

AMPC SnapShot – Strategic evaluation of RD&E opportunities for water reuse and recycling at Australian abattoirs (2016.1021)

Date of issue: August 16

Project Description

The focus of this project was to identify the needs and opportunities to achieve water efficiency gains through water conservation, reuse and recycling whilst maintaining food safety and highest quality product.

Project Content

During the past decade, AMPC financed multiple research projects aiming to decrease water consumption and to improve water efficiencies at Australian abattoirs. AMPC now requires a clear framework for further R&D and research translation to maximise industry benefit from these activities. To do so, an understanding of water consumption and quality is needed while the understanding of wastewater production and quality is essential to elaborate strategies for the implementation of water conservation, reuse and recycling at Australian abattoirs. This report supplies:

- A description of the water usage and wastewater production;
- An overview of the national and international regulations regarding water reuse/recycling;
- Four strategies to decrease town water consumption, including value proposition and benefits, research/implementation, and key risks.

Project Outcome

Currently, large abattoirs use approximately 7 kL of water per tonne of hot standard carcass weight produced (tHSCW) (AMPC wastewater report, 2012) at an average cost of \$2.2/kL. Four strategies have been highlighted to reduce fresh water consumption and costs associated with water:

- 1) Water conservation: this is a strategy suitable to abattoirs at all sizes to save up to 10% of town water consumption. The payback period ranges from immediate to up to 3 years. Simple actions can include staff education/awareness, fixing water leaks and the adoption of dry cleaning methods.
- 2) Water reuse: this strategy allows the reuse of one process waste stream to the same or another process with or without pre-treatment, which can save 15% of town water consumption with a payback of less than 5 years. Abattoirs at all sizes can adopt this strategy. However, small abattoirs (< 100 kL/d) might be limited to waste streams requiring no treatment or simple treatment (such as screening before reusing). Before starting any reuse project, sites should contact AQIS to assure its feasibility. AQIS has already approved

some reuse options such as (AQIS, 2008): (i) the reuse of steriliser and hand-wash water collected and used to wash cattle yards; and (ii) the reuse of steriliser water collected from clean end on the viscera table and used for the initial viscera table wash.

- 3) Non-potable water recycling: more than 40% of town water consumption can be saved by using non-potable water. This recycled water cannot be used in direct or indirect contact with meat and meat products. Different water qualities can be produced depending on the end-use purposes. For example, some abattoirs are already using non-potable recycled water for irrigation. This strategy can be adopted by medium to large sites due to the higher investment cost and payback time (6-10 years) than the two previous strategies.
- 4) Potable water recycling: more than 70% of town water consumption could potentially be saved by introducing direct potable recycle schemes in facilities. However, international regulations and public acceptance limit its implementation by prohibiting the use of recycled water in contact with meat or meat products. However, these might change in the future due to the reduction of conventional sources of potable water and public awareness. Domestic abattoirs could use potable recycled water, which will however be limited to large sites due to high investment cost and payback time (around 10 years).

Benefit for Industry

Water conservation, water reuse and non-potable water recycling are three ways to replace or minimise external supplies by 65%, thereby reducing costs and improving the sustainability of the operation. However, when considering water recycling/reuse, food safety and national and international product quality expectations and regulations need to remain the top priority. For this reason, the use of potable recycled water produced on-site is a challenge for international abattoirs. The main benefits of using these three strategies are:

- Save water intake and disposal costs
- Produce sustainable products meeting customer demand
- Reduced energy demand (e.g. through hot water recycling)
- Improve operational performance (e.g. less chemical use for cleaning, boilers and cooling towers)
- Preserve product value
- Recover nutrients from the wastewater with market value

Contact Information

Australian Meat Processor Corporation
Suite 1, Level 5, 110 Walker Street
North Sydney NSW 2060
Ph: 02 8908 5500
Email: admin@ampc.com.au

Disclaimer:

The information contained within this publication has been prepared by a third party commissioned by Australian Meat Processor Corporation Ltd (AMPC). It does not necessarily reflect the opinion or position of AMPC. Care is taken to ensure the accuracy of the information contained in this publication. However, AMPC cannot accept responsibility for the accuracy or completeness of the information or opinions contained in this publication, nor does it endorse or adopt the information contained in this report.

No part of this work may be reproduced, copied, published, communicated or adapted in any form or by any means (electronic or otherwise) without the express written permission of Australian Meat Processor Corporation Ltd. All rights are expressly reserved. Requests for further authorisation should be directed to the Chief Executive Officer, AMPC, Suite 1, Level 5, 110 Walker Street Sydney NSW.