

REFLECTIVE ELECTRICAL ENGINEERING LEARNING (REEL2026)

Building Skills and Professionalism through
Industrial Training

SKILLS



REEL2026
Reflective
Electrical Engineering Learning

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BUILDING SKILLS AND PROFESSIONALISM THROUGH INDUSTRIAL TRAINING



REEL 2026

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*"Building Skills and Professionalism
through Industrial Training"*

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*Reflection transforms
experience into meaningful learning*

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Electrical Panel Maintenance and Motor Control Systems

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I believe that industrial training is an essential connecting point between theoretical knowledge and actual engineering practice. Since I have completed 5 semesters of the theoretical part, it is time to start my internship at SDGI Port Klang. I had the opportunity to see firsthand how control systems work in an industrial environment. The experience was new and difficult at first, as it is totally different from what is learned in the classroom. It required both understanding the concepts and applying with the real situations. During this internship, I was exposed to equipment such as control panels, motor control circuits, and troubleshooting activities. I hope that by the end of training, I will gain as much knowledge as possible in this industry-relevant technical skills.

One of the most meaningful learning experiences of my internship was working with electrical control panels that run pumps and motors. In classroom, I was familiar with the control systems subject that taught us about open-loop systems, closed-loop systems, block diagrams, and many more, but it was an entirely different experience to face an actual control panel. The panel consists of various elements such as indicator lamps, contactors, protection devices, and selector switches. All are arranged in a compact and complex layout. Initially, I found it challenging to understand real wiring layouts and to find the components on the actual panel, but this is the process that I needed to learn from my colleagues and find a way to go through.

To overcome this challenge, I learned how to systematically trace wiring connections with the help of various tools, including my best buddy, the multimeter. My colleagues were very helpful. They explained the function of each component and showed how they are interconnected to form a complete control system. This is very interesting, and I feel eager to learn as I listened attentively, so that I didn't miss anything important. Any small mistake in identifying wires or components might lead to a misunderstanding. Gradually, I became more confident in doing my job.

It is crucial to use testing tools for troubleshooting purposes. I was involved in checking the presence of voltage, testing continuity, and detecting potential faults in electrical circuits, for example, loose connections or frayed cables. I remembered, once, there was one experience, when I assisted in diagnosing a fault in a control circuit. The system failed to operate even though the power supply was normal. At first, it was difficult for me to determine the cause of the problem, but by performing a guided troubleshooting approach, we were able to identify a loose connection in the control wiring that disrupted the signal path. This opportunity really taught me the importance of systematic problem-solving in engineering. It is necessary to verify each part of the system carefully and not jump to making assumptions. Troubleshooting is not just about fixing problems but also about understanding how the system behaves under different conditions. This hands-on experience greatly

improved my critical thinking skills and helped me build confidence in handling real electrical systems.



Figure 1: Electrical Control Panel During Inspection and Troubleshooting

In addition to conventional control panels, I was also exposed to more advanced equipment such as Variable Frequency Drives (VFDs). Before this, my understanding of motor control was mainly limited to basic methods such as direct-on-line (DOL) starters learned in university. However, through this exposure, I learned that VFDs provide more flexible control by adjusting the frequency and voltage supplied to the motor. This allows better control of motor speed and improves energy efficiency in industrial applications.

I also observed how communication cables are used to transmit signals between different components, enabling better integration and automation of systems. Although I did not directly program or configure the VFDs, observing their operation helped me understand the importance of modern control technologies in industry. This exposure expanded my perspective and showed me that continuous learning is necessary to keep up with technological advancements.



Figure 2: Variable Frequency Drive (VFD) System and Control Wiring Setup

Another valuable lesson I learned during my internship was the importance of proper wiring practices and panel organization. In an industrial setting, control panels are often packed with wires and components. It looks more complex than the setups used in academic laboratories in the university. I noticed that proper cable management, clear labelling, and an organized layout are essential for efficient maintenance and troubleshooting. Without these practices, identifying faults would be much more difficult and time-consuming. It is not only about making the system function but also about ensuring that it can be easily maintained and understood by others.

Apart from technical skills, my industrial training also helped me develop soft skills such as time management, communication, and teamwork. Maintenance tasks in the industry are often performed within limited downtime to avoid disrupting operations. This means that tasks must be completed efficiently and accurately within a short period. I learned how to manage my time effectively and prioritize tasks based on urgency.

Working with technicians and supervisors also taught me the importance of communication. I had to listen carefully to instructions, ask questions when I was unsure, and report findings clearly during troubleshooting activities. Teamwork was also essential, as many tasks required coordination among multiple individuals. These experiences helped me understand that being a good engineer is not only about technical knowledge but also about the ability to work effectively with others. Throughout my internship, I realized that learning does not stop in the classroom. In fact, real learning begins when we are exposed to practical situations that challenge our understanding. Industrial training provided me with the opportunity to apply what I had learned and, more importantly, to learn new things that were not covered in lectures. It also taught me to be proactive in seeking knowledge and not to rely solely on instructions.

My industrial training at SDGI Port Klang has given me valuable lessons in developing practical and industry-relevant technical skills for lifelong learning. Through hands-on experience with control panels, troubleshooting activities, and exposure to modern equipment such as VFDs, I was able to strengthen both my technical knowledge and problem-solving abilities. At the same time, I developed important soft skills such as communication, teamwork, and time management.

Authors' Biography



Muhammad Haziq bin Sohayni is a Diploma student of Electrical Engineering (Electronics) at Universiti Teknologi MARA (UiTM). As part of his academic requirements, he is currently undertaking industrial training at SDGI Port Klang, starting from 2nd March to 19th June 2026. Currently attached to the Engineering Department, he is working with electrical technicians in the troubleshooting and maintenance of industrial systems. Handling electrical control panels, motor control systems, and Variable Frequency Drives (VFDs) has provided him with practical exposure in terms of bridging the gap between theoretical knowledge and real-life applications. His interests lie in industrial automation and electrical maintenance. He aspires to become a competent and skilled electrical engineer in the future.



Asmalia binti Zanal is a Senior Lecturer at Faculty of Electrical Engineering, Universiti Teknologi MARA Cawangan Pulau Pinang. With over 19 years of academic experience, she has demonstrated a sustained commitment in teaching and research. She obtained her B.Eng. Hons. In Electrical and Electronics Engineering from Universiti Teknologi Malaysia (UTM) in 2004 and subsequently earned her MSc. In Electronic System Design Engineering from Universiti Sains Malaysia (USM) in 2008.

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