

ARC Dairy Innovation Hub – Research Themes

Process Innovation

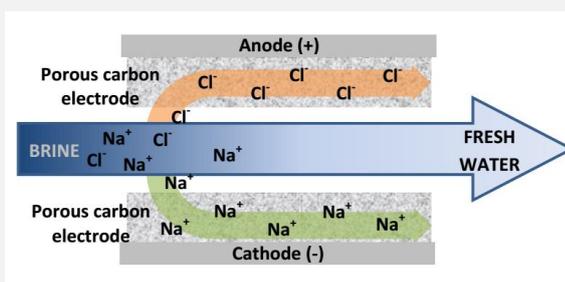
Led by Professor Sandra Kentish and Professor David Dunstan from the University of Melbourne, the *Process Innovation* theme focusses on new separation technologies and methods for the prevention of equipment fouling. This includes scoping studies of separation technologies not previously applied to dairy streams such as capacitive deionization and membrane distillation for recovery of salt and charged proteins from dairy solutions. Advanced nanofiltration technology and electrodialysis will also be studied as approaches for salt reduction and for removal of lactic acid from acid whey. Success here will not only help to reduce the cost of waste disposal but also reduce environmental impact and provide new opportunities for water recycling. A novel anti-fouling technology concept developed by researchers at UoM will also be further evaluated for application in dairy processing plants. The processing down-time caused by fouling is currently responsible for significant economic losses for dairy processors.

Antifouling technology

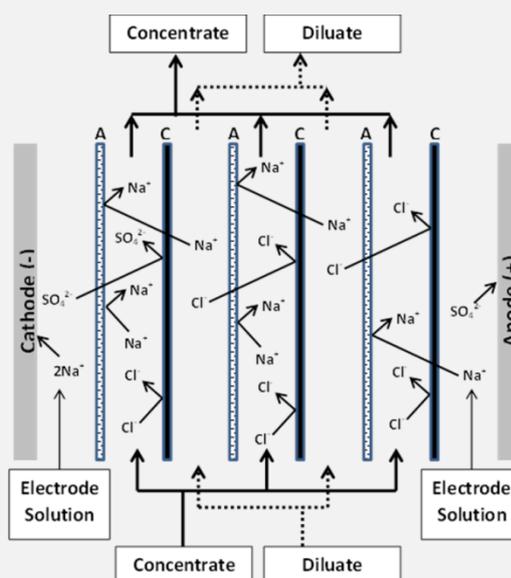
Evaluation trials at Dairy Innovation Australia's cleaning rig will demonstrate application, removal and performance of the coating at pilot plant scale. The coating is based on food safe ingredients and is heat resistant. It has the potential to reduce energy consumption and cleaning cost while increasing productivity in dairy processing.



Salt streams and acid whey



An extensive technology review will be conducted into the technologies used for wastewater recovery and reuse in the dairy industry. This review will include the Closing the Loop (CTL) project and more recent DIAL work in sustainability and waste reduction.



A scoping study will evaluate capacitive deionisation (CDI) for the removal and/or recovery of both salt and charged proteins from dairy solutions. CDI is an alternative technique to ion exchange that uses no chemicals in regeneration, and the process stream is passed between two electrodes that have the ability to adsorb ions.

Key Collaborations with other Hub projects

The UoM Process Innovation team will closely collaborate with DIAL and its industry partners to evaluate the feasibility and commercial applicability of antifouling and separation technologies.

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