FINAL REPORT

Meat Processing Engineering Network

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1.0 EXECUTIVE SUMMARY

AMPC has invested heavily in technical innovation and the application of automation to some of the industry's most pressing human capital issues. New automated technologies offer significant opportunities to solve problems such as improving productivity, increasing yield recovery, Workplace Health and Safety (WHS) performance and attracting people with new skills into the industry.

Likewise, the increasing community and regulator demands for corporate environmental responsibility have meant that industry via AMPC has funded the development of engineering solutions to minimise environmental impacts in the meat processing industry.

Developing and implementing appropriate technology solutions is critical to improving a processor's bottom line and ensuring the sustainability of the industry. AMPC is committed to fostering creativity and supporting technology providers and processors to innovate and develop new safer, sustainable and cost-efficient solutions to problems affecting the industry.

However, regardless of how successful an innovation is the challenge is to get the information to the industry and in particular to the industry's engineering practitioners. In order to do this MINTRAC and AMPC have attempted to build on the existing AMPC engineering network.

For the contracted period the Engineering Network has been built around eight state-based networks of industry engineering personnel, researchers, and regulators. The meetings had very little difficulty attracting high calibre speakers presenting on new issues and showcasing initiatives being undertaken by meat processing plants. Specific areas of interest included:

- virtual and augmented reality
- automation
- energy self-sufficiency for meat processors
- AMPC Strategic Plan
- rendering technology
- processing and supply chain sustainability
- waste water and stormwater management.

Each meeting's agenda included:

- updates from AMPC contractors in relation to current projects
- displays of new technologies/developments
- agenda items requested by the attendees
- MINTRAC update, including current relevant training matters
- identification of professional development requirements.

Documentation was provided to attendees and included AMPC fact sheets and technical sheets from service providers and regulators as well as other written information as appropriate.

Each meeting was minuted and minutes distributed to attendees and other interested stakeholders on request. Presentations were be loaded onto the MINTRAC website (with permission from presenters).

The most challenging issue for the meetings was engaging meat processing plant and is indicative of the critical role plant engineers play in the day to day operation of plants. The meetings were well supported by Group engineers and so Queensland (where many processing groups have their HQ) attracted good support from industry. However, in many regional areas industry support was limited and the network will, if it is to continue, have to develop a format which enable greater participation by plants.

In addition to the network meetings, there were four webinars made that were well supported by industry. The webinars were presented by industry leaders and covered:

- automated palletization and product selection
- the upgraded blade stop bandsaw
- DEXA and its future role in the red meat processing industry
- Energy self-sufficiency for red meat processing establishments.

Recommendations are made as part of this Final Report.

2.0 INTRODUCTION

The Meat Industry Engineering Network consists of industry personnel from the meat processing sector, representatives from AMPC and MLA, researchers and regulators. The network was created to provide an efficient method of distribution of information on research and innovations for processing plant engineers.

MINTRAC has run this network on behalf of AMPC to highlight and extend research and development activities. It aims to give plant-based engineering personnel, researchers and regulators a very useful forum to explain, explore and discuss new issues and innovations.

The network also provides a means of showcasing initiatives being undertaken by the meat processing industry in the nominated areas of transformational and disruptive technologies, new and modified products and process developments. Specific areas of interest in the rounds of network meetings include:

- virtual and augmented reality
- automation
- energy self-sufficiency for meat processors
- AMPC Strategic Plan
- rendering technology

- processing and supply chain sustainability
- waste water and stormwater management.

MINTRAC has run seven regional network meetings over the two-year periods.

Each meeting has included:

- updates from AMPC and MLA (when available)
- presentations from current researchers or in relation to current projects
- displays of new technologies/developments
- agenda items requested by the attendees
- input from regulators, as appropriate
- input from service suppliers, as appropriate
- MINTRAC update, including current relevant training matters
- identification of professional development requirements.

Documentation provided to attendees has included AMPC Snapshots and other written information as appropriate.

MINTRAC also facilitated four webinars over the two-year period that highlighted AMPC funded research projects and industry innovations that are of contemporary interest to red meat processors. The principle objective of the webinar is to give engineering staff, who may not have had access to network meetings, an opportunity to see live presentations on innovations in the industry. Webinars also give them an opportunity to interact live with presenters. In addition, webinars capture the presentations digitally and they can be made available to industry personnel into the future on the AMPC website.

