



## **STEEL ASIA MANUFACTURING CORPORATION**

### **Installation of Ceramic Fiber Insulation Inside the Furnace Wall at Recuperative Zone Side**

#### **SUMMARY OF THE OPTION**

Steel Asia Manufacturing Corporation (SAMC), a joint venture with TATA Steel from India, is located in Bulacan in the Philippines and produces reinforcing steel bars (also referred to as rebar) for use in construction.

High surface wall temperatures were measured at the Walking Hearth Reheating Furnace, especially at the recuperative zone side. This resulted in high radiation and convection losses at the reheating furnace wall, amounting to 16,371 kcal/hour. Approximately 17 m<sup>2</sup> ceramic fiber was installed to insulate the inside furnace wall at the recuperative zone side. This reduced the heat losses by more than 75% (13,180 kcal/hour), resulting in 5,514 liters of bunker fuel oil reductions per year. Investment costs were US\$ 180, electricity cost savings were US\$ 2,410 and the payback period was 0.9 months.

#### **KEY WORDS**

Iron and steel, Philippines, Furnaces and Refractories, Heat Loss

#### **OBSERVATIONS**

The measured average surface wall temperature of the recuperative zone side of the Walking Hearth Reheating Furnace was around 141°C, which was relatively high compared to the standard of 50°C. The calculated heat loss based on these data was about 16,371 kcal/hour.

#### **OPTIONS**

The proposed option was the installation of ceramic fiber insulation in selected areas, such as the side of recuperative zone and the right side of zone III to cover approximately 17 m<sup>2</sup>. This would lead to a reduction of the surface wall temperature of the furnace and consequently reduce the heat loss due to convection and radiation.

The plant purchased ceramic fiber (Cerakwool) from a Philippines supplier in boxes of 2 m<sup>2</sup> blanket with a thickness of about 2 inches. As part of the installation of the insulation material some refractory bricks were also replaced.

#### **RESULTS**

##### **Financial benefits**

- Investment: US\$ 180 (including labor)
- Annual operating costs: minimal
- Annual cost savings: US\$ 2,410
- Payback period: 0.9 months

### **Environmental benefits**

- Annual energy savings: 5,514 liters bunker fuel oil (based on reduced heat requirement of 13,180 kcal/hour)
- Annual GHG emission reduction: 16.54 tons CO<sub>2</sub>

### **Other benefits**

- Improvement in working conditions due to reduced heating of the ambient air at the work area surrounding the furnace

## **FOR MORE INFORMATION**

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