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A platform for learning and action for small and micro enterprises

The CoSMiLE team wishes its readers a happy and prosperous 2008

Editorial

Foundry or cast metal production is one of the most important secondary metallurgical processing industries. Castings are used in a variety of end-use applications such as automobiles, engineering machinery, agricultural implements, electric motors, pumps, municipal water pipes, and manhole covers. The global annual production of castings is estimated to be about 80 million tonnes, valued at \$ 100 billion. The global trade in metal castings—valued at about \$ 10 billion at present—is also increasing at a brisk pace.

India currently produces about 6 million tonnes of castings each year. The Indian foundry industry is growing at about 8%–9% per annum. Most of the 4000 or so foundries in India are small in size and have low levels of mechanization. The most common melting unit used by foundries in India is the cupola furnace, which uses coke as fuel. Most cupolas operating in India are of conventional design and are energy-inefficient. Hence, when TERI and SDC decided to assist small-scale energy intensive industries in improving their energy and environmental performance, the cupola furnace was targeted.

In order to demonstrate an energy-efficient melting furnace for foundries, TERI and SDC developed and installed a DBC (divided blast cupola) with an appropriate pollution control system at a foundry unit located in Howrah, West Bengal in 1998. The demonstration plant was found to be 35% more energy-efficient than the conventional cupola used earlier by the unit. The emissions too were brought down below the most stringent pollution norm in the country.

Since then, several Indian foundries have adopted the TERI-designed DBC technology. At present, around 45 DBCs of the TERI design are in operation in various foundry clusters spread across the country. The estimated cumulative energy savings from these DBCs is 13 000 TOE (tonnes of oil equivalent), equivalent to a total CO₂ savings of 50 000 tonnes.

With support from UNIDO (United Nations Industrial Development Organization), TERI recently completed the preparation of a PDD (Project Design Document) for a bundled CDM (Clean Development Mechanism) project, to improve the energy efficiency of cupola furnaces operating in Belgaum, Karnataka. The CDM project bundles 22 foundry units and aims to replace their conventional cupolas with energy-efficient DBCs. The project has a potential to reduce 4000 tonnes of CO₂ per annum. The Belgaum foundry cluster is keen to get the project registered in 2008. This CDM project is the first of its kind in the foundry sector in India, and has a good potential to be replicated in other foundry clusters.

The year 2007 also heralded the spread of the demonstrated DBC technology beyond Indian shores. TERI has been engaged by the International Finance Corporation-managed South Asian Enterprise Development Facility, of the World Bank Group in Dhaka, to support the Foundry Owners Association of Bangladesh in setting up DBCs at two of its member foundry units located in Bogra. The two DBCs are scheduled to be commissioned in 2008.

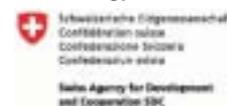
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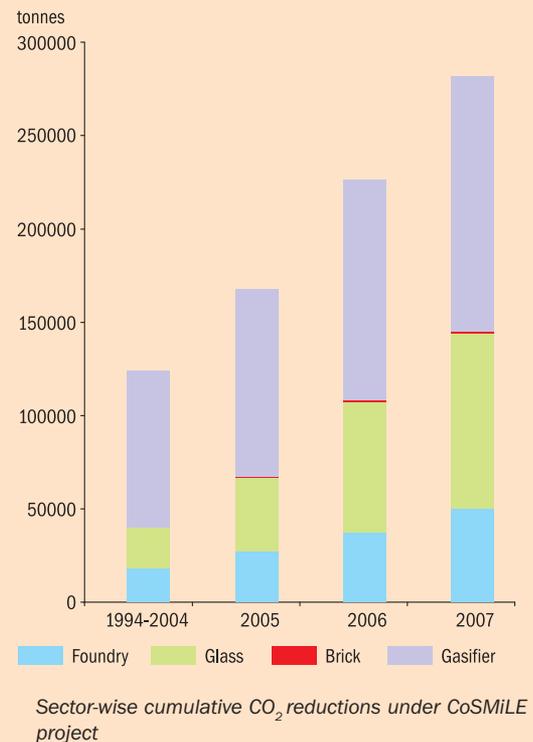
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The Energy and Resources Institute



