MICRO, SMALL & MEDIUM ENTERPRISES
सूक्ष्म, लघु एवं मध्यम उद्यम

Ministry of New and Renewable Energy
Government of India

"PROMOTING ENERGY EFFICIENCY AND RENEWABLE ENERGY IN SELECTED MSME CLUSTERS IN INDIA"

To develop and promote a market environment for introducing energy efficiency and enhanced use of renewable energy technologies in process applications in the selected energy-intensive MSME clusters, United Nations Industrial Development Organization (UNIDO) in collaboration with Bureau of Energy Efficiency (BEE) is implementing a project titled "Promoting Energy Efficiency and Renewable Energy in selected MSME clusters in India" funded by Global Environment Facility (GEF) and co-financed by Ministry of Micro, Small and Medium Enterprises (MoMSME) and Ministry of New and Renewable Energy (MNRE).

Using low thermal mass (LTM) material for the kiln cars to reduce the energy consumption in a tunnel kiln

Objective

Reduce the energy consumption in a tunnel kiln by using LTM material for the kiln cars in a ceramic industry.

Implementation

Kiln cars constructed with refractory and insulating bricks were used in the tunnel kiln. These cars were replaced with cars constructed with LTM material for energy saving.

Principle

The kiln cars, constructed with refractory and insulating bricks consume considerable amount of heat energy supplied to the kiln, due to their high thermal mass. whereas kiln cars made with LTM material have low specific heat and sensible heat, so require less thermal energy to heat up resulting in energy saving. LTM cars also have less weight (23% less in the present case) compared to traditional cars resulting in improved productivity and ease of operation.

Savings
₹ 14,02,128

Investment
₹ 3,73,000

Pay Back
4 months

Prepared & designed by:
Confederation of Indian Industry

Unit Profile

Simandhar Ceramic Pvt. Ltd. is a ceramic unit located in Thangadh, Gujarat and established in 2013. Unit manufactures 7,500 MT of sanitaryware per annum.

Benefits

- **Reduced weight of the kiln car**
- **Improved capacity of the kiln**
- **Reduction in energy consumption and energy costs**

Replication Potential

In all the ceramic units with traditional kiln cars are used

Outcomes

- **50,076 SCM of annual natural gas saving**
- **₹ 14,02,128 of annual cost saving**
- **112.2 T of CO_2 reduction per year (56.1 kg/ 1GJ of Natural gas)**

Cost Economics

	Before implementation	After implementation
Weight of the kiln car	465	358
Natural gas consumption per day	680 SCM/ day	524 SCM/ day
No of working days per year	321	321
Natural gas consumption per year	2,18,280 SCM/year	1,68,204 SCM/year
Natural gas saving per year (SCM)	50,076	
Annual cost saving (₹ 28/SCM)	₹ 14,02,128	
Investment (20 cars)	₹ 3,73,000	
Simple payback period	4 months	

Calculation

Natural gas savings per annum (SCM/year) = (fuel consumption before implementation- after implementation, SCM/day) *no of working days/year

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