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Refractory lining – A key component for lime kilns.

A continuously changing demand challenges the lime kiln operation in beet sugar factories. There is the request for increased lime capacities, for a flexibility in fuel usages such as coke vs anthracite or natural gas vs biogas, for an increased lifetime and less maintenance efforts and finally for energy saving measures respectively fuel cost reduction. In some factories the lime kiln is a very long existing asset. The outer steel structure is given, but the inner shape can be adapted by a modified refractory lining to improve the material flow and the air-energy distribution. At the end of the day a chance to improve kiln performance. In detail the paper touches the topics (1) concept of a refractory lining, (2) different requirements for coke or natural gas operation, (3) documentation and reporting as basis for improvements, (4) wear phenomena, (5) chemical infiltration and thermal impacts, (6) damages and port-mortem analysis, (7) veneering and maintenance repairing, (8) energy saving with refractory bricks, (9) warehousing and hydration prevention.

A refractory lining is by far not a consumable. Reliability during the campaign, durability and certain capability to cover process or mechanical events inside the lime kiln makes it necessary to consider a refractory lining as a key component of a lime kiln in a beet sugar factory. The paper will contain drawings, pictures, microscope images and videos and will bring the topic of refractory and the real life inside a lime kiln to the audience.