

Research Fellow / Engineer (Microgrid and propulsion system) - AKR3  
Singapore Institute of Technology

Direct Link: <https://www.AcademicKeys.com/r?job=254491>

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Posted Mar. 17, 2025, set to expire Jul. 17, 2025

**Job Title** Research Fellow / Engineer (Microgrid and propulsion system) - AKR3

**Department** Engineering

**Institution** Singapore Institute of Technology  
Singapore, , Singapore

**Date Posted** Mar. 17, 2025

**Application Deadline** Open until filled

**Position Start Date** Available immediately

**Job Categories** Research Scientist/Associate

**Academic Field(s)** Electrical and/or Electronics

**Job Website** <https://careers.singaporetech.edu.sg/cw/en/job/498869/research-fellow-engineer-microgrid-and-propulsion-system-akr3>

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**Job Description**

## Research Fellow / Engineer (Microgrid and propulsion system) - AKR3

**Job no:** 498869

**Department:** Engineering

**Contract type:** Contract

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As a University of Applied Learning, SIT works closely with industry in our research pursuits. Our research staff will have the opportunity to be equipped with applied research skill sets that are relevant to industry demands while working on research projects in SIT.

The primary responsibility of this role is to deliver on an industry innovation research project where you will be part of the research team to perform modelling and real-time simulation of electric vessel's onboard microgrid and propulsion system.

### Key Responsibilities

- Participate in and manage the research project with Principal Investigator (PI), Co-PIs and the research team members to study, evaluate, propose and innovate solutions to the marine electrical propulsion systems of various e-vessel types including their protections and energy management to enhance reliability, safety, efficiency, density and to reduce the total cost of ownership.
- Work with research team to deliver the work scope and undertake the following responsibilities in the project.
  1. Develop digital twins of the detailed electrical power system architectures of various e-vessels based on the concept design in real-time simulation environment such as OPAL-RT and/or Typhoon HIL and conduct real time simulation studies/experimentation.
  2. Design and develop an intelligent and optimal energy management system (EMS) controller for the optimal operation and coordinated control of e-vessel microgrid of multiple energy sources considering cost, carbon, and operation constraints.
  3. Perform HIL/real-time simulation studies/experiments with EMS controller for various cases to demonstrate performance and recommend improvements at unit, sub-system and whole system level.
  4. Dynamic, thermal, and stability analysis of the electrical propulsion systems of various e-vessel types
  5. Perform simulation studies for onboard microgrid and connection to shore charging infrastructure including protection systems and their coordination
  6. Propose and innovate solutions for operational challenges in hardware such as common mode noise, electromagnetic interference, filter design, etc.
- Evaluate and recommend efficient and reliable power system architecture(s) with other merits of high-density and light-weight.
- Carry out Risk Assessment, and ensure compliance with Work, Safety and Health Regulations.

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- Test the relevant power electronics and drives system hardware and troubleshoot the challenging problems.
- Work independently, as well as within a team, to ensure proper operation and maintenance of equipment and assist in laboratory management.
- Coordinate procurement and liaison with vendors/suppliers.
- Mentor students involved in the research project
- For those hired at senior levels, management responsibilities may be included

### Job Requirements

- Have a Master's or PhD's degree in Electrical Engineering or equivalent from a recognized University. Major in Power Engineering will be advantageous.
- Minimum 5 years of relevant experience in power electronics, drives, control algorithms, optimization techniques, and optimal energy management algorithm development for the optimal operation of the microgrid system.
- Strong knowledge of power electronics, drives, and control is highly preferred. Experience with hardware testing and real-time simulation will be advantageous.
- Knowledge and experience in fault diagnosis and analysis and protection systems will be advantageous
- Knowledge of software such as ETAP and MATLAB/Simulink
- Prior knowledge and experience in marine electrical propulsion system architectures and digital twins will be a bonus
- Experienced and committed to participating in project meetings.
- Self-motivated team player and good project management skills.
- Excellent communication and interpersonal skills.

### Key Competencies

- Able to build and maintain healthy working relationships with people within (staff and PIs/co-PIs within the programme) and external to the university (industry partners and funding agencies).
- Self-directed learner who believes in continuous learning and development
- Proficient in technical writing and presentation
- Possess strong analytical and critical thinking skills
- Show strong initiative and take ownership of work

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**Advertised:** 17 Mar 2025 Singapore Standard Time

**Applications close:**

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31 Dec 2025 Singapore Standard Time

**Contact Information**

Please reference Academickeys in your cover letter when  
applying for or inquiring about this job announcement.

**Contact**

Singapore