

## Case Study: Steam Boiler House Insulation at Henkel Facility with Thermie-S Material

### Introduction

The objective of the insulation project at the Henkel facility, carried out by HungaroWatt Kft., was to reduce heat loss in the steam boiler house. The showcased insulation technology used the Thermie-S material. This case study examines the efficiency of the insulation and the economic benefits derived from it.

### Situation Assessment

Two different sections were examined at the Henkel facility: an uninsulated surface and an insulated surface. The temperature of the uninsulated surface was 133°C, while the insulated surface was 88°C. The energy flow values (heat loss) were also measured: on the uninsulated section, it was  $Q_1 = 114.79 \text{ W/m}$ , and on the insulated section, it was  $Q_2 = 55.7 \text{ W/m}$ . Additionally, the economic costs were recorded: the uninsulated section cost 1.75 Ft/mh, while the insulated section cost 0.84 Ft/mh.

### Calculation of Insulation Efficiency

To calculate the efficiency of the insulation, the reduction in heat loss needs to be determined. This can be done using the following formula:

This means that each meter of insulated surface results in an annual cost savings of 0.91 Ft due to reduced heat loss.

$$\text{Insulation Efficiency}(\eta) = \left( \frac{Q_1 - Q_2}{Q_1} \right) \times 100$$

The reduction in heat loss:

$$\Delta Q = Q_1 - Q_2 = 114.79 \text{ W/m} - 55.7 \text{ W/m} = 59.09 \text{ W/m}$$

Efficiency:

$$\eta = \left( \frac{59.09}{114.79} \right) \times 100 \approx 51.47\%$$

### Economic Analysis

Calculating the reduction in costs:

$$\text{Cost Reduction} = 1.75 \text{ Ft/mh} - 0.84 \text{ Ft/mh} = 0.91 \text{ Ft/mh}$$

### Results and Conclusions

The insulation project carried out at the Henkel facility resulted in a significant increase in efficiency, reducing heat loss by over 51%. Concurrently, the economic analysis demonstrated that the use of insulation led to a cost saving of 0.91 Ft/mh, which translates into significant long-term cost reductions.

This project clearly illustrates the effectiveness and economic benefits of the Thermie-S insulation material, and it could be recommended for other similar industrial facilities where reducing heat loss and optimizing costs are important considerations.

(Note: In 2013, our product was still marketed under the name Thermo-S, but due to patent reasons, the name has since been changed to Thermie-S.)

## 7. Gőzkazánházi hőszigetelés Thermo-S anyaggal

