards for REBs, and with state PWDs, CPWD, MES and other organizations for incorporating the necessary specifications in their guidelines for the use of REBs.

Mr Pritpal Singh, Senior Engineer, PSCST observed that brick producers must shift their focus from increasing quantity (production volume) towards increasing quality (better product). He explained how REBs bring indirect benefits to the end-user—in terms of energy saving and reduced costs of plastering—and urged brick kiln owners to investigate their soils and see whether they could be used to make REBs through mechanization. As LRC, PSCST would help the industry in identifying suitable technologies specific to the cluster needs, creating awareness on REBs among architects and builders, and facilitating availability of loans for technology upgradation. It is important for existing brick producers to move quickly in this regard, as new players including multi-nationals have already started to enter the market.

### **Synergy in capacity building of LSPs in foundries**

Under the REEEP-supported project for promotion of DBC in the Coimbatore foundry cluster, a key component is to build capacities at cluster-level. This entails strengthening the capabilities of local service providers (LSPs) – fabricators and technicians – in interpretation of design drawings, fabrication of equipment with strict quality norms, system commissioning, and maintenance and troubleshooting.

TERI worked with APITCO Ltd (a consultancy organization implementing a

### **Finding the right LSP**

TERI's search for an LSP in Coimbatore began a decade ago, when it commissioned a DBC—the first TERI-design DBC to be adopted in Coimbatore—at CRI Pumps Ltd with the assistance of Mr Appassamy, a local consultant. Recently, Mr Appassamy suggested that Mr Naagendiran, proprietor of a fabrication unit named Saravana Engineering Work, could be an effective LSP for promoting the TERI-design DBC. TERI interacted with Mr Naagendiran and learned that he had already fabricated and installed a DBC (broadly based on the TERI design) in a Coimbatore foundry named Amma Alloy. Mr Naagendiran further proved his mettle by fabricating a DBC based on drawings given to him by TERI, and installing and commissioning it at Nelcast, a foundry unit near Chennai. A qualified mechanical engineer, Mr Naagendiran has over 18 years' experience in fabrication of equipment and machinery such as boilers, cupolas, and pollution control systems. As TERI's LSP he is likely to play a key role in promoting the DBC in the Coimbatore cluster.

SIDBI-supported project to promote business development services in the Coimbatore cluster) in order to evolve a plan and structure for LSP training programs. TERI held initial discussions with entrepreneurs and LSPs on 27<sup>th</sup> January 2010 in the cluster. The program was attended by around 20 LSPs and representatives from COSMAFAN Marketing



LSP training program, Coimbatore

Society (an association of foundry units that arranges raw material supplies to its member-foundries) and IIF (Institute of Indian Foundrymen).

TERI conducted the technical sessions of the training program. The first session included a general description of the DBC and its advantages vis-à-vis the conventional coke-based cupola. The second session focused on the characteristics of the TERI-design DBC and on issues relevant to fabrication of the DBC and related systems such as accurate interpretation of design drawings, oxy-acetylene welding for castings, and so on. This joint training was in effect a synergy of capacity building initiatives at cluster level by different organizations: APITCO, REEEP, SDC, SIDBI, and TERI. More such synergetic initiatives are envisaged in future.

### Study to help improve clamp kilns

TERI has initiated a project to monitor the performance of different types of clamp kilns in India. The study is being supported by the Central Pollution Control Board (CPCB). The aim is to help evolve and implement better design and operating practices for improving their environmental and energy performance. The objectives of the study are to:

### Tips on fast firing for energy efficiency in brick and tile industry

Mr K C Thomas, proprietor of Thomson Tile Factory, Annallur, Kerala is a progressive entrepreneur, who has implemented a number of energy conservation measures at his factory. These measures have brought significant energy savings and reduced production costs. The unit has earned Energy Conservation Awards for the years 2002-03 and 2003-04 from the Energy Management Centre, Kerala for these efforts. The measures include the following features.



- Hot flue gases from the fired chamber in the kiln are sucked through blowers into the dryer rooms or drying chamber for removal of moisture from green bricks.
- The flue gases at about 80–90 °C are used in chamber dryers and hot floor dryers, wherein the waste gases are cooled to almost ambient conditions.
- Use of stiff extrusion for brick making helps in reducing the water content of clay to 15–18% thereby reducing the drying time and improving the product quality.



Clamp kiln, Gujarat

- Prepare an inventory of clamp kilns
- Study and monitor the existing firing practices, emissions and ambient air quality levels of different types of clamp kilns
- Develop cost-effective modifications and improved operating practices and undertake demonstrations
- Evolve emission standards for different types of clamp kilns

TERI has approached various state pollution control boards (SPCBs) with a request to collate information related to clamp kilns. Discussions were also held with office bearers of the Gujarat Brick Manufacturers' Federation, Ahmedabad. A field visit was undertaken to the Adalaj brick industry cluster to interact with local clamp operators and identify logistical requirements for environmental monitoring planned in April/ May 2010.

### **Opportunity to promote venturi scrubber for pollution control**

TERI participated in a workshop on 'Environmental sustainability in foundry and electroplating sectors' which was organized by the Tamil Nadu Pollution Control Board (TNPCB) on 11–12 February 2010 in the Coimbatore foundry cluster, which has around 680 units. The event, which was attended by around 200 participants, took place in the backdrop of growing concerns about pollution from coke-burning cupolas, because of which TNPCB is strictly enforcing environmental regulations in the cluster. While large-size foundry units have switched over to electrical induction furnaces, a huge number of smaller foundry units are not able to afford such a switchover and continue to operate coke-based cupolas. TNPCB is concerned over the fact that these smaller units are unable to comply with pollution control norms, as they have installed sub-optimal pollution control systems (PCS).

During the workshop, the smaller coke-based cupola entrepreneurs discussed the problems they are facing in meeting environmental norms. A number of them were interested in learning more about the high-efficiency venturi scrubber system developed and demonstrated in Howrah foundry cluster under the TERI-SDC Partnership project. Following the workshop, TERI along with TNPCB held focused discussions with interested entrepreneurs who were provided details about the venturi scrubber system and its proven ability to meet the most stringent environmental norms. It was agreed that representatives from the cluster would visit Howrah to witness the venturi scrubber system in operation. TNPCB also responded positively to the suggestion of demonstrating the venturi scrubber in the Coimbatore cluster.



*Venturi scrubber system, Howrah*



Divided blast cupola

Gas-fired muffle furnace

Vertical shaft brick kiln

Gas-fired pot furnace

Biomass based power gasifier

Gasifier for namkeen making

Gasifier-based dyeing unit

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