final report

Project code: P.PIP.0269

Prepared by: MLA

Date Submitted: January 2006

PUBLISHED BY
Meat & Livestock Australia Limited
Locked Bag 991
NORTH SYDNEY NSW 2059

IFFA 2010 Innovation tour – May 8th -22nd 2010

This is an MLA Donor Company funded project.

Meat & Livestock Australia and the MLA Donor Company acknowledge the matching funds provided by the Australian Government and contributions from the Australian Meat Processor Corporation to support the research and development detailed in this publication.

Contents

1 Introduction

During the period of 8th to 22nd of May 2010, representatives from MLA and four Australian meat processors participated in a tour across several European countries to visit IFFA, the biggest meat processing trade show in the world, as well as multiple plants and factories.

The idea behind this trip was to understand which technologies are being developed worldwide, and witness the current situation of the European meat processing industry, in order to learn from different processing methodologies and explore new avenues to progress in the automation of the slaughter and boning rooms, as well as other areas like value adding.

This report is a summary of the observations and learnings taken from that tour.

2 Marcher boning room – Graz, Austria (May 10th)

The first stop of the tour was Marcher, an Austrian, family-run business based in Graz. The corporate infrastructure comprises three abattoirs and one boning room.They procure their livestock from the area, including neighbouring countries like Hungary.

Marcher has recently commissioned a Marel StreamLine boning system in their Graz plant, which the group witnessed in action, although some functionality like trimming sorting according to CL content was not implemented yet.

Carcasses are weighed-in on an overhead track scale at the entrance to the boning room. The information about each animal such as animal ID, slaughter date, etc, is captured by the production control system and then each carcass is cut down according to specifications.

Primals are distributed to one of the work stations on the StreamLine, based on operator availability, where they are deboned and trimmed according to customer specifications. The weight of the trim, fat and finished product is registered and compared to the incoming weight. The finished products are sent to packing, manual or vacuum, after which they are led to a finished goods stock.

Yield, throughput, quality and other KPIs are registered and monitored online. These are the typical benefits of the Marel lines, which turn them in management tools to control operators' performance and general yield and throughput rates.

3 IFFA trade show – Frankfurt, Germany (May 11th – 13th)

IFFA 2010, the biggest meat trade show in the world that takes place in Germany every three years. The range of exhibits at IFFA covers slaughtering, processing, weighing, filling / packaging, conveying, cooling, storing, transporting and selling, as well as spices and additives for meat and sausage products. IFFA has the most comprehensive overview of machinery and equipment for all stages of the process chain – from slaughtering to processing and packaging of any tradeshow in the world and is run from the 8th to the 13th of May, 2010.

Even with three full days, the schedule was full and focused on the processing section of the trade show that required three full halls.

The most relevant new developments found at IFFA 2010 were an automated knife sharpening system and a fully automated machine to de-bone pork legs.

The automated knife sharpening system is of particular interest because MLA has supported a preliminary study prior to a future development to sharpen knives without any labour requirement. Although the system shown in IFFA is still under development, it will probably be worth waiting rather than pushing for an alternative development in Australia.

The automated system to fully de-bone pork legs was an impressive piece of automation developed by the Japanese company Mycom/Mayekawa, and is currently in operation at a Vion plant in Europe. Although it is a system developed for pork, we discussed potential opportunities to apply the technology to beef and sheep. Although MLA's strategy so far relies on the collaboration with RTL in NZ to develop automated boning technologies, the communication channels are open and future joint developments are a possibility.

Other technologies or companies to follow are:

- Innovative plastic beef weasand clip to avoid ingesta contamination, applied with vacuum for proper sealing
- The new ATTEC beef line, the first serious competitor for the Marel lines, to be installed first in 2011
- FOSS and the Meatmaster: not a new technology but the progress in automated CL measuring and sorting applications attracted interest
- QVision and CL measuring/sorting: new technology based on NIR. MLA and AMPC have invested previously in feasibility studies to evaluate the potential of NIR for this application. QVision, a Norwegian company, is taking to market the first system capable to measure CL at third of the capital cost of the Meatmaster. MLA already had a relationship with QVision, but attendance IFFA provided the opportunity to check on recent progress and discuss a future technology evaluation project for early 2011.

