



**ENERGY EFFICIENCY SERVICES LIMITED**  
A JV of PSUs under the Ministry of Power



Ministry of Micro, Small and Medium Enterprises,  
Government of India



## PROMOTING MARKET TRANSFORMATION FOR ENERGY EFFICIENCY IN MICRO, SMALL & MEDIUM ENTERPRISES

Ministry of micro, small and medium enterprises (MoMSME), Government of India in association with United Nations Industrial Development Organization (UNIDO) is implementing a project funded by Global Environmental Facility (GEF) titled “Promoting Market Transformation for Energy Efficiency in Micro, Small and Medium Enterprises” in India. Energy Efficiency Services Limited (EESL) is the implementing partner for the project.

The overall project objective is to promote the implementation of energy efficiency in the MSME sector; to create and sustain a revolving fund mechanism to ensure replication of energy efficiency measures in the sector; and to address the identified barriers for scaling-up energy efficiency measures and consequently promote a cleaner and more competitive MSME industry in India. The project envisages to extend support to 470 MSME units across 10 identified energy intensive MSME clusters with a target of reduction of energy consumption by 110,000 tonnes of oil equivalent and greenhouse gas emissions by 1 million tonnes of CO<sub>2</sub> emission, leveraging an investment of USD 150 million towards energy efficiency, during its tenure.

### CASE STUDY - 4

#### Installation of Energy Efficient Natural Gas Fired IBR Boiler (1 TPH)

##### Objective:

Steam is one of the key utility in chemical production units. In Ankleshwar Chemical cluster, steam boilers in the capacity range of 0.5 tph to 2 tph are most commonly used. Most of the units in the cluster use old and obsolete vertical boilers to meet their steam requirement. The efficiency of such boilers are as low as 70-75%. The inefficient designs of such boilers lead to high losses, higher breakdown and increase energy consumption. Indian boiler regulation (IBR) governs the design, manufacture, installation and operation of boilers. Using IBR boilers enables higher efficiency leading to reduction in energy consumption.

##### Implementation:

The unit was using a 600 kg/h Non- IBR wood /briquettes fired boiler. The project supported installation of a 1000kg/h energy efficient IBR boiler, thus making the system energy efficient and cost competitive.

##### Principle:

Steam boiler consists of closed steel container used for heating the water to generate steam by some energy sources like burning of fuel gas, liquid or solid. Steam is generated in the design pressure which is normally 7.5-8 kg/cm<sup>2</sup> which is further reduced to the process pressure requirement using a pressure reducing valve. The IBR is basically a construction code that specifies the design, material, fabrication, inspection, and testing requirements for boiler and boiler connected parts for use in India. IBR boilers can ensure a boiler efficiency > 80-85% thus leading to significant savings in terms of energy.



## Unit Profile

**Green Planet Chemical Pvt. Ltd.**, located in the Dahej GIDC, Gujarat is one of the reputed chemical manufacturing company. The unit produces a wide range of chemical solvents.

## Benefits



- ◆ Reduction in specific energy consumption by 10-15 %
- ◆ Reduction in cost of energy by 5-7%
- ◆ Reduction of maintenance cost by 20-30%
- ◆ Reduction in breakdown by 20-30%
- ◆ Safety assurance



Non IBR Boiler



IBR Boiler

## Project Economic

 **Savings**  
₹ 13,18,000

 **Investment**  
₹ 15,00,000

 **Payback**  
1.4 Y (17 months)

## Project Impacts



219,687 kg of annual fuel saving



72 TOE of annual energy savings

## Cost Economics

Fuel consumption (Baseline)	230 kg /y
Fuel consumption (Post Implementation)	193 kg/y
Annual fuel Saving	219,687 SCM/ year
Annual Monetary saving	Rs 13, 18,000
Investment	Rs. 15,00,000
Payback	17 months

## Replication Potential



The technology has significant replication potential in across all industrial process. In Ankleshwar chemical cluster, the replication potential is expected in 6 % of the units i.e. around 35 units.

## Calculation

Annual Energy Savings =  
Baseline fuel consumption  
– Post Implementation fuel consumption



## Contact details:

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