3.0 PROJECT OBJECTIVES

THIS PROJECT SEEKS TO:

- serve as an extension arm for AMPC's technology project outcomes
- enhance the ability of the industry to manage its engineering responsibilities
- increase the dialogue between industry engineers and the researchers
- facilitate professional development activities to enable engineers to expand their skills and knowledge bases
- ensure the timely and structured dissemination of R&D outcomes throughout the industry.

4.0 METHODOLOGY

Initially it was planned that MINTRAC would run four network meetings each year. Meetings scheduled

in WA and SA were to be combined Engineering and Environment meetings, since in these States these functions are usually carried out by the same person. The other two meetings were scheduled for locations in southern Queensland and Victoria.

Following the June 2018 Major project review, it was agreed that all future meetings, except for Brisbane, would be combined meetings with the Environment Network.

In order to enable possible attendees to plan ahead and select the meeting(s) which best suit their availability and requirements, the entire year's schedule of meetings was developed and advertised at the beginning of the program.

The network provided a means of showcasing initiatives being undertaken by meat processing plants and related industries in the nominated areas of transformational technologies, new and modified products and process developments.

Each meeting included:

- updates from AMPC and MLA
- presentations from current researchers or in relation to current projects
- displays of new technologies/developments
- agenda items requested by the attendees
- input from service suppliers, as appropriate
- MINTRAC update, including current relevant training matters; and identification of professional development requirements.

All meeting documentation, including agendas and minutes, were submitted to AMPC for approval before distribution.

Four webinars were developed on a range of industry innovations and will be made available to industry via the AMPC website into the future.

5.0 PROJECT OUTCOMES

5.1 Meetings

This project aimed at maintaining and building on the Engineering Network that had been developed in previous years. The network was built around state-based network meetings with invitees consisting of plant engineers, researchers, regulators and industry body personnel.

The network was designed to be an efficient method of distribution of new information and providing extension services for AMPC research and development activities in other fields of AMPC.

In this project the aim has been to provide plant-based engineering personnel, researchers and regulators with a useful forum to explain, explore and discuss new issues and innovations. The network also provided an opportunity to invite service providers or individual meat processing plants to showcase initiatives.

Over the twenty-four-month period, eight meetings were scheduled and seven held in Brisbane, Perth, Melbourne, Wagga Wagga, Adelaide, and Tamworth. All publications and materials disseminated to industry received approval by AMPC and branded as per the AMPC style guide.

5.2 Agendas and presentations

Each meeting included the following agenda items.

- updates from AMPC where applicable
- presentations from current researchers or in relation to current projects
- displays of new technologies/developments
- agenda items requested by the attendees
- MINTRAC update, including current relevant training matters
- identification of professional development requirements.

In addition, there were a range of presentations covering:

- virtual and augmented reality
- automation
- energy self-sufficiency for meat processors
- AMPC Strategic Plan
- rendering technology
- processing and supply chain sustainability
- wastewater and stormwater management.

Augmented reality presentation, Brisbane

Documentation provided to attendees included:

- AMPC SnapShots
- other written information to support presentations.

Each meeting was minuted and minutes distributed to attendees and other interested stakeholders on request. These minutes were provided with the Milestone Reports.

5.3 Attendees and presenters

Over the seven meetings there were a total of 82 participants. There were presentations from 21 presenters on a wide range of topics including;

- Evaluation of electrocoagulation as a wastewater treatment technology for meat processors
- Water recycle and reuse opportunities using risk management framework
- Stormwater Management Guidelines
- Updating waste water extension materials
- Teys Condamine project, presented by Carl Duncan on behalf of Teys Australia
- Eenergy sufficient red meat processing facility
- AMPC Update Environmental films series
- EPA presentation
- Technical and economic feasibility of water recycling and energy recovery
- Designing and assessing the viability of renewable energy along the red meat supply chain
- Augmented Reality Machine assembly analysis
- Red Meat Industry Carbon Neutral by 2030 update
- Augmented and virtual reality for machine maintenance
- Energy and water benchmarking and opportunities analysis tool
- Harvesting CO_2
- Demonstrating and trialing of an Internet of Things solution for real time computation and every of plant KPIs
- Research into conveyor belt materials
- News in refrigeration
- Low charge NH3 refrigeration systems

- DEXA technology for abattoirs
- Environment Protection Agency – update on current requirements
- Micro-algae being used to purify waste water
- DEXA carcase measurement

5.4 Developing communication channels between the parties involved

MINTRAC has continued to develop the database of engineering contacts which has enabled ongoing communication and allowed information and updates to be sent out to engineers and maintenance managers. During the meetings, participants were encouraged to share contact details and develop a network amongst engineers and maintenance personnel within different plants.

