

2023 TAPPI-PEERS Abstract Submission for New Product Showcase

“The Path towards Carbon Neutrality – How Reduced Thermal Conductivity Refractories Can Contribute”

Presenter / Bio:

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ABSTRACT

In the ongoing quest for reduced CO₂ emissions and eventual Carbon Neutrality, customers are employing all potential methods that could contribute to a reduction in CO₂ output.

Within the Lime Sludge Recovery kiln - energy savings are of critical importance, as this directly translates into reduced shell temperatures on the rotary kiln, with the potential added benefits of reduced fuel consumption and therefore reduced CO₂ footprint. Historically, lime sludge rotary kilns have used dual layer linings as an effective means to provide reduced heat transfer through the refractory lining resulting in lower kiln shell temperatures.

Technological advancements in the refractory qualities used in the Lime Sludge Recovery kiln have resulted in the successful development of products with reduced thermal conductivity. Initially the emphasis was upon the reduction of the kiln shell temperature. However it is now possible to correlate the reduction in heat flow through the refractory lining to an improvement in the specific heat consumption inside the rotary kiln process. Independent evaluation and verification has been done by the VDZ (German Cement Association) which has correlated the reduction in heat flow to reduced fuel usage and therefore a decrease in the CO₂ generated during the calcination process.