

Redirection reduces impact of erosion

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Rio Tinto Alcan's Yarwun alumina refinery. Photo: Rio Tinto Alcan

The life expectancy of cooling plates in heat exchangers at Rio Tinto Alcan's Yarwun alumina refinery has increased from a few days to as long as 12 months with help from CSIRO's slurry erosion researchers, according to the October issue of *Process* magazine.

“Traditional defences by industry against [erosion](#) of critical equipment were to build the equivalent of a high wall, to make improvements to the way materials are hardened and to follow up with routine repairs to the damage caused by fine particles flowing in slurry form through a mineral processing facility,” says Dr. Jie Wu who leads slurry erosion research for CSIRO's Minerals Down Under Flagship.

“What we're working on are smarter ways to minimise damage in the

first place, extending the working life of equipment, saving both time and money.”

At Rio Tinto Alcan’s alumina refinery, constant bombardment of the cooling plates by abrasive hydrated alumina particles in the slurry was forcing the plant operator to replace some plates as frequently as every few days.

“What we suggested was a way to make the slurry flow more uniform by inserting a form of mesh to homogenise the flow. This eliminated the peak hot spots and minimised damage to the cooling plates,” Dr. Wu says.

The benefits from implementing that single piece of advice have been dramatic. The life expectancy of cooling plates has been extended from a few days to as long as 12 months, representing a major saving in the maintenance costs. The biggest reward, however, is minimising plant shutdowns and maximising production.

More information: This and other stories can be found in the October issue of *Process*, which is released today. A pdf of the magazine is available at: [Process magazine](#) (Oct 10).

Provided by CSIRO

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