

# **Small and Medium Enterprises: Energy Efficiency Knowledge Sharing (SAMEEEKSHA) Platform – 14<sup>th</sup> Meeting**

Date: 23<sup>rd</sup> August, 2018  
Time: 1:00PM – 06:30 PM

Venue: ITC Sonar  
1 JBS Haldane Avenue, Kolkata

**Ajoy Bandopadhyaya,  
Director  
MSME-DI, Kolkata**

**MSME Development Institute, Kolkata**

**works for development of**

**Micro, Small and Medium Enterprises  
(MSME) in the field of Energy Efficiency  
Knowledge Sharing (SAMEEEKSHA)  
Platform- 14<sup>th</sup> Meeting**

- **MSME Sectors often practice inefficient energy utilising process. Some case studies are presented in respect of state of West Bengal in the field of Energy Efficiency for MSMEs**
- **MSME-DI, Kolkata assisted some enterprises and clusters adopting energy efficient technologies.**

- **Energy efficient technology not only reduces energy cost but also increases productivity and reduces pollution.**
- **Some cases of energy efficient technology intervention are following.**

- **Roofing Tiles Cluster of Murlu, Bankura, West Bengal. This cluster produces clay roofing tiles.**
- **MSE Cluster Development Programme set up Common Facility Centre for the cluster using Shuttle Kiln.**

# **Products of the Cluster**



**Decorative Roofing Tiles**



- **EXISTING FACILITIES FOR HEATING OF CLAY TILES**







|                                 | <b>Fuel used</b> | <b>Cost of fuel per pc</b> | <b>Fuel cost saving</b> | <b>Rejection</b> |
|---------------------------------|------------------|----------------------------|-------------------------|------------------|
| <b>Traditional Kiln Process</b> | <b>Coal</b>      | <b>Rs. 2</b>               |                         | <b>15 %</b>      |
| <b>Shuttle Kiln Process</b>     | <b>Oil</b>       | <b>Rs. 1.40</b>            | <b>30 %</b>             | <b>2 %</b>       |

- **Energy Efficient Technology intervention with**

**M/s. Sree Gauranga Himghar  
Private Limited, Dist.  
Hooghly, West Bengal  
Using Solar Panel.**

- **Connected Load 200 KVA**
- **Installed 100 KWp Grid  
connected Solar Photovoltaic  
Power Generation System**

***MSME-DI, Kolkata assisted with technical  
consultancy and DPR for installing the Solar  
Rooftop Power Plant***



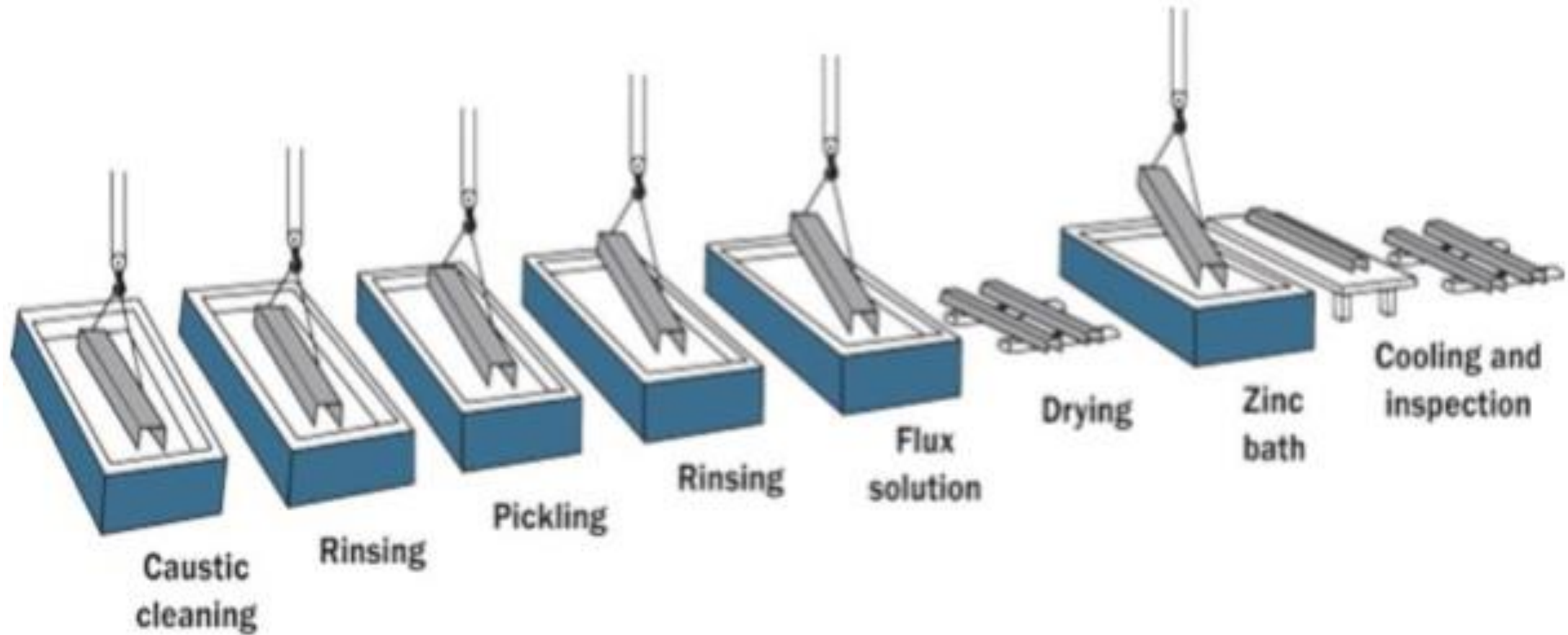
- **Existing units of Refractory Cluster of Asansol, Paschim Bardhaman, West Bengal use Down Draft Kiln which has limitation of producing 1300 °C temperature. Produces traditional refractory bricks. Around 84 units are engaged in brick manufacturing.**
- **Common Facility Centre is being set up in the cluster under MSE Cluster Development Programme**
- **The CFC will be equipped with Rotary Kiln which can produce upto 1650 °C**

