

UNIFRAX APPLICATION STORY



Product Solutions: Saffil M-Fil grade Module
Industry: Ceramic-Porcelain Production
Applications: Porcelain Tunnel Kiln Roof
Location: Turkey

NOVEMBER 2018

Business Challenge

Porcelain kilns provide a significant challenge for a low thermal mass lining application due to their high operating temperature combined with a demanding production schedule. The kiln operator is looking for continuous operation, low maintenance and minimum shutdown periods. All of these requirements have to be sustained whilst providing the maximum energy saving benefits.

The high temperature product range from Unifrax combined with extensive application engineering experience, gained over many years in a variety of industrial sectors, were implemented for this application to achieve all of the above goals.

Application

The tunnel kiln is used for the production of high quality porcelain. It forms part of a production complex of an internationally renowned ceramic producer.

This kiln has a fibre based roof lining and refractory lined walls.

The original kiln roof lining was a 1600 °C grade fibre based lining. This provided good service, however, the decision to replace this lining with a 1450 °C grade ceramic fibre module lining, installed with a hot face coating, saw a significant reduction in operating efficiency and lining life cycle. This lining required replacement every 1 - 2 years. The lining exhibited high levels of shrinkage and required a large amount of maintenance.

“Immediate benefits were realised by the kiln operator.”



Roof casing and modules during installation work.



Roof section during installation, prior to lifting onto the kiln roof

Solution

Unifrax were asked to submit a lining proposal that would offer significant performance improvements, enhanced service life and reduced operating and maintenance costs.

Working through a local refractory engineering company, the Application Engineering team put together an engineered solution based on Saffil M-Fil grade (PCW - Polycrystalline Wool) Anchor-Loc Modules. These modules were edge stacked construction, 130 kg/m³ density, supplied without anchors.

The modules were produced to special dimensions, with lengths of 2090 or 2430mm, 325mm wide and 300mm thick. These special modules allowed installation onto the furnace roof from the outside without the need to remove pipework, cables and other ancillary equipment required for normal kiln operation.

The modules were installed onto the roof supporting steelwork sections over 2 x 25mm thick back-up layers of Fiberfrax Durablanket Z 25mm x 128 kg/m³.

The roof construction consisted of an expanded metal casing and a steel angle framework. The modules were retained using a 'stack bond' type anchor system.

Where required a 25mm 'batten' of Fibermax Blanket 25mm x 100 kg/m³ was installed between modules to maintain compression of the lining.

The special modules were installed successfully and the kiln recommissioned. Immediate benefits were realised by the kiln operator.

Customer Advantages

A summary of the advantages and benefits that were obtained by this unique engineered solution can be summarised as follows.

- Ease of installation
- High temperature stability
- Thermal performance
- Reduced maintenance
- Energy savings
- Low shot content



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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