

ENERGY AND WATER BENCHMARKING TOOL FOR A RED MEAT PROCESSING PLANT

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Project Description

What is the situation for industry?

Profit margins have tightened in the industry due to competition from red meat substitutes, such as chicken and pork. Meanwhile, energy costs have increased dramatically, particularly over the last few years, further pressuring this energy-intensive industry.

Many facility owners only have an approximate gauge of how well their plant performs against their peers: benchmarking data may be outdated or simply unsuited to a plant's arrangement.

Lastly, despite a wealth of literature on best-practice energy and water use in a plant, it may be unclear to a plant owner what project opportunities are relevant or best suited to their plant, how to quantify the opportunities and what to do next to progress a project.

Project Content

How did this project address this situation?

This project aimed to create a tool to allow plant owners to benchmark their energy and water performance, compare it to an industry standard plant and review energy and water saving opportunities appropriate to the plant's arrangement and performance. The rest of this section describes the design elements and interface elements of the tool.

There are three key design elements of the tool. First, in order to model plants with fewer facilities, the tool's energy and water model was constructed to identify energy and water use in each facility of a plant. This allowed the tool to hide facility processes as needed. Second, the tool categorised a plant's performance across three metrics: thermal, electrical and water. Performance was marked as poor, fair or good and presented in three dial gauges, each compared to an industry-leading plant's performance. Third, opportunities were categorised: advanced opportunities are appropriate only once a plant is performing well. As such, the opportunities presented to a plant were determined by the performance level of the plant in that metric.

Facility data

What is the company and site name?

What facilities do you have in your plant?

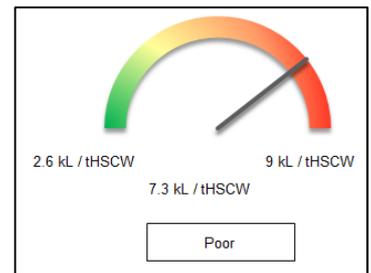
Stockyards	<input type="checkbox"/>
Slaughter and Evisceration	<input checked="" type="checkbox"/>
Hide Processing	<input checked="" type="checkbox"/>
Blood Processing	<input type="checkbox"/>
Rendering	<input type="checkbox"/>
Paunch Processing	<input type="checkbox"/>
Offal Washing	<input type="checkbox"/>
Wastewater Treatment	<input checked="" type="checkbox"/>
Chilling	<input checked="" type="checkbox"/>
Boning	<input checked="" type="checkbox"/>
Packaging	<input checked="" type="checkbox"/>
Freezing	<input type="checkbox"/>

There are also three key interface elements of the tool. First, in order to allow plant owners of all plant sizes to effectively use the tool the tool interface and outputs were deliberately limited to keep the tool accessible and simple. Second, to aid the connection between plant performance and the opportunities presented the dial gauges were colour-coded and labelled to categorise performance. Third, each opportunity is presented with a description, estimated cost, saving, payback and a hyperlink to the AMPC website article for more information.

Project Outcome

What was the result of the project?

The main deliverable of the project was an Excel tool. The user inputs were simplified wherever possible for ease of use. The benchmarking results were quantified and displayed in a colour-graded ‘dial gauge’ style for each performance metric, along with the categorisation of poor, fair or good.



Each metric had an accompanying table outlining up to four suggested opportunities.

Performance Opportunity Example	Savings (\$ / year), to 2 digits	CAPEX (\$), to 2 digits	Payback range (years)	Link to more information
Avoiding under utilisation of spray capacity for stock washing. Some meat plants have large pens capable of holding 50-100 head (cattle), with floormounted and possibly overhead jets covering the entire area. If a small number of stock are washed at a time (say 20- 50), then water is wasted, since stock tend to crowd into the corner and only a portion (50-75%) of the spray capacity is utilised. (Eco-Efficiency Manual - section 2.2.4, pg 28)	\$17,000	\$17,000	0.8 - 1	Link

Industry representatives were consulted on the design, including the interface, level of detail and the output report. Real-world figures from operating plants were used to refine the model.

Benefit for Industry

What benefit to industry does this project provide?

Industry participants can download the Excel tool, input their own plant data and determine their performance against an industry-standard plant with equivalent processes. In addition to this, participants can review suggested opportunities for improvement tailored to their plant’s facilities and performance. Each opportunity has pre-estimated cost, saving and payback figures, along with a hyperlink to more information on the AMPC website.

Useful resources

Eco-Efficiency Manual for Meat Processing, 2002

http://www.ecoefficiency.com.au/Portals/56/factsheets/foodprocess/meat/ecomat_manual.pdf

Benchmark tool, available on AMPC website.

Final Report on tool, available on AMPC website.

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