TERI technologies in small and micro enterprise sector – an update on the present status

The objective of the CoSMiLE project is to increase adoption of resource-efficient technologies amongst targeted end-users with special focus on small and micro enterprises. The technologies that are being disseminated include the DBC (divided blast cupola) and venturi scrubber in foundries; natural gas-fired pot furnaces with recuperators (waste heat recovery systems) in glass melting pot furnaces; natural gas-fired muffle furnaces for heat-treating glass bangles; VSBK (vertical shaft brick kiln) for brick firing; and biomass gasifiers for various thermal applications in various small and micro enterprise sectors. Adoption of these improved technologies has resulted in substantial energy savings (20%–65%) in replicated units, and corresponding reductions in CO₂ generation. It has been estimated that a cumulative energy savings of around 75 000 TOE (tonnes of oil equivalent), and 280 000 tonnes of CO₂ reductions have been achieved till December 2007.



Swiss media visit Firozabad glass cluster

A delegation of about 18 senior journalists from Switzerland and representatives from Holcim's office in Switzerland and India took some time off from their busy travel itinerary in India to pay a brief visit to the Firozabad glass cluster on 29 November 2007. The purpose of the half-day visit was to get an idea of the work that TERI has done in improving the energy efficiency of small-scale glass units. The staff of SDC (Swiss Agency for Development and Cooperation)–India and members of the CoSMiLE project from TERI accompanied the delegation.

The delegation visited two representative glass melting units, which have benefited from the project's intervention in the cluster. The first stop was Express Glass Works. This was the first demonstration unit, where the project had successfully developed and demonstrated a natural gas-fired pot furnace with recuperator (a waste heat recovery system) in year 2000. Mr Mohammed Islam Khan, owner of the unit-

warmly greeted the visitors and showed them around the factory. The next stop was the Amrit Glass Works. This is one among over 40 pot furnace units that have recently adopted the TERI-designed system.

Reflecting on the visit, Ms Kathrin Brugger, from the Corporate Communications Group of Holcim, Zurich later observed: 'It was an extraordinarily interesting experience for us in Firozabad!'

Awareness workshop on CoSMiLE project

TERI organized a workshop on 'Dissemination of learnings of CoSMiLE project' at TERI–Southern Regional Centre, Bangalore, from 21–22 November 2007. Over 50 participants attended the workshop, which was co-sponsored by the Department of Industries and Commerce, Government of Karnataka. The objective of the workshop was to create awareness on energy-efficient technologies in small and unorganized industries. The target group comprised

government officials from the District Industries Centres of different districts in Karnataka, KSPCB (Karnataka State Pollution Control Board), KCTU (Karnataka Council for Technological Upgradation), and CEDOK (Centre for Entrepreneurship Development of Karnataka). The participants also included representatives from industries, manufacturers, NGOs (non-governmental organizations), renewable energy agencies, training institutes, and implementing agencies. The workshop involved the following activities.

- Presentations on various initiatives and case studies under the CoSMiLE project in foundry, glass, brick, thermal gasifiers, and puffed rice sectors
- Field visits to sites where biomass gasifiers have been installed for different thermal and power applications
- Focus group discussions

The participants were introduced to different applications of thermal gasifiers through short video films. S3DF (Small-Scale Sustainable Development Fund), Bangalore, shared its experience on entrepreneurial-support funding. Further, the Dhanaprakash Industrial Corporation, Miraj (Maharashtra), shared its experiences with energy efficiency in the small-scale industrial sector.

Field visits were organized to Adanya Chetana, to expose the participants to a thermal gasifier system used for community cooking, and to MGIRED (Mahatma Gandhi Institute for Rural Energy Development) to observe a 5 kW (kilowatt) biomass gasifier system used for power generation as well as other renewable energy systems displayed in the campus.

Following the field visits, the workshop devoted itself to focus group discussions. Participant groups were encouraged to prepare a list of unorganized industrial clusters in different districts of Karnataka, and to examine and discuss the potential for bringing about improvements in these clusters.

