Challenge: Ceramic Composite Material with Novel Structure for Refractory Products

2021-06-06

RHI Magnesita is seeking for a new method for the production of ceramic materials to get innovative material combinations & structures for enhanced corrosion/erosion and thermo-shock behavior which can be used in different areas of operation.

Traditionally, oxide materials, like MgO, Al2O3 and SiO2, are used as main raw materials. For this innovation, the deviation from the usual materials are possible and welcome as long as refractoriness can be maintained.

The following ideas are considered: ceramic matrix composite (according to fine ceramic materials) or the production of a porous material followed by impregnation and/or other post-treatments. For the impregnation different materials are conceivable.

Refractory materials must withstand high demands. Typical conditions are a reducing atmosphere, but the material must withstand oxygen without failing completely.

The following properties should be fulfilled:

- withstand a high thermal shock which means a temperature change from approximately 300 °C to 1500 °C within few seconds
- thermal shock resistance: preferred for several times
- erosion, abrasion and corrosion resistance

Submissions to this Challenge must be received by Jul 1, 2021.