EG5016B – Exploring Engineering Project Management

BEng/MEng Mechanical Engineering
BEng/MEng Mechanical Engineering (Automotive)
BEng/MEng Electrical and Electronics Engineering

INDUSTRY LIVE BRIEF

Thank you for supporting our undergraduate students with a Live Brief. This form will help us capture the key information for your proposed challenge and ensure a rewarding experience for the students involved.

1. Organisation / Contact Details

- **Organisation name** : Siemens PLC
- **Your name** : Thamizharasu Ravi
- **Job Title / Role** : Primary Design and Specification Engineer
- **Email Address** : thamizharasu1997@gmail.com
- **LinkedIn Profile (optional)** : Click or tap here to enter text.

2. Title of the Challenge

A short, clear title (e.g. "Redesigning a Modular Bike for Urban Use")

Designing an Anti-condensation Outdoor Enclosures for Switchgear

3. Summary of the Brief

A short description (250 – 300 words) of the real-world engineering problem you would like the students to work on.

Outdoor switchgear enclosures are vital for electrical distribution systems, especially in industrial and utility settings. However, these enclosures often face a persistent issue: internal condensation. This moisture buildup can lead to corrosion, insulation breakdown, and ultimately, equipment failure—posing safety risks and increasing maintenance costs.

The challenge involves understanding the environmental factors contributing to condensation, such as temperature fluctuations, humidity ingress, and enclosure material properties. Students will explore both passive and active mitigation strategies, including ventilation design, thermal insulation, integrated heating elements, and smart moisture control systems.

The project encourages a multidisciplinary approach, combining mechanical design, environmental analysis, and electrical safety. Students should also consider manufacturability, cost-effectiveness, and compliance with industry standards. Deliverables may include CAD models, simulations, and a design rationale that demonstrates how their solution enhances reliability and performance in real-world conditions.

4. Background or Motivation

What is the industry context or reason behind this challenge?

Condensation is a widespread challenge in the switchgear industry, particularly for outdoor installations exposed to the UK's variable climate. Moisture accumulation inside enclosures can compromise electrical integrity, leading to safety hazards and costly downtime. As infrastructure demands grow, there is a pressing need for smarter, more resilient enclosure designs that can withstand harsh environments without sacrificing performance. This challenge reflects a real-world problem faced by engineers at Siemens and across the industry. By engaging students in solving it, we aim to foster practical thinking, creativity, and environmental awareness in engineering design.

5. Constraints/Special Considerations

Any key requirements such as sustainability, manufacturing, cost, regulations, or customer needs?

- **Sustainability**: Preference for energy-efficient solutions and recyclable materials.
- **Manufacturing and Assembly**: Designs should be feasible for mass production using standard industrial processes. Design should follow DFMA.
- **Corrosion Resistance**: Material selection and corrosion control methodology to be explained.
- **Cost**: Solutions must balance performance with affordability for commercial viability.
- **Regulations**: Must comply with IEC standards for switchgear and electrical enclosures. (Research on the required IEC standard)

6. Presentation and Acknowledgement

Do you consent for the student work on this brief to be presented at our Future Skills Day (December 2025) or shared internally within the University (with appropriate credit to you/your organisation)?

☐Yes
☒Yes, but internal use only
☐No

7. Are you planning to attend the Future Skills Day on the 10th of December between 10am – 2pm at the Townhouse, Penrhyn Road Campus, Kingston University London?

☐Yes
☒Maybe
☐No