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Recent Activities in Research of Refractories and Slag

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Synopsis :

Technology trend in the last decade in refractory and slag fields as well as research activities at the Refractories & Slag Laboratory of Kawasaki Steel are described. Main activities in the refractory field have been focused on the development of refractory materials, construction and repair technologies, and technologies for wear reduction of refractories. In the slag field, reduction and improvement technologies of waste slags and development of new uses of slags have been the main subjects. Topics of newly developed technologies such as flame gunning repair, graphite-containing monolithic refractory, brick lining and slag control, and control of waste slags were also discussed.

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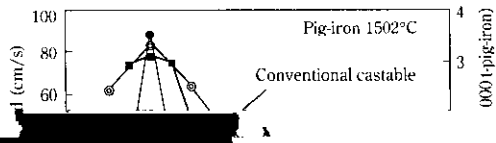


要旨

耐火物，スラグ分野での過去 10 年間の技術動向，および川崎製鉄の耐火物・スラグ研究部門の活動概要を述べた。耐火物分野では，溶射補修技術開発とコークス炉への適用，不定形化の拡大，築炉構造設計・スラグ設計による炉寿命延長などで成果をあげている。ス

Table 1 Comparison of various flame gunning techniques for coke oven

Technique	Advantages	Disadvantages
Water gunning	Low cost, simple operation	High steam production, risk of explosion
Oil gunning	High energy density	High cost, pollution, safety concerns
Gas gunning	High efficiency, clean	High cost, complex equipment
Electric gunning	High efficiency, clean, precise control	Very high cost, complex equipment



Information of slag coating in furnace

Calculation of slag state by thermodynamic calculation software

Analysis of operation condition

Stability condition

Stability condition