5.5 Webinars

There were four webinars developed in the two-year period delivered by four different presenters.

Webinar one:

This was an overview of developments in carton handling and automated palletising systems. This covered:

- Automated Developments in Carton Handling
- Automated Palletising System - Technology Options
- Benefits of Adoption
- videos of adopted automation in meat industry.

Webinar Two

This was an overview of advances made in the Blade Stop bandsaws and covered:

- features of the 'BladeStop' bandsaw
- use of blade stop
- the industry standard
- advantages of BladeStop
- different models available.

Webinar Three

This webinar dealt with the DEXA (Dual Energy X-ray Absorptiometry) objective measurement systems in red meat processing plants. It covered:

- the industry's vision of how DEXA will be used to assist productivity improvements
- accurate and objective information on the lean meat, bone and fat composition of each carcase.

- DEXA and processing automation.

Webinar Four

This webinar dealt with the feasibility of red meat processing plants becoming energy self-sufficient. The webinar looked at:

- The types of energy that can be generated on site
- The rate of return.

6.0 DISCUSSION

6.1 Outcomes from Meetings

6.1.1 Future topics

Other issues that were requested as topics for future meetings included:

- Energy self-assessment tool - is it available yet? energy and water benchmarking tool for a red meat processing plant https://www.ampc.com.au/e-learning-resources/energy-and-water-benchmarking-tool
- Eco-efficiency project - DAWR meat notice on reuse of water - some discussion on why they the industry has not taken advantage of the opportunities this meat notice offers the industry
- Some discussion about the temperature setting for hot water and the previous study undertaken at Herds - this is located on the MLA website Technical support on the application of < 82°C water for knife and equipment sterilisation. https://www.mla.com.au/research-and-development/search-rd-reports/final-report-details/Product-Integrity/Water-at-less-than-82-degrees-for-sanitising-knives-in-abattoirs/2300#. Again there is confusion why industry has not taken advantage of these research outcomes especially in the domestic industry.
- Possible site visit - Rivalea: two covered lagoons and third power generator is due to come online; short film was shown

6.1.2 Improving participation

The last four of the network meetings were combined with the environment network and this did help numbers in some states but not all.

In addition, having plant visits incorporated into the agenda can sometimes improve the level of industry participation. However, plant visits are difficult to facilitate and generally they are much easier to organize if the original AMPC R&D agreement has a site visit incorporated into it.

While the MI&QA and Training Networks took years to build the participants in those networks are more easily freed up to attend than site engineers and trades people. It is possible that only by creating virtual reality networks that engineering personnel are able to participate. In addition, that will enable the ready digital capture of the presentations. This will enable industry personnel to access a library of engineering U-Tube material for the meat industry.

Regardless of the format this network is to survive there will have to be real focus on what are the

engineering issues of the day in that region. Furthermore, the industry will require a routine and predictable timetable of engagement with plant engineers particularly when it comes to regions where meetings have not been well patronized for some time.

6.1.3 Increasing the effectiveness of R&D extension through the network

The critical issue is that if there is going to be an effective extension strategy associated with an R&D project it is essential that the R&D contract should bind researchers and or participating plants to extension activities as:

- site visits
- presentations at network meetings
- development of supporting videos and or webinars

In the event of this not being the case R&D contractors and participating plants are likely to be disinterested in the roll out through extension.

AMPC's continuing commitment to extension through the network is also essential. AMPC will need to continue identify the most promising projects for extension and to drive presentations and discussions at network meetings.

7.0 CONCLUSIONS/RECOMMENDATIONS

7.1 Locations and timing

AMPC will be organizing this network into the future and this is a challenging network in terms of attracting industry participation. However it has a good basis to build on and AMPC could utilise the existing tradition of meetings, contacts with EPAs and the library of films and webinars.

Recommendation 1

Actual locations for network meetings should be determined by AMPC based on the proximity to possible site visits and built around the opportunity it allows engineers to see innovations in-situ.

Recommendation 2

Given the apparent industry enthusiasm for webinars AMPC should explore the use of webinars as a form of extension for R&D projects when appropriate.

7.2 Professional development

It is essential that the network deliver training opportunities for plant engineering staff. In the past the strong support for the ammonia refrigeration plant operator training is indicative of the real demand for PD.

The delivery of this training often needs some industry financial support in the initial or pilot phases of the delivery of new PD programs be they accredited or merely workshops.

Recommendation 3

It is recommended that the professional development needs of plant engineers and trades personnel associated with robotics and automations should be considered by AMPC as a high priority programs

as without this training many industry automation innovations will struggle to be adopted.