

## UNIFRAX APPLICATION STORY



**Product Solution:** Fiberfrax® S Grade Module  
**Industry:** Ferrous  
**Application:** Transport Ladle Desulphurisation  
**Location:** Slovakia

AUGUST 2019

### Business Challenge

Globally manufacturers and end users demand steel of an ever increasing quality. The need to produce steel with consistent chemical and physical properties to allow further processing into finished product forms is essential. This involves removing impurities from the hot metal.

The majority of the world's steel is produced via the integrated blast furnace - basic oxygen furnace (BF - BOF) route. The liquid hot metal that leaves the BF contains impurities, which have to be removed later in the process. Typically liquid steel is tapped from the BOF and sent to the secondary metallurgy ladle treatment. Here remaining impurities are removed, and alloying elements and deoxidisers are added. When the steel has the desired chemical composition, it is cast into solid steel.

### Application

A twin ladle desulphurisation unit was designed by a leading engineering company based in Eastern Europe. One of the main criteria was to maintain hot metal temperatures during the desulphurisation process. A robust, energy saving solution was sourced from Unifrax.

Two steel structures were designed, incorporating moveable sections, to cover each ladle during desulphurisation process. These were lined internally with Fiberfrax Anchor-Loc Modules and a hot face coating of Silplate® Mass 1500.

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**“THERE IS NO PROBLEM WITH THE INSULATION OR COATING”**

## Solution

The areas to be lined included side walls and roof sections. The lining chosen was Fiberfrax S grade (1250 °C) Anchor-Loc RX2 Modules with a hot face coating of Silplate Mass 1500. This combination combined low thermal mass, low weight and physical strength.

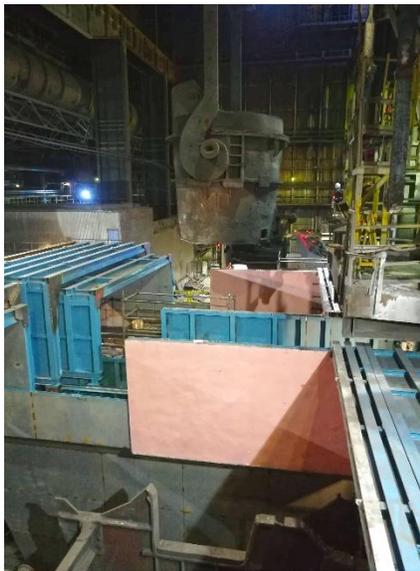
*(Photo-1)*



*Photo-1 Modules being installed*

The lining consisted of a series of 100mm (4") thick modules manufactured from blanket. These were supplied edge-stacked with internal RX2 (side fixing) internal metal-work. Density was 190 kg/m<sup>3</sup> (12 pcf). Modules were installed in a unidirectional system with a single batten between rows of modules. Silplate Mass 1500 was installed in the joints between modules and as a hot face coating 10mm thick.

The Unifrax Application Engineer worked closely with the client to fulfil the design conditions and provide a practical lining solution based upon Unifrax standard installation guidelines. This resulted in a lining that could be installed quickly, during a production shutdown, and allowed the removable sections to be used in service without problems as the unit was put into service. *(Photo-2)*



*Photo-2 Lining after installation*

The lining works well in handling the operating conditions, a combination of high temperature, atmosphere and molten metal contact during use. This solution also helps to maintain they molten metal temperature and save energy. *(Photo-3)*



*Photo-3 Charged ladle and the station in use*

The Silplate Mass 1500 layer works well as a protective barrier. During operation the lining surface may be splashed with molten metal. After some time the metal deposits fall away from the Silplate Mass 1500 without damaging it, or the module lining. *(Photo-4)*



*Photo-4 Metallic deposits peeling away from Silplate Mass 1500*

## Advantages

An engineered solution was developed around Fiberfrax Anchor-Loc Modules in conjunction with Silplate Mass 1500 to provide a practical, long term solution. The application engineering team at Unifrax worked precisely to interpret the needs of the client. Lining/installation drawings and installation guidance were provided to allow simple, but effective installation.

The ease of installation allowed the installation work to be carried out during a scheduled production shutdown. This allowed the units to be in service very quickly. The benefits include a thermally efficient lining that maintains metal temperature and provides energy savings.

## About Unifrax

Unifrax is a global leader in high-performance specialty products used by many industries in a diverse group of industrial applications. Our products provide substantial improvement in thermal performance, save thousands of dollars in energy costs and can help reduce your operations environmental footprint.

## Contact Us

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