



STEEL ASIA MANUFACTURING CORPORATION

Installation of Heat Resistant Cloth Canvass on Charge and Discharge Door of Furnace to Reduce Heat Loss

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.

The company incurred high heat losses at the Walking Hearth Reheating Furnace during the opening of the charging and discharging doors of about 137,684 kcal/hour and 1,652,936 kcal/hour respectively.

The option recommended was to install heat resistant cloth canvass at the discharge and charging door of the reheating furnace to minimize heat losses. The option was implemented last September and projected savings amounted to US\$ 148,028 per year against an investment of US\$ 2,545 and a payback period of one week. Annual bunker fuel reductions would be 678,487 liters bunker fuel oil, equating to GHG emission reductions of about 2,035 tons of CO₂ per year.

KEY WORDS

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

OBSERVATIONS

Charging and discharging of billets at the Walking Hearth Reheating Furnace doors are controlled manually. When the furnace doors are opened, flames inside the furnace is exposed to the outside air. This results in significant heat loss due to infiltration, radiation and convection. Estimated heat loss at the discharge door was about 1,652,936 kcal/hour and at the charging door about 137,684 kcal/hour. This was calculated using the following figures: furnace pressure is at +0.6 mm WC, charging door temperature is 426°C, discharge door temperature is 1144°C, furnace operation is 24 hours and the furnace uses about 30 liters bunker fuel per ton of steel rebars.

OPTIONS

Ceramic cloth covers could be installed at the charging and discharging doors to reduce heat loss. In addition, the ceramic cover of the sensor rod at the zone III side could be replaced.

RESULTS

Financial benefits (expected)

- Investment: US\$ 2,545
- Annual operating costs: not given
- Annual cost savings: US\$ 148,028
- Payback period: less than one week

Environmental benefits (expected)

- Annual bunker fuel savings: 678,487 liters (based on reduction of 895,310 kcal/hr, and an estimated Heat loss reduction of 50%, although in practice this is probably higher)
- Annual GHG emission reduction: 2,035 tons
- Reduction in the electricity used to pump the bunker fuel (not quantified)

Other benefits

- Improved working conditions

FOR MORE INFORMATION***GERIAP National Focal Point for the Philippines***

Dr. Alice B. Herrera

Officer-in-Charge, Fuels and Energy Division

Industrial Technology Development Institute

Gen. Santos Ave., Bicutan, Taguig City, Metro Manila Philippines 1631

Tel: +632 837 2071 ext 2190

Tel fax: +632 837 2071 ext 2204

E-mail: aherrera@dost.gov.ph, abherrera@pacific.net.ph

GERIAP Company in the Philippines

Ms. Belen W. Yao

AVP – Gen Plant Services

Steel Asia Manufacturing Corporation

090 Ciudad Industria, Bo. Bahay-Pari, Meycauyan, Bulacan, Philippines

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