# Specific Energy Conservation and Cost Saving

|                    | <b>K Cal/kg</b> | <b>Energy Cost Saving</b> |
|--------------------|-----------------|---------------------------|
| <b>D D Kiln</b>    | <b>4200</b>     |                           |
| <b>Rotary Kiln</b> | <b>1413</b>     | <b>66%</b>                |

- **GEF-5 Program is being implemented for 10 msme clusters for energy efficiency.**
- **Major stakeholders of the programme are UNIDO, MSME, EESL, BEE and SIDBI.**
- **10 MSME Clusters are selected for intervention**
- **Galvanizing and Wire Drawing Cluster of Howrah, W. B. is one of them. Implementation is under process.**

## MANUFACTURING PROCESS-GALVANIZING



## WIREDRAWING

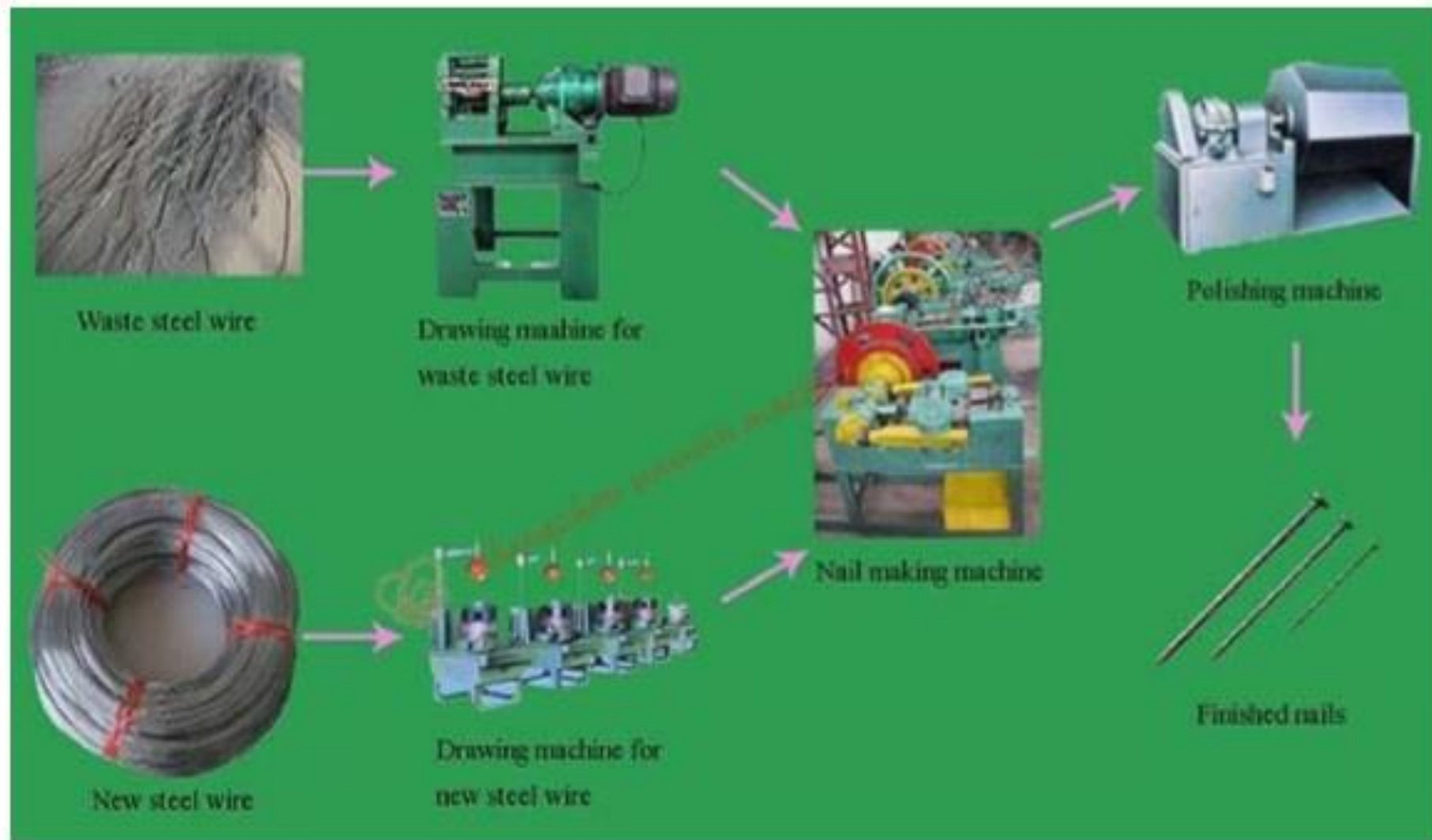


Figure for Wire-drawing process

- **Fuels used in galvanizing**  
**1.Furnace Oil 2.Electricity 3. Bio Mass 4.LDO HSD 5.Coal**
- **Share of energy cost 20 – 30%**
- **Technology Solution for Energy Conservation in Galvanizing Units**
  - 1) **Waste heat recovery from exhaust gas for preheating combustion air/ heating flux solutions**
  - 2) **Fuel switching like employing bio-gasifier**
