

MONASH INDUSTRY TEAM INITIATIVE (MITI)

Recommended Enhancements for Dryer CIP

Brooke Roberts (BSc/BGS), Hashini Fernando (BChemEng(Hons)),
Monika Burford (BChemEng(Hons)/BPharmSc),
Wilson Deng (BElecEng(Hons)/BIT)

BACKGROUND

The Fonterra Darnum site produces nutritional powders collected from dairy farms throughout the Gippsland region. Nutritional products require a high food quality standard; therefore, it is crucial that Fonterra is consistently achieving these standards to best serve existing customers and reach new markets.

PROJECT SCOPE

The key to achieving a high-quality product is to ensure that our Spray Dryers are clean and dry at the completion of the cleaning in place (CIP) process, therefore preventing the introduction and growth of contaminants.

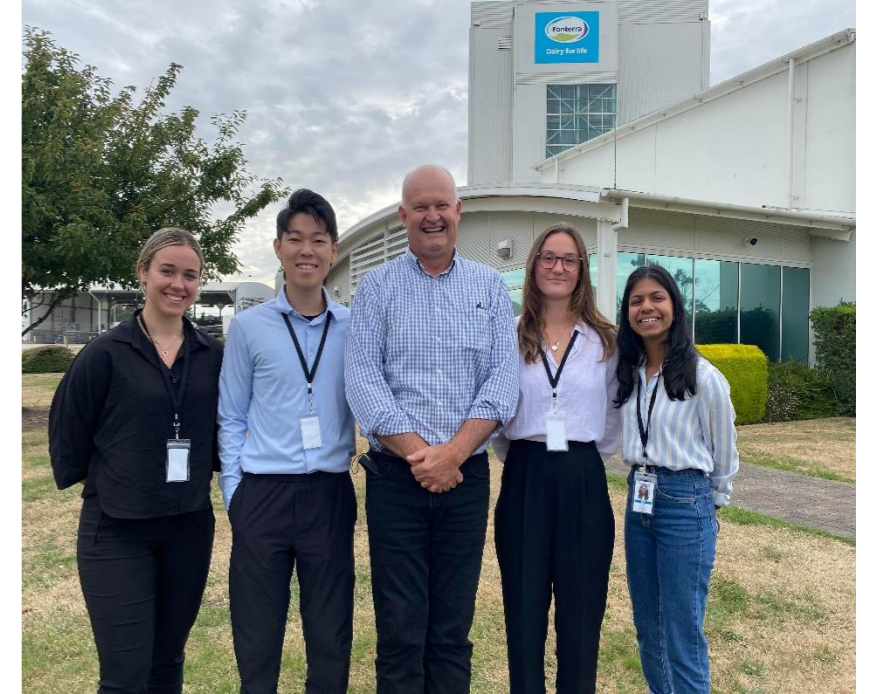
There are opportunities to improve aspects of the CIP process by phasing in the following:

- Improve CIP spray nozzle maintenance processes with the introduction of labelling and a service history database.
- Re-assess operator procedures and update SOP documents, adding signage and improving accessibility.
- Increase drainage of the CIP system by modifying nozzles, flexi-hosing and adding more manual drains.
- Address areas more challenging to clean by installing additional nozzles.
- Add additional valves between particular CIP lines to ensure complete isolation.



ACKNOWLEDGEMENTS

We would like to thank the Gardiner Dairy Foundation for providing us with this opportunity and the experience of working within the Dairy Industry. We express our gratitude to the Monash MITI team and Fonterra for organising and providing us with an impactful project to collaboratively work on. We also thank Geoff Horstman and Colleen Gates for providing us with the necessary guidance and support throughout the duration of the project.



PROJECT OUTCOMES

FINAL REPORT

Provides an analysis of the current system and identifies key issues. Recommendations are made based on financial viability and effectiveness. In addition to this, the report outlines an action plan for Fonterra Darnum which is broken into phases to be followed as future funding becomes available for this project.

SOP

Documents detailing the standard operational procedures for the CIP process were revised and updated. An SOP document to guide operators on when to use CIP drain valves along with floor plan to indicate their location on each level was created. This document would be used by the operators to ensure process consistency and accuracy.

LABELLING

Nozzle locations were labelled using stainless steel tags to increase traceability of assets. This allows for the implementation of a database to record the history of when nozzles were maintained and proactively enables servicing before issues arise. Additionally, signage was created for easy identification of CIP drain valves.