Awareness programme on modern biomass technologies

TERI jointly organized an 'Awareness programme on modern biomass technologies' with NIE



View of exhibition at NIE, Mysore

(National Institute of Engineering), Mysore, on 31 October 2007. The programme comprised a seminar followed by an exhibition. The participants to this programme included the district commissioner of Mysore, the director of CSRTI (Central Sericulture Research and Training Institute), the chairman of NIE, and officials from DIC (District Industries Centre) and KCTU (Karnataka Council for Technological Upgradation). About 60 people attended the seminar, and over 400 people were registered at the exhibition. Among others who attended the programme were entrepreneurs and representatives from small-scale industries including the hotel industry, NGOs, students of engineering colleges, and school children. TERI shared information on the successful interventions and case studies carried out under the CoSMiLE project. NIE shared its experience with the 'Anila' pyrolyser stove, used for domestic and community applications.

The exhibition displayed working models of the thermal gasifier, improved stoves, and gasifier-based water heaters, which attracted the attention of participants. The event attracted a number of interesting enquiries on utilizing biomass gasifiers for the following thermal applications.

- Heating requirements at Mysore Milk Dairy
- Drying of agarbathis (potential exists in over 100 units)
- Cocoon cooking at CSRTI
- Incineration of old notes at Reserve Bank of India
- Hot water generation for bathing and cooking in hotels

Awareness seminar on VSBK

An awareness seminar on the VSBK (vertical shaft brick kiln) was organized at Bhubaneswar by the



View of VSBK-Thogur

MSME-Development Institute, Cuttack, on 21 November 2007. The programme was inaugurated by the Commissioner cum Secretary, Department of Industries, Orissa, and attended by about 50 prospective entrepreneurs. The technical session was conducted by DA (Development Alternatives) and TERI. While DA provided information on the salient features of VSBK technology, TERI elaborated on its experiences with adoption of the VSBK by women SHGs (self-help groups) in Thogur, Tamil Nadu. TERI also provided details regarding the SHGs' experience in leveraging government programmes/schemes and bank loans that are aimed at benefiting rural enterprises. The MSME-Development Institute provided an overview of various government schemes for the setting up of VSBK. The Assistant General Manager, State Bank of India, Cuttack provided details regarding the financial schemes and loans offered by the bank for setting up rural enterprises such as the VSBK.

Foundry Barta, a Bengali newsletter for Howrah foundry workers

With support from the CoSMiLE project, a quarterly newsletter in Bengali titled *Foundry Barta* (Foundry News) is being published for the benefit of Howrah foundry workers. The newsletter is being brought out by IMSE (Institute for Motivating Self Employment) – an NGO partner – on behalf of the Worker-Owner Forum established under the project. The newsletter covers topics such as health, safety, and BOP (best operating practices) in foundries. It carries articles by office bearers of the IIF



Foundry Barta; a medium for strengthening dialogue

(Institute of Indian Foundrymen), IFA (Indian Foundry Association), and other stakeholders. Workers too contribute articles in the newsletter. Foundry Barta is a step towards strengthening dialogue and interaction between workers, owners, and other stakeholders on socio-economic issues related to the Howrah foundry industry. Copies of the newsletter can be obtained from IMSE (bipimse@cal.vsnl.net.in)

PCRA support for biomass gasifiers project in Jaipur

Under the CoSMiLE project, one of the technologies being promoted is the use of



Biomass gasifier for namkeen making

biomass gasifiers for thermal applications in various small and micro enterprises. The region in and around Jaipur is well known for thriving small-scale enterprises that make sweets and *namkeen* (snacks) using petroleum-based fuels—including LPG (liquefied petroleum gas). With increasing LPG/petroleum prices, many of these units are looking at biomass gasifier-based systems as an option to save on fuel costs. PCRA (Petroleum Conservation Research Association), a research body under the Ministry of Petroleum and Natural Gas, Government of India, has agreed to support TERI in accelerating replications of biomass gasifiers among the *namkeen* and sweet-making units in the Jaipur cluster.

TERI provides biomass gasifiers of capacities ranging from 10 kg per hour to 60 kg per hour, and will set up seven biomass gasifiers of suitable capacities in the cluster. PCRA will support this initiative for a period of 18 months. The initiative will strengthen confidence among local units and encourage them to adopt biomass gasifiers on a wide scale.

