

Detective work solves zinc smelter puzzle

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Physical models and computational fluid dynamics helped researchers to better understand ore feed and mixing behaviour at the Risdon smelter.

Thorough detective work by CSIRO researchers has helped identify the cause of unusual brick degradation in a Tasmanian zinc smelter.

Although the plant has been operating since the 1960s, the brick degradation was a relatively recent phenomenon.

“We used physical modelling, computational fluid dynamics, numerical modelling and our expertise in thermodynamics to investigate the case,” says Dr Seng Lim of CSIRO Minerals.

“Working closely with the company and using a range of approaches meant we were able to gain a clear understanding of what was happening in the roaster bed and within the roaster dome area.”

Dr Lim took this understanding – and a solution that had been tested and

proven at CSIRO's Clayton facilities – and presented it to current smelter owners Nyrstar. It was, he says, “a bit like Hercule Poirot unveiling his evidence.”

According to Nyrstar senior metallurgist Kevin Halbe, CSIRO's work added a theoretical understanding to the company's problem-solving process, making it much easier to find and implement the best solution.

Changing the way feed was added to the roaster bed resolved the problem and allowed plant production to return to previous levels.

The full story can be found in the February issue of Process, which will be released on Tuesday 12 February 2008.

Source: CSIRO

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