



final report

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Facilitation of the engineering network - 2008

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Executive summary

A meeting of the network group for meat industry engineers was organised for 28 May 2008. The meeting was held at the Visy recycling plant, Gibson Island, Brisbane, Queensland and was attended by 12 engineers from 9 different plants from Queensland, New South Wales, Victoria and South Australia. There were also representatives from MLA and AMPC.

In the morning representatives from the consulting company GHD gave presentations on the national greenhouse gas and energy reporting system and emissions trading plus a discussion of renewable energy options for meat processors. This was followed by an interesting tour of the Visy recycling facility and paper making plant. The first portion of the afternoon session was devoted to lean manufacturing. Kevin Bennett of SW TAFE explained the basics of lean, with special application to engineering aspects. This was followed by a talk from Len Davis of CRF describing how he applied lean to his engineering workshops and maintenance program. The final two presentations were on correct specification of stainless steel drainage for food plants and on principles of cleaning and sanitation. Quite positive feedback was received for the day and some useful suggestions were received for future topics for discussion.

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1 Introduction

The Australian Meat Processor Corporation (AMPC) and Meat & Livestock Australia (MLA) have funded the engineering network group since 2003. This network group has provided a forum for representatives from processors to receive technical information useful to the development of their businesses. It has also given them an opportunity to share this with others for their individual and joint benefits. Meetings are usually held approximately every six months, but due to the later commencement of this contract only one was held during the 2007-08 financial year. The ultimate aim is to provide feedback to MLA and AMPC regarding industry concerns and needs for technical support, training, research and development. This document reports on the activities related to the facilitation of this meeting.

2 Project Aim

By June 2008, facilitate one engineering network meeting with the aim of:

- establishing contacts with engineers from processors;
- deciding, in consultation with participants, the subjects to be discussed;
- organising a suitable venue and arranging presenters on subjects of interest;
- providing feedback to AMPC and MLA regarding industry concerns and needs for technical support, training and research and development;
- providing a forum for MLA to deliver applicable information; and
- promoting the services of MLA, AMPC and Food Science Australia, Meat Industry Services.

3 Methods

Contacts were made via email with engineers from plants throughout Australia using an existing email contact list and a list provided by AMPC. Requests were made for topics of interest and telephone contact was made with several regular network group attendees. We have for some time been trying to arrange a session on lean manufacturing as requested by MLA, but suitable speakers have not been available. Kevin Bennett of SW TAFE was suggested by Rebecca Underwood of MLA and he was very keen to participate and he suggested that Len Davis of CRF could give a talk on implementation of lean in their maintenance system.

At the suggestion of a regular attendee, the topics of renewable energy and greenhouse gas reporting and emissions trading were included. Engineering consultants, GHD, who had undertaken work in this area for MLA and other clients, provided speakers.

It was originally planned to include a presentation on rendering hygiene as there has been an apparent increase in issues with *Salmonella* in meat meal. However Bill Spooncer, the planned speaker had an accident and could not attend, so Blucher, a supplier of stainless steel plumbing to the meat industry was able to step in at relatively short notice.

4 Results

The meeting was attended by 12 industry delegates from nine different plants in Queensland, NSW, Victoria and South Australia. Three people, who advised that they would attend, did not make it on the day and apologies were received from about five others who were unable to attend due to work commitments. The meeting was also attended by John McGuren and Irene Parker of AMPC, Kristina Garlinge of MLA and Kate Perkins of Kulu Pty Ltd who is reviewing professional development for MLA. A list of the attendees and their affiliations is attached along with the program for the day.

Greenhouse gas emissions – reporting and trading – Jeff Foley, GHD

Jeff outlined the new national greenhouse and energy reporting system (NGERS) which commences on 1 July 2008. He explained the thresholds that apply to individual facilities and to corporations. Facilities only have to report if they use more than 100 TJ of any type of energy per annum, but the requirements for corporations, who have multiple sites will become more stringent with time, reducing from 500 TJ in 2008-09 to 200 TJ by 2010-11.

Jeff calculated that most of the larger abattoirs would need to report under the individual facility requirement. Reports will be submitted online to a greenhouse energy data officer (GEDO) who is being appointed by the Department of Climate Change.

The Australian Government has an aim of reducing greenhouse gas emissions by 60% by 2050. Emissions trading is one of the key policies in achieving this and will be established by 2010. The rules are still unknown but the costs to industry are likely to be substantial.

Waste to energy – relevance to the red meat industry – Chris Hertle, GHD

Chris presented some typical rates of energy consumption for abattoirs and pointed out that 40-50% of electrical energy was utilised in refrigeration. He then discussed waste to energy opportunities for the meat industry and the drivers in Australia which include, waste disposal costs, increasing energy costs, greenhouse gas emissions and carbon trading.