Support to a small green-field foundry unit

A small firm from Faridabad, M M Makewell Technology, contacted TERI in August 2007 to set up a small-scale green-field foundry unit. It had already decided upon the DBC design. Interaction with the firm indicated that the owner would find it difficult to raise additional resources to upgrade the design option. Under these circumstances, TERI agreed to review the design provided by the firm, and suggested improvements (in blower selection and distribution of air blast) that would not require major additional investments but would still help in improving the energy efficiency. The unit is presently under installation and is expected to be commissioned in early 2008. This is the first such initiative undertaken by TERI. It is exploring the possibilities of extending such services to other foundry units; to promote local capacities and provide guidance to smaller foundry units, in addition to providing complete design and commissioning support, as was being done in the past.

Training programme for brick kiln firemen at V V Giri National Labour Institute

TERI had initiated discussions with the V V Giri National Labour Institute, Noida, in early 2007 to explore synergizing the training activities of the institute, with the measures TERI is undertaking to benefit the brick firemen community in east Uttar Pradesh. These interactions led the members of the firemen sangathan (association) to participate in a training programme organized by the institute from 29 October–3 November 2007. Besides leaders and members of the sangathan, the programme was attended by Lokmitra, one of the NGO partners in the CoSMiLE project. Other participants in the programme included representatives from state and district-level trade unions working in the rural and unorganized sectors in Bihar, Gujarat, Orissa, Tamil Nadu, Uttar Pradesh, and West Bengal.

The purpose of the programme was to educate emerging trade union leaders on labour problems, labour laws, and various welfare schemes for the weaker sections. The training programme covered issues such as identification of problems in the unorganized sector; development schemes and programs for rural workers; the role and significance of trade unions; motivational style; the value of positive attitudes; and leadership skills. The participants were given certificates by Mr Hanumant Rao, Hon'ble Member of Parliament, Rajya Sabha.

Training programme for potential entrepreneurs in biomass energy technologies

TERI organized a training programme in biomass energy technologies at Vidya Bhawan Polytechnic College, Udaipur, from 24–26 October 2007. About 50 participants including potential entrepreneurs, government officials, NGOs, and students and teaching staff of the polytechnic college attended the programme. The former Foreign Secretary, Mr Jagat Singh Mehta, inaugurated the training programme. The training programme focused on the use of biomass gasifiers for various thermal

applications, their salient features, and successful case studies on application of biomass gasifiers. The interactive session helped the participants in gaining a better understanding of the gasifier technology. The programme was given extensive coverage by both TV and print media.

Social training programmes for brick firemen community

Programme at Lalgopalganj

PEPUS (Paryavaran Evam Pradhyogiki Utthan Samiti), the NGO partner under CoSMiLE organized a two-day training programme for the brick firemen community from 5–6 October 2007 at the knowledge centre recently inaugurated at Lalgopalganj (Allahabad district). It was attended by about 50 members of the 'Bhatta Parivar Samaj Sangh'. During the programme, Mr M G Srivastava, retired Labour Commissioner, provided information on minimum labour wages, procedures for submitting applications at the labour department, functioning of trade unions, and procedures for registration of a trade union. The organizer of the Bidi Workers Association briefed participants on how issues such as child labour and women exploitation can be collectively addressed, and on ways to strengthen the sangathan. The labour inspector from Allahabad elaborated upon procedures and formalities related to provident fund and insurance.

The participants discussed the role of sangathan in the Panchayati Raj governance system. PEPUS elaborated upon the idea and purposes of the knowledge centre, that is, to link traditional and modern scientific knowledge and make it accessible to the entire firemen community for its overall benefit.

Programme at Dalmau

A training programme was organized by Lokmitra from 23–24 October 2007 for the firemen community at Panchayat Bhawan, Dalmau. The programme was attended by about 60 members of the sangathan. The participants discussed issues related to village development such as the NREGA (National Rural Employment Guarantee Act),

procedure and formalities related to issuance of ration cards, pension schemes, public distribution system, the scope for setting up micro enterprises, and so on. The participants also discussed the importance of the passbook, identity card, and *iqarnama* (agreement with kiln owner, master firemen). Lokmitra spoke on gender issues and provided information on the RTI (Right to Information) Act. An office bearer from Kissan Union talked about the importance of sangathan and assured the firemen that their concerns would be included in the agenda of the Kissan Union. He added that he would make efforts to increase linkages between the Kissan Union and the sangathan.