4 Danish Crown – AXFood – Jonkoping, Sweden (May 15th)

Jonkoping is a town in Sweden where a centralised meat packing facility with highly automated case packaging has been built as part of a joint venture initiative between Danish Crown (DC) and AxFood.

Jonkoping was selected because it provided access to labour (statistics showed low absenteeism in that part of Sweden), as well as a central location to procure product from multiple plants.

Danish Crown is one of the biggest pig processing companies in the world and AxFood is a supermarket chain that holds a 17% market share in the Swedish supermarket sector.

We visited the plant on a Saturday as on Fridays the plant closes due to supermarket logistics, with no delivery on Saturday. The plant employs 120 people, occupies a total land area of 102,000m^2 with a 8,500m^2 production area

They process 400ton/week in 1 shift, with capacity of 670ton/week, or 900ton/week if a 2 shift system was implemented. Danish Crown has a type of cost plus arrangement, where AxFood buys all raw material and DC are paid by throughput, though AxFood has contributed to the capital investment. The contract is valid for 10 years.

DC designed and built the plant with budgets done on open book so that AxFood can benefit from savings too, or pay more if costs are more expensive than expected. AxFood has some of its own employees based at the factory.

In summary, this plant was a very interesting example of collaboration between a processing company and a retailer/supermarket chain.

5 Westfleisch – Coesfeld, Germany (May 17th, 2010)

The group then visited the Westfleisch plant in Coesfeld, where BANSS, a German automation company, has installed 6 pig slaughtering robots, in particular:

- Hock cutting
- Bung cutting
- Aitch bone cutting
- Belly ripping and brisket bone cutting
- Splitting
- Head cutting

MLA had visited this plant previously, in 2007, with another group of Australian processors and two Australian developments (beef hock cutting, currently running in an Australian plant and sheep bung cutting, currently under development) were inspired by the technologies observed at that time.

This second visit provided the opportunity to see how the systems seen in 2007 are currently running and new systems that have been added.

Note that MAR, the developer of the Australian technologies mentioned before, has a very good relationship with BANSS, in part thanks to similar tours that MAR representatives have participated in.

6 DMRI – Roskilde, Denmark (May 18th and 20th, 2010)

DMRI was visited on two non consecutive days, May 18th and 20th, to discuss progress of the AMPC/MLA project (A.TEC.0071) to automate striploin boning, including the final trials of the work bench built as part of the project.

The first day the general progress of the project and the featherbone separation was demonstrated. Results were not deemed to be satisfactory and a few quick improvements were suggested. Those improvements were implemented in the next 24 hours and a second trial was demonstrated on May 20th.

Feedback from the Australian processors participating in the visit indicated the concept has merit to be developed further, though some suggestions were provided to ensure maximum value is gained.

A full report has been prepared by MLA to document the visit, results from the trials and a recommendation to go forward. This recommendation will be submitted to the AMPC Technology committee and based on their decision the development may be continued in 10/11. If continued, Scott Technologies will play a significant role in monitoring, managing and contributing to the development, as it is envisaged Scott will refine and commercialise the technology in Australia.

7 Skare – Vejen, Denmark (May 21st, 2010)

Skare, a very fined tuned boning operation that prides itself of supplying a very consistent and high quality product was the next site the group visited. Skare procures carcasses from slaughter plants in the area, including one fully owned by the group.

Their typical production is 750t/week, equivalent to 10,000 quarters/week, with 35% domestic and 65% export.

Skare employs a significant number of Polish workers, because local people usually are not willing to work for the salaries offered. They initially trained a significant part of their workforce within 3 weeks in a training centre and 3 weeks in Ringsted (a DC plant). They are starting to appoint their first Polish managers.

