AUSTRALIAN MEAT PROCESSOR CORPORATION

Meat Processing Engineering Network
FINAL REPORT

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1.0 Executive Summary

AMPC has invested 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 investment in successful innovation also requires that new developments are communicated to and evaluated in a systematic way with industry practitioners. In addition to the current communication processes such as fact sheets, conferences, plant visits etc, the engineering networks now provide a structured consistent approach to industry extension.

The main functions of the Meat Industry Engineering Network are centered around:

- Providing a communication channel for AMPC to keep industry abreast of the latest R&D projects in terms of proposals, progress and outcomes
- Running professional development workshops delivered in selected regional centres facilitated by technical consultants
- Providing a forum for researchers, regulators, industry bodies and company representatives to discuss issues of mutual interest
- Providing service providers with a way of displaying new and innovative products.

The Meat Industry Engineering Network this financial year consisted of state based networks of industry engineering personnel, researchers, regulators and trainers. The three meetings proved an efficient method of distribution of new information and providing extension services for AMPC research and development activities. They provided plant-based engineering personnel, researchers, service providers and regulators a very useful forum to explain, explore and discuss new issues and innovations.

The network can in the future continue to provide 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. Specific areas of interest might include robotics, processing aides, automation and handsaw technologies as well as refrigeration and steam generation efficiency.

Each meeting's agenda included:

- Updates from AMPC presentations from current researchers or in relation to current projects
- Displays of new technologies/developments
- Onsite visits at 2 meetings: one at a sheepmeat processing plant utilizing robotics and automation,

and the second at Scott Technology

- Agenda items requested by the attendees
- MINTRAC update, including current relevant training matter
- 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).

Four recommendations are made as part of this Final Report.

2.0 Introduction

Over the last decade AMPC has invested significantly in technical innovation and the application of automation to some of the pressing human capital issues facing the sector.

New automated technologies offer significant opportunities to solve problems such as improving productivity, increasing yield recovery and remuneration levels, 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 increasingly engineering solutions are being developed 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.

There is a need to ensure that new developments are communicated to and evaluated in a systematic way with industry practitioners, and that they are also reflected in appropriate changes to the national training system. In addition to the current communication processes such as fact sheets, conferences, plant visits etc, the Engineering Network provides a structured consistent approach to industry extension.

The Meat Industry Engineering Network consists of three geographical networks of industry personnel, researchers, regulators and trainers and represents an efficient method of distribution of new information and providing extension services for AMPC research and development activities. It provides 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 meat processing plants and related industries in the nominated areas of transformational technologies, new and modified products and process developments. Specific areas of interest addressed include robotics, processing aides, automation and handsaw technologies as well as refrigeration and steam generation efficiency.

Over a twelve month period, three meetings were held, in Queensland, New South Wales and Victoria.

3.0 Project Objectives

The objectives of this project are 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

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.

5.0 Project Outcomes

The author should outline the outcomes from the project. This section should also include the key data sets with appropriate statistical analysis. The use of graphs and tables to summarise data is strongly encouraged. All project data should be included as an Appendix or supplied electronically.

5.1 Meetings

The objectives of the project have been addressed through the creation of an Engineering Network which centered on three state-based network meetings with invitees consisting of plant engineers, researchers, regulators and trainers. This approach was adopted as it replicated the methodology employed in the other AMPC industry networks. The concept of networks based on regional meetings has proved an efficient method of distribution of new information and providing extension services for AMPC research and development activities.

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. The nominated areas included:

- Robotics
- Processing aides
- Automation
- Bandsaw technologies
- Ammonia refrigeration operation and safety
- CO^2 capture research.

Over a twelve month period, three meetings were held in Brisbane, Cootamundra and Melbourne. 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
- 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
- MINTRAC update, including current relevant training matters
- Identification of professional development requirements

Documentation provided to attendees included:

- AMPC fact sheets
- Other written information to support presentations.

Each meeting was minuted and minutes distributed to attendees and other interested stakeholders on request. The minutes for these meetings were included as an Attachment to the Milestone Three Report.

The agendas for the three meetings form Attachments 1-3 to this Report.

5.3 Attendees and presenters

The first engineering meeting was held on the 3rd of March 2016 at Cootamundra Returned Serviceman Club and a site visit to Manildra Meat Company was attended by 12 participants. Attendees at this meeting were given updates, presentations and information on the following topics.

- Introduction to AMPC and MINTRAC and background on both organisations, including their roles within industry
- Maintenance engineering training pathways and proposed qualifications
- Review of the Training Package and current engineering units available
- Presentation on robotics in the meat industry and training options that are available
- Presentation on Cold Logic's CO^2 Systems
- Managing contractors on site and how to manage liabilities and responsibilities
- Ammonia training program.

The second engineering meeting was held on the 10th of May 2016 at Colmslie Hotel Morningside, Queensland was attended by 12 participants. Attendees at this meeting were given updates, presentations and information on the following topics.

