



Reducing costs through improving boiler maintenance efficiency

The maintenance of sugarcane mill boilers is a significant cost to the Australian sugar industry.

It has been estimated that boiler tube wear and corrosion costs the industry about \$5 million each year in repairs, downtime, and inefficient operation. The cost of one convection bank due to wear is about \$1 million.

There is also a building challenge for the industry as boilers age. Most boilers in the industry are more than 30 years old, while a typical convection bank has a tube life of about 10-15 years using current protection technology.

As the boilers age, the wear and corrosion costs are expected to increase.

Thus a team of researchers at the Queensland University of Technology and CSIRO are working on a research project (project code 2016/020) that is investigating new ways of coating boiler tubes to extend their life and reducing these maintenance costs.

The research team consists of Dr Nazmul Alam (CSIRO), Dr Floren Plaza (QUT), and Dr Anthony Mann (QUT) and they are two years into a three year project.

As explained by QUT's Dr Geoff Kent at milling research seminars recently, the project began with a literature review to find materials suitable for coating. These coating were discussed with the milling sector during 2017 to assess their practical application and whole-of-life economics.

The next step was corrosion and erosion testing in the lab.

Dr Kent said this included 15 new coatings, an uncoated boiler tube, and two existing tube shield materials for the external erosion performance. For internal corrosion testing, 12 materials were tested, which included five materials that are applied to the surface of an existing tube, two materials that form the coating of as-supplied tubes, two corrosion resistant tube materials, standard boiler tube

materials, and two types of mild steel.

A number of materials have shown promise in the lab testing.

The research will now progress to testing of the shortlisted materials at Mulgrave and Isis, although this will need to be delayed until the 2019 crush because the most promising coatings require procedure development and application equipment.

SRA will keep industry informed of the progress of this work through Milling Matters, events for the milling sector, and our fortnightly newsletter. ■

For more information, contact: Dr Floren Plaza on f.plaz@qut.edu.au or 07 3138 1239.

(Above) Research is underway to investigate options for improving milling efficiency via better boiler maintenance.