Inauguration of glass artisans' showroom

The CoSMiLE project has helped artisans who make glass decorative articles in Kushwhanagar, Firozabad, to form a cooperative named 'Glass Handicraft Works Sahakari Shram Sanbida Samiti Limited'. It comprises 47 members. The cooperative has also been registered under the Cooperative Act. TERI and its NGO partner, Vikas Sansthan, helped in organizing an exposure visit for the cooperative members to Urmul Trust in Rajasthan from 9–13 October 2007. Urmul Trust is a successful cooperative model, and it was felt that the exposure visit would provide the glass artisans with an opportunity to learn from the Trust's experiences, and also gain lessons and insights to draw up strategies and plans for growth.

Encouraged by their visit, the members collectively decided to start a showroom to



Inauguration of glass artisans' showroom

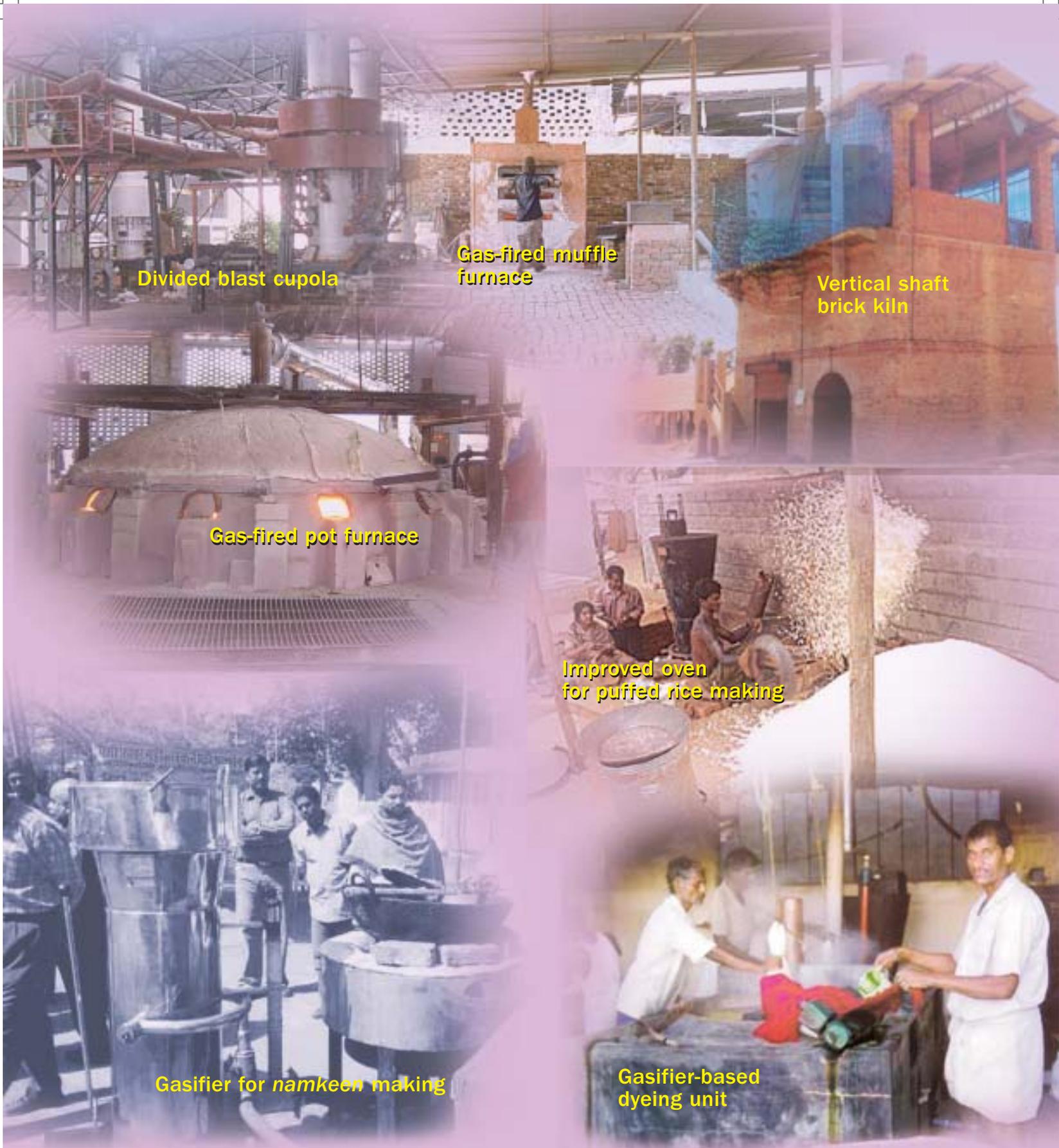
display their products, and thereby directly sell to the customers without going through the usual middlemen channel. The project provided assistance to the artisans' cooperative in this venture, and the showroom was inaugurated on 29 November 2007. Subsequently, a meeting was held with the cooperative members to nominate representatives to handle various activities – supervision, accounting, quality