  - 3) **Improving furnace wall insulation**

- **Technology Solution for Energy Conservation in Wire Drawing Units**

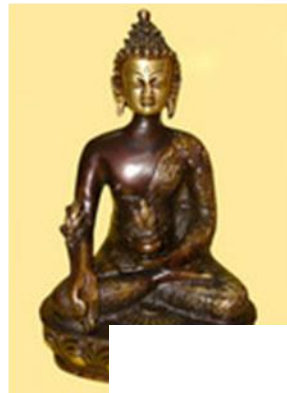
- 1) Using motors of proper size and energy efficient motors**

- 2) Replacement of electrically heated furnace with oil fired annealing furnace**

- 3) Using energy efficient fans and lights**

**Some Brass and Bell Metal Product Clusters are present in West Bengal producing utensils and handicraft items. West Bengal is one of the major producers brass and bell metals in the country.5 (Five) of these clusters are under intervention jointly by Govt. Of West Bengal, National Metallurgical Laboratory and MSME – DI.**

# Major Brassware Products across the country



# RELEVANCE

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**Employment: Over 6 million people**

**Annual export: 1.1 billion USD approximately**

## Problems:

- Decrease of sale of brass artifacts
- Increase in cost of raw materials
- Competition from foreign products

Artisans are in dire economic situation and are abandoning their age old profession.