Examples of waste to energy studies were presented for feedlot manure and abattoir solid waste. Feedlot manure could be anaerobically digested to produce biogas or dried and combusted as a fuel to produce steam. In the abattoir example, the aim was to reduce fuel usage, so the main technical issue was sufficiently dewatering the material so that it was suitable for a thermal process. A combustion process for abattoir solid waste was the most economically feasible process, but the long payback time of 8 – 12 years means that the investment may be more suited to a third party energy supplier. The production of biogas for electricity generation from covered anaerobic ponds was more feasible with a payback period in the region of 3 years.

Tour of Visy facility – Darren Ralston, National Sustainability Projects Manager

Darren led the group on a complete tour of the Gibson Island plant, which commenced with an explanation of the paper making process using the model in the room. The plant was constructed in 1995 and recycled the building that previously housed the Bulimba B power station. The MRF facility recovers and sorts all the material collected from recycle wheelie bins from Brisbane and surrounding shires. The paper from the MRF and waste cardboard collected from industrial sites is used to manufacture paper used for fibreboard box manufacture. Saleable recycled material such as plastics, aluminium and steel is baled up and sold and the remaining material used as fuel in the fluidised bed boiler, which produces steam for the paper process and also electricity

The plant has reduced water consumption considerably and is one of the most efficient and recycles much of its water. In order to provide water security, there are plans to install a desalination plant to handle river water.



**Figure 1: The paper making machine at Visy, Gibson Island
Lean and maintenance – Kevin Bennett, SW TAFE**

Kevin introduced us to lean by providing some background regarding the origins and by explaining the five principles of lean and how lean can be combined with total productive maintenance (TPM). When applied to a system, there are two main stages – firstly stabilise the process, the optimise it. This can be further broken down into four stages:

- Level 1A – taking control
- Level 1B – stabilise
- Level 2A – refine practices
- Level 2B – zero breakdowns



**Figure 2: Kevin Bennett discussing lean
Application of lean to maintenance – Len Davis, CRF (Colac Otway)**

Len is the Maintenance Manager at CRF and is clearly passionate about applying lean to his systems. He explained the basics including the 5Ss: Sort, Set in order, Shine, Standardise and Sustain. He provided some examples of application of lean to date. One of these resulted in the reduction of radio calls to maintenance from 180 per week to 50. Lean has provided the company with total savings to date of almost \$500,000.

Stainless steel drainage and pressure systems – Ian Johnson, Blucher, Australia

Blucher supply stainless steel piping and drainage to many food processing plants in Australia. Ian described some best practice principles for plant drainage and stressed the importance of correct specification of a drainage system. Some of these points included:

- use materials that can withstand thermal shock;
- specify correct falls and line sizes;
- eliminate 90° bends
- design junctions to be at 45°;
- correctly vent drains, and
- install correctly designed floor wastes.

Cleaning chemistry – Colin Court, Ecolab

The four main groups of soil to be removed from a meat plant are: fat, proteins, carbohydrates and salts. Colin explained that the basic parameters of cleaning are: time, mechanical action, temperature and chemical action. Cleaning products are made from many different components to remove the different soils and include alkalis, acids, enzymes, surfactants and conditioners. The operator also needs to take into account the environmental effects of the cleaning solution he is planning to use.

Evaluation sheets

Evaluation sheets were distributed to attendees prior to the completion of the session and were filled out by most people. All topics rated reasonably highly in relevance, with greenhouse reporting and lean manufacturing appearing to be of most interest. As possibly expected, cleaning and sanitation was of limited interest to some. This presentation did not quite target the area I had hoped as I had requested that it would give some emphasis to engineering aspects such as chemical distribution systems and effects of chemicals on structures. Some suggestions were received for future topics and these will be considered for future meetings. The topics of greenhouse gas reporting and lean manufacturing were the main areas in which further information was requested. One person who forgot to submit a sheet followed up with an email that he thought a workshop on lean would be of value. All attendees considered the Engineering Network Group to be a useful event and would attend another.

Requests were received for copies of the presentations, especially on lean as they contained quite a lot of detail. When all presentations are available they will be copied to CD and posted to attendees.

5 Appendix



Engineering Network Group Program for 11th Meeting Wednesday, 28 May 2008

Location: Visy Recycling
168 Paringa Rd
Gibson Island
Qld

	Coffee	
08:55	Welcome	Neil McPhail, FSA
09:00	National greenhouse and energy regulations and emissions trading	Jeff Foley, GHD
09:35	Renewable energy	Chris Hertle, GHD
10:15	Morning tea	
10:35	Visit to Visy recycling plant (biogas recovery, solid-fired boiler, production facilities)	Darren Ralston, Visy
12:15	Lunch	
13:00	Lean manufacturing <ul style="list-style-type: none">- Introduction to lean thinking- Total productive manufacturing- Case studies	Kevin Bennett, SW TAFE
14:00	Application of lean to plant maintenance	Len Davis, CRF (Colac)
14:30	Afternoon tea	
14:50	SS plumbing and drainage for food plants	Ian Johnson, Blucher (Australia)
15:30	Cleaning & sanitation for engineers	Colin Court, Ecolab
16:10	Close	