control, marketing, and so on – for ensuring a smooth operation of the showroom. The cooperative has also made arrangements with a local gas agency for regular supply of oxygen cylinders, used by the artisans for making decorative items. With this arrangement, the artisans can obtain oxygen cylinders easily, at market prices, without having to pay security deposits.

Events calendar

- 1 Workshops on developing village energy plans for pilot VESP (Village Energy Security Programme) villages in different regions:
 - Raipur, 8 January 2008 (Madhya Pradesh and Chhattisgarh);
 - Pune, 15 January 2008 (Maharashtra and Gujarat);
 - Guwahati, 21 January 2008 (Assam and West Bengal); and
 - Bhubaneswar, 11 February 2008 (Andhra Pradesh and Orissa).The workshops are supported by the MNRE (Ministry of New and Renewable Energy), and will benefit regional consultants, implementing agencies, and other stakeholders.
- 2 Commissioning of a two-shaft VSBK at Cuddalore, Tamil Nadu, January 2008.
- 3 Paper presented on 'Energy savings and carbon credits : A win-win option for Indian industries', at ENVISAFE 08 organized jointly by the Institute of Indian Foundrymen (Kolhapur Chapter) and KIT's College of Engineering, Kolhapur, 12–13, January 2007.
- 4 Special event on 'Energy efficient buildings - Today and Tomorrow' during DSDS (Delhi Sustainable Development Summit) organized by TERI, 8 February 2008.

The objective of the special event on energy efficient buildings is to strengthen the understanding on possible actions to deal with energy constraints focusing on energy efficiency and buildings.
- 5 Presentation of a paper on linkages between energy efficiency and CDM (Clean Development Mechanism) with special focus on small-scale foundries at the 68th World Foundry Congress organized by IIF (Institute of Indian Foundrymen), Chennai, 7–10 February, 2008.
- 6 Three week training program on 'Renewable energy and energy efficiency' for African and South Asian developing countries, 18 February – 7 March, 2008. The programme will be conducted at TERI-Delhi and TERI-Bangalore and is supported by ITEC (Indian Technical and Economic Cooperation), Ministry of External Affairs, Government of India.
- 7 Presentation of a paper on 'Diffusion of cleaner technologies in SMiE systems—a process oriented case study of the foundry industry'. The programme is organized by the Institute of Technology, Banaras Hindu University, Varanasi, 29 February – 1 March, 2008.
- 8 Commissioning of two TERI-designed DBCs at Mahadev Manufacturers, Rajkot, February 2008.
- 9 Consultation with Ahmedabad Foundry Association for promotion of a small-sized (18 inch) DBC among local foundries, Ahmedabad, February 2008.
- 10 Trials on improved pots for glass melting, Firozabad, March 2008. The trials are being conducted in association with Tata Refractories Limited.
- 11 Roundtable with government stakeholders on cleaner technologies in MSME (Micro, Small and Medium Enterprise) sector, New Delhi, March 2008.



Divided blast cupola

Gas-fired muffle furnace

Vertical shaft brick kiln

Gas-fired pot furnace

Improved oven for puffed rice making

Gasifier for namkeen making

Gasifier-based dyeing unit

For more details, please contact

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