

# Improvement of DC furnace lining used for recovery of PGM's

RMS conducted exhaustive testwork to improve lining performance of a PGM recovery process.

## The Problem

The furnace refractory had to be continuously maintained using gunning, resulting in weekly outages and additional opex.

## Client Request

Improve the refractory lining to allow for continuous operation without shutdown and reduced costs by eliminating gunning repairs.

## Solution

RMS conducted a desktop study of the process, followed by exhaustive static and dynamic slag testing. The dynamic slag testing used rotary slag testwork, comparing the theoretical and static test samples with the current magnesia chrome brick in use.

The slag system was found to not be saturated in magnesia and this resulted in loss of free magnesia from the magnesia chrome brick. The slag could not be modified any further due to metallurgical and thermal constraints.

RMS proposed a rebonded chrome magnesia brick with chrome enrichment and no free magnesia present. The RMS brick showed significant slag resistance compared to the magnesia chrome brick.

## Results

This quality brick was installed into the furnace and during operation, no maintenance of the lining by gunning was needed. The campaign performance was excellent and the client achieved continuous operation and low opex costs due to no gunning. Overall, the cost of production reduced significantly.

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