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Investigations on hearth refractory and skull

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The Gwangyang Blast Furnace No. 3 experienced an early relining approximately 12 years after its initial blow-in due to premature wear of copper staves leading to shell damage and damage to the hearth cooling system caused by hot metal leakage at the No.1 taphole. To expand the internal volume from 4600 m^3 to 5500 m^3, a complete dismantling of the furnace body was undertaken. During this period, core boring was conducted in areas where the hearth cooling system was damaged to sample the hearth refractory and skull. These samples were analyzed for their composition, conductivity, and other properties based on their location. The study results provide insights into the material degradation mechanisms and inform strategies for enhancing the durability and performance of blast furnace components.

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