- Introduction to AMPC and MINTRAC and background on both organisations, including their roles within industry
- Maintenance engineering training pathways and proposed qualifications
- Review of the Training Package and current engineering units available
- Presentation on robotics in the meat industry and training options that are available
- Presentation on Cold Logic's CO^2 Systems
- Managing contractors on site and how to manage liabilities and responsibilities
- Ammonia training programs.

Outcomes from this meeting have identified some areas that could be considered for the next round of engineering network meetings included:

- Heat Recovery Systems
- Direct Expansion (dx) ammonia
- Co^2 refrigeration
- Vision sensing systems.

The third Engineering meeting was held on the 17th May 2016 in Melbourne at Scott Technology and Automation head office and design centre, and was attended by 10 participants.

Attendees at this meeting had the opportunity to tour Scott Technology facility and observe the robotics in design, build and overhaul phases. They were also able see development of Xray inspection systems and robotics used in other industries including bakery, mining and dairy. Attendees were also given updates, presentations and information on the following topics.

- Introduction to AMPC and MINTRAC and background on both organisations, including their roles within industry
- Maintenance engineering training pathways and proposed qualifications
- Review of the Training Package and current engineering units available
- Presentation on robotics in the meat industry and training options
- Ammonia emergency plans from Fire and Rescue NSW
- Managing ammonia refrigeration safety; a study of a multi-national food processor
- Optimising your compressed air system

Outcomes from this meeting have identified some additional areas that could be considered including:

- Heat Recovery Systems
- Direct Expansion (dx) ammonia
- Co^2 refrigeration
- Vision sensing systems
- Seeing robotics in other industries and assessing if they could be used in the red meat industry.

6.0 Discussion

6.1 Outcomes from Meetings

6.1.1 Future topics

An internal audit check list and accompanying professional development workshop was strongly supported at meeting. Other issues that were requested as topics for future meetings included:

- Heat Recovery Systems
- Direct Expansion (dx) ammonia
- Co^2 refrigeration
- Vision sensing systems
- Seeing robotics in other industries and accessing if they could be used in the red meat industry.

6.1.2 Improving participation

Making plant visits part of the agenda in particular requires a great deal of preparation, to ensure they are keeping with AMPC's priorities for extension and are of general interest to the bulk of the engineers in the particular state. Generally speaking the need to get agreement from the plant to have a site visit is aided if that was part of the original research agreement with AMPC.

The MI&QA and Training Networks have taken years to build and the Engineers' Network will require a similar level of effort and a great deal of cold calling especially when staff at plants change and it is important to re-establish contacts at a site.

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 extension strategy associated with an R&D project it is essential that the original researchers are bound to participate in that extension strategy. In the event of this not being the case R&D contractors are likely to be disinterested in the roll out through extension.

Likewise plants accessing industry funding through AMPC should have some involvement in the process so the rest of industry is able to learn directly from the researcher/participant plant of any potential benefits or pitfalls attached to implementation of an innovation.

AMPC's continuing commitment to extension through the network is also essential in order that priority can be given in identifying the most promising projects for extension and the relevant information to drive presentations and discussions at network meetings.

6.1.4 Professional development for engineers

The meetings identified the following opportunities for PD for engineering staff including:

- Plant operator training for ammonia (they were advised further funding is being sought through the AMPC RFP process)
- Electrical stimulation maintenance
- Reliability and maintainability of plant (e.g., auto industry/OEE)

- Automatic storage retrieval
- Heat recovery systems
- Effluent water recovery
- Energy efficiency.
- High voltage switching
- Internal audit course for engineers
- Analytical trouble shooting.

7.0 Conclusions/ Recommendations

7.1 Locations and timing

The option of having a meeting in South Australia or Western Australia is considered necessary to maintain industry commitment and confidence in the coverage of the networks across all States. In addition, at least one meeting should be held in the first half of the financial year so that the outcomes and experiences of the network can inform future project proposals.

Recommendation 1

It is recommended that one network meeting be held in either South Australia or Western Australia.

Recommendation 2

It is recommended that one meeting be held in the first half of the financial year.

7.2 Professional development

It is essential that the network deliver training opportunities for plant engineering staff. Repeatedly plant engineering managers, particularly from regional areas, expressed the need for structured, accredited training not only to upskill staff but also as an incentive for staff to stay and develop some sort of career opportunities.

The networks identified a range of training needs that could be serviced by bringing a critical mass of students in a regional centre allowing the plants to access training at a reasonable cost and RTOs or technical experts to develop a viable delivery proposal. The servicing of this needs strengthens the networks and foster interest in the networks from plants not yet participating.

Recommendation 3

It is recommended that the professional development needs of plant engineers be considered as part of the future Engineering Network proposals, or as part of the AMPC Professional Development program.

7.3 Activities between meetings

MINTRAC should engage in a variety of activities between meetings including:

- Review of AMPC R&D outcomes as they become available
- Liaise with researchers and service providers to identify initiative and changes in the area
- Facilitate communication between regulators and engineers
- Facilitate communication between engineers and respond to issues raised out of session
- Facilitate participation in PD exercises out of session.

Recommendation 4

It is recommended that the on-line chatroom proposed to AMPC as part of the 2016-2017 FRP be progressed as soon as possible.