



# Overseas experience to help improve factory efficiency

## Australian sugarcane factories generally consider best practice for process steam consumption to be about 40 percent on cane.

On the world stage, however, there are steam-efficient factories using different technologies that put those numbers in the shade, and they have brought their steam consumption very low, to lower than 32 percent on cane.

Knowing this, a recent research project sought to learn from the overseas experience and discover how some of these technologies could be adopted to the benefit of the Australian industry.

Undertaken by Queensland University of Technology, the project was overseen by Professor Ross Broadfoot, Dr Darryn Rackemann, and Mr David Moller, and was called *Develop a blueprint for the introduction of new processing technologies for Australian factories (2015/043)*.

It undertook the following phases of work:

- Measure the sucrose losses that presently occur in Australian evaporator stations which almost universally comprise Robert evaporators with tubes of 2m length and 44.45mm outside diameter.
- Assess the suitability of Kestner evaporators for Australian factories.

- Assess the suitability of falling film tube evaporators for Australian factories.
- Investigate the potential application of novel process steam efficiency technologies for application into Australian sugar factories.
- Undertake modelling studies for four Australian sugar factories to assess the suitability of using the alternative evaporator designs and the novel process steam efficiency technologies to suit nominated objectives for each of the factories.
- Investigate the effect on pan stage productivity (production rate and exhaustion) when using low pressure vapour for boiling the pans.
- Investigate the effects on whole of factory operations (including electricity export, surplus bagasse generation and water balance) resulting from the adoption of the new technologies into Australian sugar factories.

Researchers visited factories in several countries including South Africa, Reunion, Mauritius, India and Germany to better understand the technologies being employed in steam efficient factories.

According to the researchers, in many cases the technologies

being used in these steam efficient overseas factories can be introduced into Australian factories to provide capacity and operational benefits. The technologies that are not currently being used in Australian factories include:

- Falling film tube evaporators and Kestner evaporators;
- In-line juice heaters on vapour from the final evaporator;
- Barriquand juice heaters;
- Use of vapour from the 3rd evaporator for pan boiling;
- Direct contact pan feed conditioning systems; and
- Vapour recovery systems such as in condensate cigars. ■

The final report from this project is available from the SRA elibrary [www.elibrary.sugarresearch.com.au/](http://www.elibrary.sugarresearch.com.au/). There are also additional appendices to the report that are confidential to Australian sugar mills and are available via the login via the Sugar Research Institute elibrary via [www.sri.org.au](http://www.sri.org.au).

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(Above) Darryn Rackemann with QUT in front of two falling film tube evaporators and a semi-Kestner evaporator at Le Gol factory, Reunion.