

Future Energy Exports – Development and demonstration of safe, efficient hydrogen liquefaction through optimised mixed refrigerants and plant design

This Project received funding from the Australian Renewable Energy Agency (ARENA) as part of ARENA's Transformative Research Accelerating Commercialisation Program.

OBJECTIVES

This project aims to provide significantly lower hydrogen (H₂) liquefaction costs with novel mixed refrigerant (MR) cycles and smaller, safer plant layouts through the development of validated numerical tools.

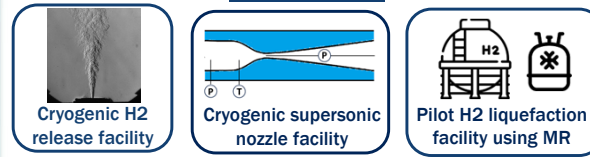
We will achieve this by completing three carefully designed and integrated core research programs delivering:

- 1 A novel demonstration and testing facility for liquid hydrogen (LH₂) production using MR (lowering power consumption and cost)
- 2 New tools for understanding the thermodynamics and fluid dynamics of cryogenic hydrogen to optimise LH₂ process design, efficiently scale-up turbomachinery, and to better predict release incidents
- 3 Fit for purpose safety codes for LH₂ plants and associated infrastructure design so hydrogen liquefaction can be both safe and cost competitive

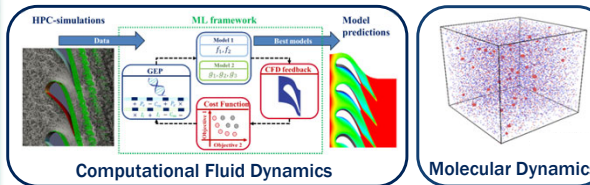


PROJECT OVERVIEW

EXPERIMENT



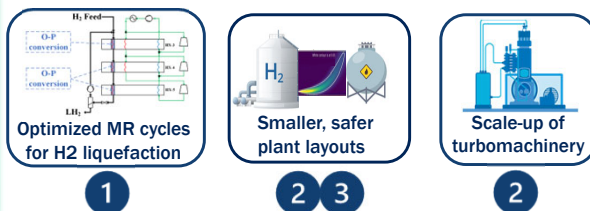
HIGH FIDELITY SIMULATION



FAST, ACCURATE DESIGN TOOLS

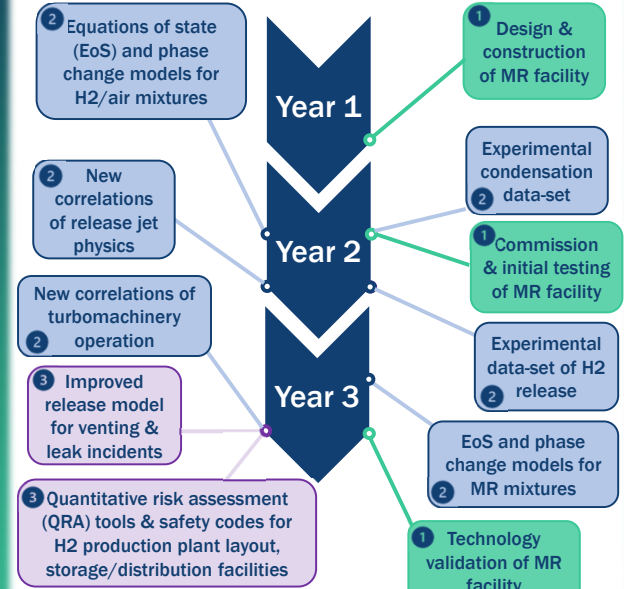


OUTCOMES



TIMELINE

RESEARCH STAGE Commence April 2024



COMMERCIALISATION STAGE Commence April 2027

