

REFLECTIVE ELECTRICAL ENGINEERING LEARNING (REEL2026)

Building Skills and Professionalism through
Industrial Training

SKILLS



REEL2026
Reflective
Electrical Engineering Learning

REFLECTIVE ELECTRICAL ENGINEERING LEARNING

BUILDING SKILLS AND PROFESSIONALISM THROUGH INDUSTRIAL TRAINING



REEL 2026

REFLECTIVE ELECTRICAL ENGINEERING LEARNING

*"Building Skills and Professionalism
through Industrial Training"*

Copyright © July 2026

Electrical Engineering Studies
Universiti Teknologi MARA Pulau Pinang Branch
Permatang Pauh Campus

All rights reserved. No part of this e-magazine may be reused, republished, or reprinted in any form or by any electronic or mechanical means, including photocopying and recording, without prior written permission from the publisher.

eISSN

3093-7027

Published by

Diploma in Electrical Engineering
Electrical Engineering Studies
Universiti Teknologi MARA Pulau Pinang Branch
Permatang Pauh Campus
13500 Permatang Pauh
Pulau Pinang, Malaysia

This e-magazine is published annually

DISCLAIMER



*Reflection transforms
experience into meaningful learning*

The content displayed in this e-magazine is the intellectual property of the Electrical Engineering Studies, UiTM Pulau Pinang Branch (PKE UiTM CPP). Without written consent, no part of this publication may be reused, republished, or reprinted in any form or by any means.

All information published in REEL 2026 is intended solely for educational and informational purposes. The views and opinions expressed are those of the individual authors and do not necessarily reflect the official stance of PKE UiTM CPP or Universiti Teknologi MARA.

The editors and publisher are not responsible for any inaccuracies, omissions, or outcomes resulting from the use of the information provided.

Building Practical and Industry-Relevant Technical Skills Through Industrial Training at Plexus Manufacturing

Muhammad Adam bin Mohd Mazwan, *Faridah binti Abdul Razak
Faculty of Electrical Engineering, Universiti Teknologi MARA Cawangan Pulau Pinang,
Permatang Pauh, Malaysia

*Corresponding author's email: faridah805@uitm.edu.my

Industrial training is an important venue where students of engineering can apply theoretical knowledge in practical environments. This article will reflect on my own experience of internship training in Plexus Manufacturing, emphasizing hands-on technical work, especially developing a Smart Parking System.

Industrial training is an important part of preparing engineering students for practical work because it exposes them to many aspects of my professional career life. During my internship program in Plexus Manufacturing on 2nd March 2026 to 20th June 2026, I was attached to the technical and testing department to perform various tasks and projects.



Figure 1: Plexus Riverside East

One of the tasks I performed at the Plexus Manufacturing company was designing a prototype of a Smart Parking System. The project consisted of using ultrasonic sensors connected to the microcontroller for detecting parking places. The first step in the development process was selecting the right type of components. I chose ultrasonic sensors because of their ability to detect distance independently of lighting conditions. The experience of this task proved to me the necessity of choosing components that meet all requirements regarding performance, compatibility, and cost of devices.

After choosing and purchasing the right components, I moved on to designing the hardware architecture, which includes making schematics and finding out all input/output connections among different parts of the system. I made sure the connection of circuits and other components did not cause any signal interferences and that power could be distributed

evenly. At this stage of work, I realized the necessity of careful planning because potential problems with the system can be identified early during design.

Another important step in developing my Smart Parking System prototype was programming the system. I created a software part where I programmed the microcontroller to assign each space as either "Occupied" or "Vacant" depending on the distance reading. An important challenge I faced was receiving inconsistent sensor readings because of some kind of interference. To solve this problem, I used filters, such as time-averaging, to filter out incorrect data. Thus, this project gave me a deeper understanding of what kind of data engineers need to deal with in practice.



Figure 2: Smart Parking project.

In addition to developing the Smart Parking System, I engaged in some other technical tasks at Plexus Manufacturing. First, I participated in equipment calibration management by performing the task of scanning barcodes. Also, I was involved in one more project that used Raspberry Pi microcontroller to create a Smart Dustbin. The project used an image recognition system which taught me another way of creating more complex systems.

As I mentioned before, this project also exposed me to various aspects of professional life. First, I observed a lot of safety standards by wearing appropriate personal protection equipment, such as ESD shoes and anti-static clothes. Also, I participated in team meetings where we discussed ways to solve some problems in the workplace. Thus, the aspect of safety and professionalism played an important role throughout my training.



Figure 3: Safety standards wearing - ESD shoes and anti-static clothes

Throughout the training period, I experienced many difficulties with implementing ideas, such as shortages of some kinds of components or lack of support from certain software

platforms. These problems helped me enhance my ability to find solutions, think critically about problems, and show adaptability.



Figure 3: Building the project and learning about Raspberry Pi

In general, my industrial work experience in Plexus Manufacturing has been a very rich and rewarding experience which has really helped me a lot in terms of technical expertise as well as professional skills. My experience in developing embedded systems, sensor integration, and solving real-world problems in engineering practice was practical through my hands-on experience in projects like the Smart Parking System and the Smart Dustbin. Furthermore, this training enhanced my knowledge on industrial practices such as safety compliance, working as a team and communicating effectively in a workplace. Another way I gained a greater level of analytical, and problem-solving is regarding hardware constraints and software issues in system development. This has increased my confidence and desire to take this career in electrical and electronic engineering. In the future, I will continue to enhance my expertise in embedded systems design and IoT development as well to equip myself better to work in the engineering field of the industry.

Authors' Biography



Muhammad Adam bin Mohd Mazwan is currently pursuing a Diploma in Electrical Engineering (Electronics) at Universiti Teknologi MARA (UiTM) Cawangan Pulau Pinang. He underwent industrial training at Plexus Manufacturing from March to June 2026. His interests include embedded systems, IoT applications, and smart technology development. He aims to build a strong career in the electronics engineering field.



Faridah binti Abdul Razak has been serving as a lecturer at Universiti Teknologi MARA (UiTM) Penang since 2004. She holds a Bachelor's Degree in Telecommunication Engineering from Fachhochschule Konstanz, Germany. Prior to joining academia, she gained industry experience as an engineer for one year. She later pursued and completed her Master of Science at Universiti Sains Malaysia (USM), Penang. Her areas of interest include telecommunication systems, image processing and engineering education.

eISSN 3093-7027



PUBLISHED BY:
DIPLOMA IN ELECTRICAL ENGINEERING
ELECTRICAL ENGINEERING STUDIES
UNIVERSITI TEKNOLOGI MARA (UiTM)
PULAU PINANG BRANCH
PERMATANG PAUH CAMPUS
13500 PERMATANG PAUH
PULAU PINANG