

# HDR PROJECT SUMMARY

## ALUMINA REFINERIES' NEXT GENERATION TRANSITION (ALUMINEXT) PROJECT – NEXT GENERATION BAYER PROCESS

### HDR PROJECT DESCRIPTION

The Alumina Refineries' Next Generation Transition (ALUMINext) Project will address both the short-term need to de-risk relatively high TRL technologies that can be incorporated as a retro-fit to reduce emissions from current alumina refineries and advance the development of novel technologies needed to unlock a step-change in increased efficiency and reduced cost in next generation net zero refineries. It will do this by further developing the process models that are needed to identify, on a refinery specific basis, the benefits of low-carbon heat supply to calciners and novel steam integration designs that enable recovery of steam that is currently vented from both the calcination and digestion process.

### PROJECT OBJECTIVES

The primary objective of this project is to assess the impact of net-zero steam generation or steam recovery technology on new process configurations. This information is essential for process optimisation of the whole alumina refinery. The CO<sub>2</sub> emissions reduction and levelised cost of alumina production for reference configurations of current processes in the above scenarios.

### PROJECT SCOPE

The scope of this project will include development of more comprehensive modeling than the simplified approaches employed to date, to better account for the range of potential details needed to implement steam recovery from the digestion and calcination processes for overall refinery decarbonisation.

### QUALIFICATIONS AND EXPERIENCE

Candidates are required to have:

- A Master's degree or a Bachelor's degree with Honours in a relevant field such as Chemical Engineering, Industrial Engineering, Mechanical Engineering or a close related field.
- Experience in mathematical modeling techniques and simulation methods.
- Ability to analyse complex systems and identify key factors influencing process behavior.
- Demonstrated problem-solving skills and attention to detail.
- Creativity and ability to develop innovative solutions to challenging problems.

To determine your eligibility for studying at The University of Adelaide visit: [adelaide.edu.au/graduate-research](https://adelaide.edu.au/graduate-research)

For further enquiries and more details, please contact Dr Woei Lean Saw:

**Email:** [woei.saw@adelaide.edu.au](mailto:woei.saw@adelaide.edu.au)

**Telephone:** +61 8 8313 1182

### PRIMARY UNIVERSITY SUPERVISOR

- Dr Woei Lean Saw  
The University of Adelaide

### CO-SUPERVISORS

- Professor Gus Nathan  
The University of Adelaide
- Dr Andrew Beath  
CSIRO

### PROJECT PARTNERS

- The University of Adelaide
- CSIRO
- Other HILT CRC partners

### PROJECT TYPE

- PhD

### DATE ADVERTISED

- Wednesday 8 May 2024

# HILT CRC POSTGRADUATE PROGRAM

**Are you interested in receiving training from world-leading researchers, whilst working with industry partners on real-world problems?**

**Join the HILT CRC postgraduate program for a research career in de-risking decarbonisation for heavy industry.**

Through engagement with industry and universities we are committed to training the heavy industry workforce of the future through practical, demand driven research projects with world-leading teams and facilities.

We offer Higher Degrees by Research (HDR) through a PhD or Masters qualification for up to 3.5 years duration, providing you with the opportunity to acquire world-leading training in a field of growing demand to take your engineering career further.

By joining our postgraduate research program, you will work on real industry problems and challenges with the potential for immediate high-impact practical results to decarbonise heavy industry.

**When undertaking a research degree with us, you will also gain:**

**Expert knowledge** – designed specifically for the heavy industry sector and draws on your foundation of engineering knowledge by developing further skills tailored to transitioning the steel, iron, alumina and cement industries to reduce heavy industry's carbon emissions.

**Invaluable networking opportunities and professional development** – benefit from opportunities to collaborate and network with multiple industries and research experts and teams via participating in the HILT CRC specialised webinars, yearly conferences, and master classes.

**Career outcomes** – linked with industry and government, you will gain hands on industry experience to help you develop the skills required to operate in a new low-carbon economy, become an expert in your field, and enhance your employability.

**A platform for communicating your findings** – your research findings may be presented at industry conferences, published, commercialised and in turn, create a positive impact on society.

## Financial Support and Scholarships

We can provide full, co-funded or top-up scholarships to eligible postgraduate students (Higher Degree by Research students at both Master and PhD levels) across our three research programs at our partner universities. The distribution of funding is at the discretion of the principal (main) supervisor of the project and may be used for student stipend, costs associated with the research project or other expenditure related to the project.

Any student interested in undertaking a postgraduate scholarship is encouraged to review the [Scholarship Guidelines](#) and complete the [HDR Scholarships Application Form](#). Details for how to apply for postgraduate scholarships are included in the guidelines.

## How to Apply

All HILT CRC prospective postgraduate students are required to enrol in their degree through their host institution as per the normal university application process. Therefore, students need to meet the requirements stipulated by the host university to enrol (e.g. appropriate Honours or Masters degree).

## Further Information

For more details about the postgraduate research opportunities and projects, and financial support with HILT CRC, contact us at [hdr@hiltcrc.com.au](mailto:hdr@hiltcrc.com.au)