

# Extended heat exchanger life

by Blasch Precision Ceramics, USA

*Blasch Precision Ceramics engineered an alternative to Ni-Hard cast iron inserts in tube sheets, designed to protect the tube end and extend the life of clinker cooler heat exchangers, situated downstream of the cooler and ahead of the kiln baghouse filter, yielding a number of savings.*

**C**linker cooler heat exchangers, or gas-to-air tubular exchangers, are used in the cement industry to cool exhaust gases from the kiln so that the temperature is sufficiently low to avoid damage to the filter bags in the baghouses. In almost every case, the dust contains high levels of corrosive and erosive compounds at temperatures exceeding 600°C.

Plant operators often experience severe wear on the upper inlet side of the tubesheet and within the first few inches of tubing. This may lead to leaks which require immediate tube replacement or repair, adding substantial cost and downtime. The lifetime of these units is often no more than five years. Very often whole tubes of 20ft or longer must be cut out and replaced – a time-consuming and expensive exercise, particularly if unplanned.

## Ceramic alternative

Some operators use abrasion-resistant Ni-Hard cast iron inserts which only last 1-2 years and require constant attention. In many industrial wear applications involving sliding abrasion, ceramics have been proven to last considerably longer than Ni-Hard, in some cases by five times.

The Blasch Precision Ceramics OXYTRON™ clinker cooler wear insert is designed to protect the tube end along with the first 6-36in of the tube ID. Generally after this distance, the cooling gas flow has straightened out, or developed to the point that abrasive wear typically drops off.

Installation is fast and simple. The inserts can come fully wrapped with fiber paper for slide-in installation, with a custom-engineered high-temperature mortar, or held in place



Blasch Precision Ceramics takes up the battle against corrosive cooler exit gases

with a proven refractory face on the tubesheet. Since pressure drop is always a concern, Blasch Precision Ceramics has minimized the insert tube wall thicknesses with each insert designed to fit a specific boiler tube size.

These inserts have been proven to last for years in a wide range of applications including in the cement industry. They can also be used to temporarily seal any leaks due to holes in the tube, allowing for a quick return to service until a re-tubing can be scheduled and completed.

Blasch inserts may be manufactured

with round flanges to cover just the tube end, or square alternatives to cover the entire tube sheet between the tubes.

OXYTRON is more abrasion resistant than cast steels, at about one-third of the weight, according to Blasch, who also highlight that it tolerates thermal and corrosive environments very well. OXYTRON is a proprietary silicon carbide composite material which can be cast into complex shapes, demonstrating tight and repeatable tolerances, ensuring ease of installation.



Above: tread plates

Right: installed OXYTRON wear insert tubes