# **Problems of the Cluster**

## **Energy Inefficiency related:**

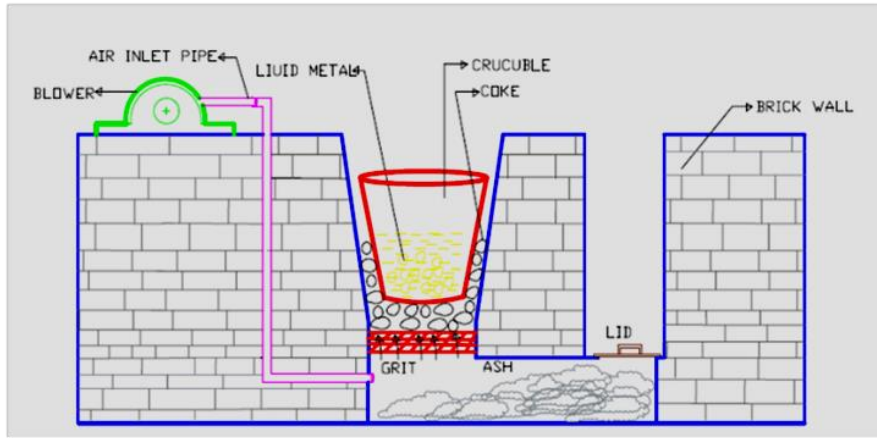
- 1) Use costly fuel – coal/coke**
- 2) Cold air is fed into furnace**

## **Pollution related:**

- 1) High sulphur containing coal is burnt in the furnace**
- 2) Furnace top is kept open causing exposure of toxic flue**
- 3) Zinc vapour comes out and inhaled by artisans**

## **Technology related:**

- 1) Oxidation loss of molten metal degrades products**
- 2) Proper mold making techniques are not practiced**
- 3) Diversification scopes are not explored**



Traditional Brass melting furnace



## Artisans use home based traditional coke fired furnace -

Energy inefficient

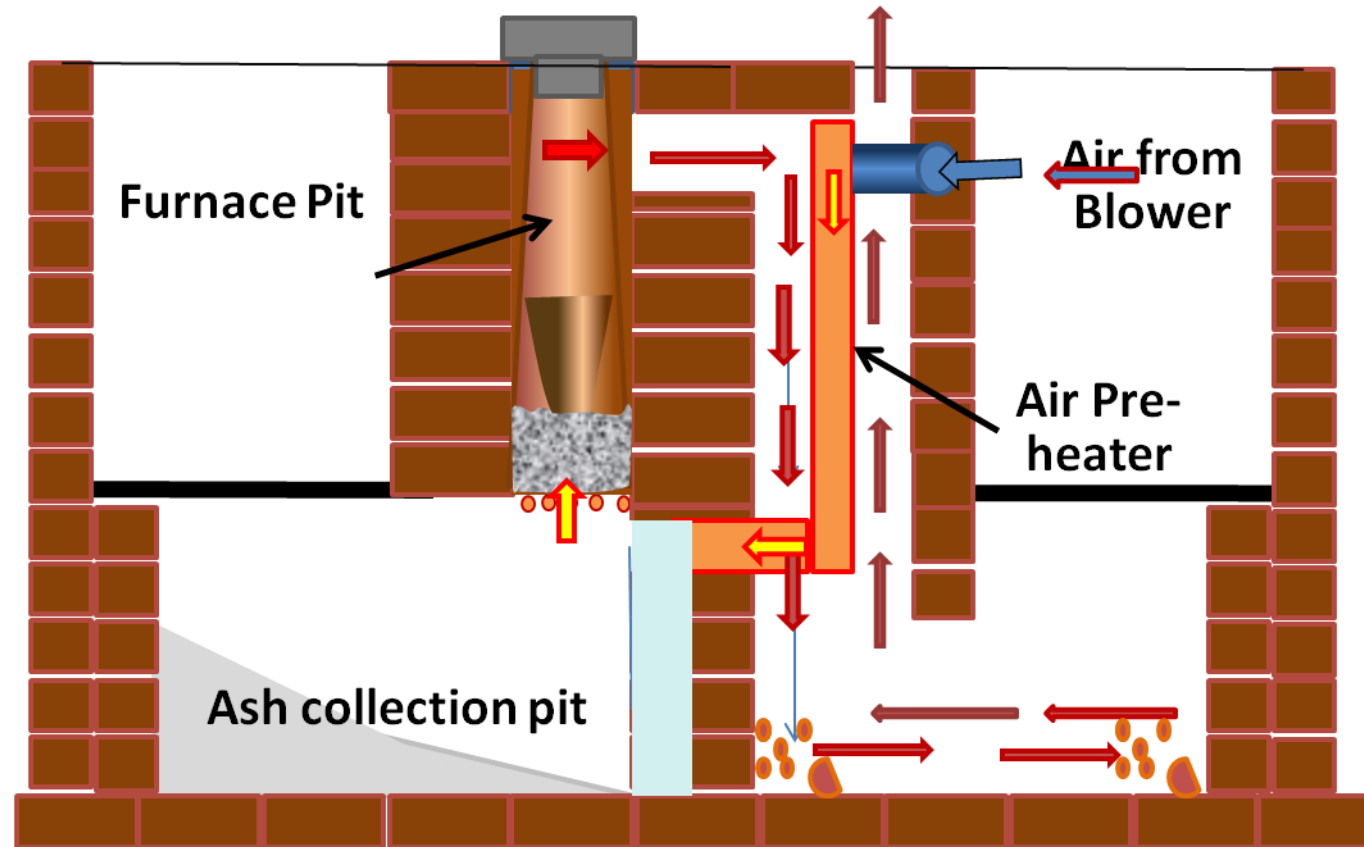
- ❖ Less productivity
- ❖ Uncongenial working environment
- ❖ Substantial zinc vapour & suspended particulate matter comes out of the furnace which the artisans directly inhale
- ❖ Polluting and health hazardous.

