

Smelter Performance Audits

Client: Inner Mongolia Huomeihongjun Aluminum Electricity Co.(IMHAE)

Location: Houlin Gol, Inner Mongolia, China



The Project

An independent audit of a single potline at the IMHAE smelter in Houlin Gol, Inner Mongolia.

The purpose for the audit was to highlight best practices and identify potential improvement pathways. Independent audits were carried out by two teams on the Potrooms and the Carbon plant. For each business unit the following were scrutinized in detail.

- Process control.
- Design of business unit process, layout, equipment and information systems.
- Operational practices.
- Management processes.

LMRC's Role

A six members (3 potroom / 3 carbon plant) audit team of highly experienced potroom and carbon plant engineers from LMRC travelled to Houlin Gol to lead the 10 day independent audit of the smelter. Once onsite the team worked closely with the technology suppliers, smelter management, and operations personnel to gather all required information to form a conclusive assessment of the current operating condition of the plant.

The team was responsible and controlled all aspects of the audit process to ensure that the independence of the audit was maintained throughout. Through detailed observation, data collection, data analysis and discussions with management, supervisors and operators the LMRC audit team assessed and reported to smelter management:

1. Smelter practices, processes and operations that should be highly commended.
2. Smelter practices, processes and operations that could be improved, with analysis of the physical and financial benefit to the smelter.
3. Ranking of improvement projects indicating level of urgency and financial commitment required.
4. Long term strategic project plan, indicating long term KPI targets and recommended pathway to achieve them.

The Results

LMRC provided IMHAE with a full assessment of the current operating state of the plant and the potential for improvement going forward. Over 80 improvement recommendations were given across the potrooms and carbon plant. Examples include:

Potrooms:

1. Improved anode design to achieve lower overall voltage drop.
2. Improved alumina feeding strategy.
3. Improved breaker feeder design.
4. Strengthen use of collected potroom data for problem diagnosis and decision making.

Carbon Plant:

1. Improvement to core sampling strategy to better assess anode abnormalities.
2. Standardise cast iron composition.
3. Introduction of slots for reduced voltage drop.
4. Strengthen data analysis and interpretation.



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