

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



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*"Building Skills and Professionalism
through Industrial Training"*

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*Reflection transforms
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From Classroom to Industry: Hands-on Experience in Semiconductor Manufacturing Operations

Carmila Nadhirah binti Mohd Noor, *Norsabrina binti Sihab
Faculty of Electrical Engineering, Universiti Teknologi MARA Cawangan Pulau Pinang,
Permatang Pauh, Malaysia

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

One of the biggest companies in semiconductor technology in Malaysia is Inari Amertron Berhad. It is an electronics manufacturing services company that focuses on the outsourced semiconductor assembly and test industry. This company is relatively young since it was founded only in 2006. However, Inari Amertron has become one of the biggest technology companies listed in Bursa Malaysia.

The corporate office of Inari Amertron Berhad is in Petaling Jaya, Selangor, while some of its key factories are situated in the Bayan Lepas Free Industrial Zone Penang, Malaysia. Moreover, the company also has its operations outside the country as evidenced by its plants in other countries including the Philippines and China.

The company specializes in semiconductor assembly, testing services and advanced electronics manufacturing for various high-technology applications. The company focuses on producing and supporting various semiconductor-related products such as radio frequency (RF) modules, fiber-optic transceivers, optoelectronic devices, sensors and custom integrated circuit (IC) technologies. These components are widely used in many industries including smartphones, automotive systems, industrial electronics and data communication devices.

Currently, I am undergoing my industrial internship at P34 Inari Technology in Batu Kawan, where I have the opportunity to observe and learn about the real working environment in the semiconductor manufacturing industry. Through the internship program, I am able to gain practical exposure to the production processes, safety procedures and operational workflow within the company.



Figure 1: Orientation Day

During my internship at Inari Amertron Berhad, I was assigned to the Molded Chip On Board (MCOB) department specifically in the Sawing process. Throughout my internship, I have been working under the supervision of the process engineer, Mr. Mohamed Shazni, who is responsible for guiding and monitoring my learning progress. At the start of my internship program, Mr. Mohamed Shazni briefed me on all the processes taking place in our company.



Figure 2: MCOB Sawing Production Line

As part of the introduction, I was given the opportunity to observe several departments located on Level 2, including the Surface Mount Technology (SMT) section, Wafer Sort, and MCOB Molding. Each department plays an important role in the semiconductor manufacturing process. The SMT section focuses on assembling electronic components onto printed circuit boards (PCB), while the wafer sort process is responsible for testing semiconductor wafers before they proceed to the next manufacturing stages. Meanwhile, the MCOB molding process is used to protect and encapsulate the semiconductor components.

Through these introductions, I was able to learn about the entire process of manufacturing semiconductors, from the beginning point when the wafers are processed until the final product is made. Exposure to the whole manufacturing process early gave me insight into how various departments were linked to one another and their contributions towards the overall process of manufacturing. It also gave me some idea of what an industrial environment looks like and how cooperation among different manufacturing processes leads to quality products.

In the MCOB Sawing section, several specialized machines are used to support the wafer dicing and preparation processes in semiconductor manufacturing. These machines include the TSK02, SAW80, UV Curing, Mounting Tape and Laser Mark machines. Every machine has its own function in making sure the wafer is correctly prepared, processed, and properly tracked throughout the entire production process.

The mounting tape machine is used at the initial stage of the process, where the semiconductor wafer is fixed onto a holder using a special adhesive tape. This step is important to ensure the wafer remains stable during cutting, preventing the individual dice from shifting after they are separated.

Next, the TSK02 and SAW80 machines are used to perform the wafer sawing or dicing process. With these machines, the wafer is cut by the high-speed rotating blade made of

diamond into many individual pieces referred to as dice. The cuts are made following the lines marked on the wafer to ensure that each piece is cut precisely, thereby avoiding any form of damage like cracking or chipping. This process must be carried out with high precision since the quality of the cuts determines the yields.



Figure 3: Mounting Tape Machine



Figure 4: SAW80 and TSK02 Machine

After the sawing process, the wafer frame will go through the UV Curing machine, which exposes the mounting tape to ultraviolet light. This process reduces the adhesive strength of the tape, making it easier for the individual semiconductor dies to be picked up in the next manufacturing stage.

Finally, the laser marking machine will be used to mark identification codes onto the wafer frame or components. It will be necessary to have some information on the components that will help identify and trace them during the production process.

At the beginning, I was quite anxious as I had no idea about the machines, manufacturing process and safety regulations. But with the help of instructions provided by the operators, engineers and technicians, I managed to get acquainted with the surroundings easier. The exposure to actual industrial settings enabled me to see how different departments collaborate to make sure that the manufacturing process is carried out smoothly while maintaining high standards of quality. It was indeed an opportunity for me to learn how theoretical knowledge gained at university could be put into practical use.



Figure 5: Lot G3DP After Done Sawing

Through this internship, I had the opportunity to gain hands-on learning experience with some of these processes. I was taught how to conduct the process of tape mounting, where one must place the wafer on the mounting tape in order to align it properly. Moreover, I was able to learn about how to use the sawing machines safely through the assistance of the technicians and engineers.

I was also exposed to the procedure of changing the blade on the sawing machine, which is a crucial maintenance task to ensure accurate wafer cutting. Through this hands-on experience, I developed a clearer understanding of the sawing process and the level of precision required in carrying out this operation.

In addition, I developed a better understanding of workplace responsibilities, teamwork and the importance of following Electrostatic Discharge (ESD) guidelines as well as general safety procedures during manufacturing processes. This experience has contributed positively to my technical knowledge and strengthened my confidence when working in an industrial environment.

In conclusion, this internship has been a meaningful experience for me, both in my personal growth and professional development. It has given me a sense of pride as I was able to adapt to new environments, learn new skills and gain hands-on experience in the semiconductor industry.

Authors' Biography



Carmila Nadhirah binti Mohd Noor is a Diploma student in Electrical Engineering (Electronic) at Universiti Teknologi Mara (UiTM) Cawangan Pulau Pinang. She is currently undergoing industrial training in the semiconductor industry, where she gains hands-on exposure to MCOB sawing processes. She is passionate about developing her technical knowledge and practical skills in electronic and electrical systems through projects and industrial training to prepare for a future career in the engineering field.



Norsabrina binti Sihab has more than 20 years of teaching experience at Universiti Teknologi MARA (UiTM). She earned her Master of Engineering in Electrical – Electronics and Telecommunication from Universiti Teknologi Malaysia (UTM), Skudai, in 2006. Her research focuses on electrical engineering education, with particular emphasis on digital learning, teaching innovation, assessment and evaluation, and student learning outcomes. Her scholarly work in these areas has been published in several academic journals.

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