# **CSIR-NML: Developed Energy Efficient & Less Polluting Brass & Bell Metal Melting Furnace**

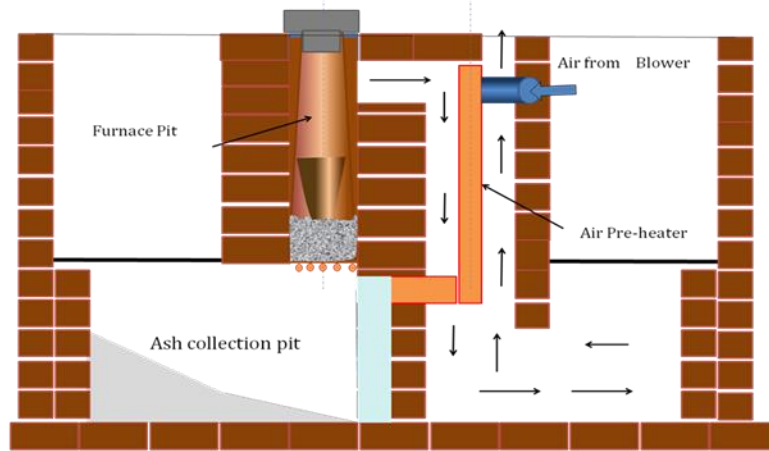


**Impact of development over traditional furnace**

# CSIR-NML: Developed Energy Efficient & Less Polluting Brass & Bell Metal Melting Furnace



## Developed Energy Efficient Furnace: Features



**Capacity of furnace :3-50 kg**

**Pre-heater – for pre heating input air for combustion**



## Commercial impact:

| ITEM                       | Traditional furnace | Developed furnace installed at Moradabad |
|----------------------------|---------------------|------------------------------------------|
| Brass melt (kg / day)      | 80                  | 96                                       |
|                            |                     |                                          |
| conversion Charge (Rs.)    | 2000                | 2400                                     |
|                            |                     |                                          |
| Average Daily Income (Rs.) | 700*                | 1240*                                    |

[www.innovationcouncil.gov.in](http://www.innovationcouncil.gov.in)

- Daily income enhanced from Rs. 250 to 400
- Lowering of brass melting cost: ~ Rs 3/kg

**CSIR-NML also developed Gas based brass melting furnace for artisans in association with M/s Indiam Thermal Engineering, Kolkata**

**Two types of furnace developed:**

- **Medium scale capacity (~150 kg) – primarily for melting raw materials for brass to cast ingots**
- **Small scale capacity (3-20 kg) – primarily for local small artisans for re-melting of ingots and casting of artifacts**

**Impact:**

- **Pollution free resulting no health hazards**
- **Less brass melting cost**
- **Higher productivity**
- **All brass melting unit will be benefitted by this**



# **Scope for Energy Efficient Technology envisaged in:**

- **Cold Storages-by installation of solar roof-tops**
- **Rice Mills**
- **Foundry Industries**
- **Other Sectors**

# THANK YOU

**Contact us at:**

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