They have very flashy offices, with a canteen that has internet access for employees and looks like a brand new city office rather than a factory, let alone a meat plant. They have a gym at the plant and a physiotherapist that visits them 3 times a week. Thanks to these and other initiatives they have only 3.5% absenteeism, all included, sick leave, maternity leave, etc.

8 ATTEC – Tandslet, Denmark (May 21st, 2010)

After visiting Skare the group went to Tandslet, in the south of Denmark, to meet ATTEC and attend the trials of the lamb splitting and chining machines being developed under the project P.PSH.0361.

The objective of this project, in partnership with ATTEC (the Danish supplier of meat processing equipment), is adapting the technology they have developed for pork boning to lamb, in order to automate the main operations of middle bone-in cutting. In particular:

- Flap cutting
- Chining (spine removal)
- Splitting
- Rack and Loin separation

A first prototype (based on past work by ATTEC), shipped to Australia in early 2009, showed more development work was required than initially anticipated, and a variation was signed in late 2009 to reflect the associated delay. Different design modifications were explored that considered up to 3 modules: Chining and Flap cutting (M1), Splitting and Flap cutting (M2) and Rack and Loin separation (M3).

Over the past 6 months, significant design work, manufacturing and prototype testing has taken place, including tests attended by Australian representatives in November 2009 and during this tour, these improvements will be considered before the project is progressed further.

The visit to ATTEC gave provided the opportunity to witness trials with a wide range of lamb middle sizes. These trials indicated that the Chining and Flap cutting module (M1) can provide good results in terms of finishing and yield, with the Australian processors attending the trials recommending that the prototype be shipped and tested in Australia.

However, the trials of the Splitting and Flap cutting module (M2) suggested additional improvement was required. It was decided that by June 30th 2010 any additional improvements would be implemented and M2 will be tested with product and according to criteria agreed by all the parties.

Regarding the Rack and Loin separation module (M3), the design was reviewed and the Australian representatives recommended focusing on M1 and M2 instead, as M3 may not meet Australian specifications and M1 and M2 should cover most of Australian requirements instead.

9 Danish Crown – Horsens, Denmark (May 20th, 2010)

The Danish Crown plant in Horsens, a highly automated pork plant, sometimes called the most automated meat plant in the world, was also visited while the group was in Denmark.

The plant currently processes 93,000pigs/week (18,600pigs/day) with capacity of 110,000pigs/week, 18hrs/day, 5 days/week. They employ 1,600 people, including 88 people just for maintenance. Initial figures showed they saved 300 labour units compared to a conventional plant of the same size due to the implementation of automation machinery.

The investment to build the plant required 300M euros ($500M approx) and Japan, Germany and the UK are their main markets for product produced.

The group were given the opportunity to go down to the massive slaughter and boning rooms and see many of systems of interest in operation, like the automated evisceration unit, the vision controlled back finning and an automated grading system as well as the automated primal cutting system for pork halves.

10 ScotBeef – Bridge of Allan (May 21st, 2010)

ScotBeef, a family owned beef processor and supplier of beef and lamb products to supermarkets, was the final site visited. The Australian group were received by one of the owners and chairman, Ian Galloway, a very friendly host who had hosted other MLA visitors in the past.

The group owns both an abattoir and a value added plant which were both visited.

The abattoir processes 400-500cs/day. The plant is spacious, tidy and well run.

However, the most interesting part of their business was the value adding plant visited in the afternoon. Scotbeef has traditionally been a beef slaughter and boning operation, however three years ago they built a value adding plant to serve clients, mostly Marks & Spencer. The value adding plant probably contributes a high portion of the total company profits. Of particular interest were the activities of their own product development team, constantly creating new products like burgers filled with cheese or sweet chilli sauce, marinated lamb steaks, etc. that were tasted in the plant tasting facilities. This constantly updated suite of products seemed to attract a growing stream of revenue to the company.