Ladle Lining Composition Superwool® 1650SI Board

Industry: Iron and Steele
Application: Ladle Lining Composition
Product Solutions: Superwool 1650SI Board
Location: USA

December 2022

The Challenge

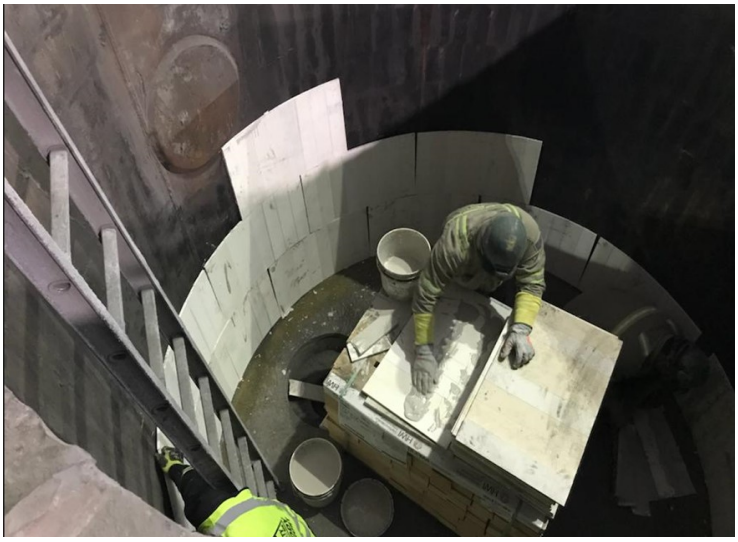
In the face of heightened carbon footprint awareness and rising energy and raw material costs, more efficient use of advanced thermal insulation materials is significant in energy-intensive industries such as iron and steel.

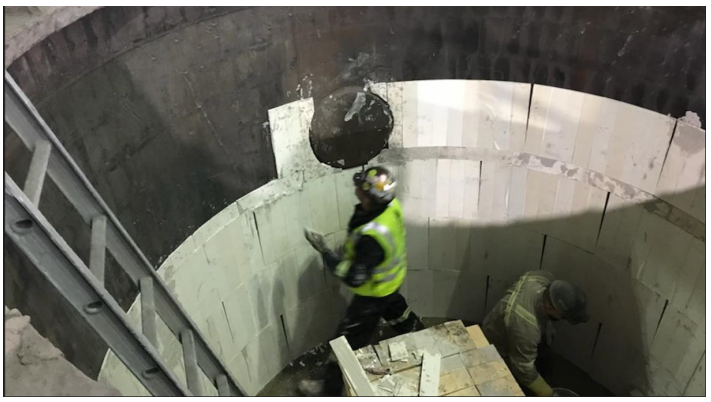
The steel ladles did not have a backup lining, only the working and safety linings. The shell temperature for the ladles was in the range of 700 to 750°F. The customer's initiatives to save energy and reduce the carbon emission in their processes due to high heat loss and energy costs for the company

Application Overview

A thermal analysis and discussion with the customer to understand expectations for ladle improvement, Morgan recommended the use of Superwool 1650SI Board, our best-in-class 1650°C classification temperature low bio-persistent structural insulation board.

Profile Calculations 120MT Ladle	Theorical Savings	Actual Savings
Ladle Side Surface Area	35.5m^2	35.5m^2
Heat Loss Per Existing Lining Design	12403W/m^2	12403W/m^2
Heat Loss as per proposal lining design	7248W/m^2	5677W/m^2
Difference	5155m^2	6726m^2
Total Heat difference for ladle	183kW	239kW
Total hours of ladle is filled	24hr	24hr
Total Heat Savings	4392kWh	5731kWh
Energy cost per unit	$0.02kWh	$0.02kWh
Payback period-/ No of days	122	94
Total Energy Savings	$26,310	$34,328





Case Study Publication Date: 28 April 2023

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Ladle Lining Composition Superwool® 1650SI Board

The Solution

The improved system design for the ladles with the Superwool 1650SI board proved to the company's that it saves energy and reduces the carbon emission to support

Customer Impact

- Reduction in shell temperature of 200 to 250°F
- Pay-back achieved between 91 to 122 days
- Energy savings per ladle is between $26,300 to $34,000 per year.

The use of better thermal insulation materials, the ladles temperature were reduced for each one. Therefore, improves the ladles holding time before and during casting.

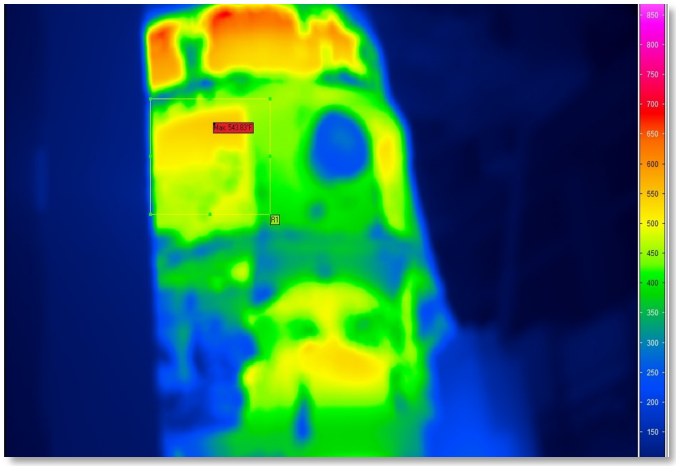
By exposing the steel ladles to lower temperatures, Morgan's thermal insulation system helps to improve the safety and working lifespan of the ladle operations significantly.

Official Results

IR Camera Superwool 1650SI Board
November 2022

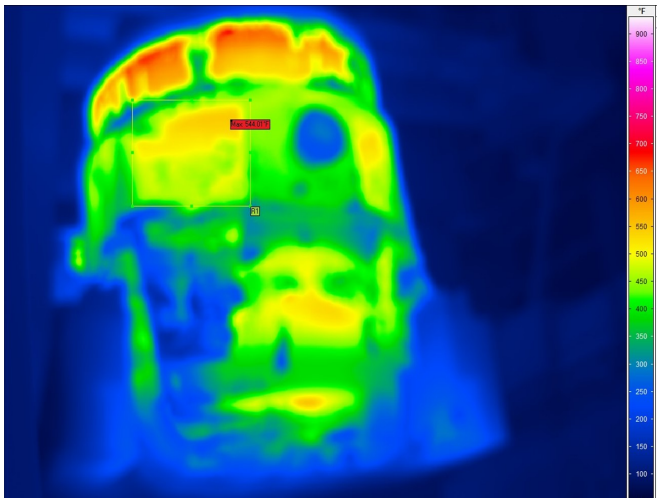
Ladle 14

ID	Avg	Min	Max	Span	SDev
R1	472.04	228.54.	543.83	315.29	45.53



Ladle 15

ID	Avg	Min	Max	Span	SDev
R1	467.88	272.82.	544.01	271.19	46.17



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