



THE UNIVERSITY
of ADELAIDE

Microgrid Battery Deployment



Faculty of Engineering, Computer and Mathematical Sciences

FBI CRC PHD SCHOLARSHIP

MICROGRID BATTERY DEPLOYMENT

Up for a challenge? Join us to work on a research project with the School of Electrical & Electronic Engineering

At a Glance

Who can apply?

- Australian Citizens
- Permanent Residents
- Onshore International students

Industry partner or funding body

- Future Battery Industry (FBI) CRC

Program of Study available

- Doctor of Philosophy (PhD)

Total annual stipend amount

- \$43 597pa (\$28,597 RTP rate indexed annually + \$15,000 top up)

Start date

- Plan for a start date of no later than December 2021.

About the project

This scholarship is funded by the Future Battery Industries Cooperative Research Centre ([FBICRC](#)) as part of the 'Microgrid Battery Deployment' project. The FBICRC brings together over 60 industry participants eight universities, CSIRO and Federal and State Governments. Through a six-year research and development program the FBICRC will target all segments of the battery value chain and deliver commercial, proprietary outcomes to

accelerate industry expansion and grow a vibrant, emerging battery industry sector. FBICRC scholarship holders will form part of the broader FBICRC community, participating in research and participant forums with opportunities to undertake industry internships and collaborate with a range of industry and research participants.

Australia in general (and South Australia in particular) lead the world in residential rooftop solar uptake with one in every five houses having an installed PV system. On the back of a growing number of residential rooftop solar systems, battery storage uptake was expected to boom, however, Electricity Statement of Opportunities produced by AEMO in 2018 suggests less than half the uptake forecast reported in its 2017 document due to longer pay-back periods for batteries. It highlights a need to minimise the cost and maximise the economic benefits of

battery systems. To that end, the Microgrid Battery Deployment project aims to develop next-generation battery energy management systems (BEMS), which in addition to providing significant performance, safety and lifetime improvements, modularise the deployment of batteries. The Microgrid Battery Deployment project is supported by the Future Battery Industry (FBI) CRC and several companies, and is led by the University of Western Australia (UWA).

In this PhD project, which is led by The University of Adelaide in collaboration with UWA, FBI CRC, and Ultra Power Systems, we want to develop an operational model of the Redox Flow Battery at the cell and unit levels using real-time operational data. The model will be used to design a battery management system to monitor and control individual cells and the greater battery units. Also, an energy management system is expected to be developed to optimally operate the battery under uncertain conditions, including the variability of renewable generation, load demand, and grid prices.

This is a multi-disciplinary research project at the intersection of power system engineering, control engineering, optimisation and statistical modelling in collaboration with UWA and the Ultra Power Systems company in Perth who are Western Australia's first Vanadium Redox Flow Battery manufacturer.

Eligibility criteria

Candidates with an **Australian equivalent first-class honours degree** (or preferably a master's degree) in electrical engineering, computer science, operations research, or applied mathematics are encouraged to apply. We are looking for excellent candidates with proven skills and knowledge in:

- Power systems engineering, battery operation and integration of storage into the grid
- Mathematical optimisation, preferably with applications to power system

- Programming in Python or MATLAB
- Applicants with well-developed written and verbal communication skills will be considered favourably.
- Students applying for this scholarship should plan for a start date no later than 23/12/2021.
- Be willing to provide your personal details by way of a Student Deed Poll.

Benefits

- Work alongside world-leading researchers
- Exposure to key industry networks and experts in the field
- Includes top-up scholarship
- Access to authorised travel and research project funds
- Our CaRST program: professional development to enhance your employability skills
- No Tuition fees! These are waived for eligible candidates
- Access state of the art technology
- Become an expert in the field and make a real contribution to solving global challenges
- Publish your contributions and impact our communities and society.

How to apply

- Complete an [expression of interest](#) and email together with a copy of your CV and transcripts to a.pourm@adelaide.edu.au
- Once your initial eligibility assessment is approved, formally lodge an application for admission and scholarship via the Adelaide Graduate Centre 'How to Apply' [link](#). **Application dates are listed on the website.**

Researcher Profiles

- Use our [Researcher Profiles](#) to find out more about potential supervisors

More about ECMS

The Faculty of Engineering, Computer and Mathematical Sciences is home to world-class research institutes and centres, and internationally renowned academics at the cutting edge of research and discovery.

We are a thriving centre of learning, teaching and research in a vast range of engineering disciplines, computer science, machine learning and high-level mathematics as well as designing human-centred, sustainable futures in our School of Architecture and Built Environments.

Many of our academic staff are leaders in their fields and graduates are highly regarded by employers.

Learn more about the Faculty of Engineering, Computer and Mathematical Science's Research capabilities at: <https://ecms.adelaide.edu.au/research-impact>

The University of Adelaide is an Equal Employment Opportunity employer. Women and Aboriginal and Torres Strait Islander people who meet the position requirements are strongly encouraged to apply.

FURTHER INFORMATION

For a confidential discussion contact:

Name: [Dr Ali Pourmousavi Kani](#)

School of Electrical & Electronic Engineering

The University of Adelaide SA 5005 Australia

TELEPHONE +61 8 8313 8311

EMAIL a.pourm@adelaide.edu.au

WEBSITE adelaide.edu.au

CRICOS 00123M

