



DON BOSCO INSTITUTE OF TECHNOLOGY

Premier Automobiles Road, Kurla West, Mumbai - 400070



Report on – PCB Making workshop

Title: PCB Making workshop

Date: 28th September 2024

Time: 9:00 a.m to 5:00 p.m

Venue: EXTC LAB 2, EXTC CR2

Target Audience: SE EXTC

No. of Participants Present: 27 Student Members

No. of Girl Participants Present: 19

No. of Boy Participants Present: 08

Resource Person:

Organization of Resource Person: Application Engineer- Quectel,

Faculty Coordinator: Ms. Freda Carvalho

Guest lecturers: Mr. Prabhakar Ghawali, Mr. Suyog Vyawahare

Objectives:

- The primary goal of the workshop was to ensure students could design, fabricate, and assemble high-quality PCBs with reliable solder joints.
- Each participating team was required to create a PCB design tailored to their respective mini-project ideas, fostering collaboration and innovation among the students.
- The process culminated in the fabrication of the teams' custom-designed PCBs, with practical guidance from the guest lecturers.

Outcomes:

- The workshop was a great success, as each group produced a functional PCB for their mini-projects.
- Comprehensive understanding of the PCB manufacturing process, fabrication, assembly, and testing.
- Proficiency in operating and optimizing reflow ovens to achieve precise temperature profiles for solder reflow.
- Ability to ensure consistent solder joint quality and minimize defects by controlling the reflow process.
- Knowledge of solder paste composition and selection to enable robust solder joints.
- Capacity to efficiently assemble complex electronic devices with miniaturized components and



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surface mount devices.

- Improved reliability and functionality of the final electronic products

Detailed Report:

1. PCB Design and DFM (Design for Manufacturability):

The first stage of the workshop emphasized the importance of PCB design using CAD software or free online tools. Mr. Prabhakar Ghawali explained how to ensure that the designs followed the DFM guidelines, ensuring that the boards were manufacturable even with basic equipment. Students learned to export their designs as Gerber files, which are essential for the fabrication process.

2. Hands-On PCB Fabrication Process:

The detailed PCB fabrication process was one of the most valuable aspects of the workshop. Mr. Ghawali took students through the intricate steps required to produce their boards manually:

- **Designing the PCB:** Teams began by creating their PCB designs and exporting them as Gerber files.
- **Printing the Design:** Instead of professional plotters, students used laser printers to print the PCB design on transparency film, which served as a photomask.
- **Preparing the Copper Clad Laminate:** The copper surface of the laminate was cleaned to remove oxidation, ensuring a clean surface for further processing.
- **Applying Photoresist:** Students applied photoresist under yellow light to avoid exposure issues, ensuring it dried evenly and prepared for exposure to UV light.
- **Exposing the Photoresist:** Using UV light, the students exposed the PCB for 2-3 minutes, allowing the photomask to transfer the design onto the copper surface.
- **Developing the Photoresist:** The next step involved immersing the PCB into a developer solution, which dissolved the soluble portions of the photoresist, exposing the copper traces.
- **Etching the Copper:** Students immersed the developed PCB in an etching solution, removing the unwanted copper to leave behind only the desired traces.
- **Stripping the Photoresist:** Acetone was used to strip the remaining photoresist, revealing clean copper traces.
- **Drilling Holes:** Students used precision drills to make holes for component leads and vias, ensuring accuracy in alignment.



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3. Optional Enhancements:

Students were also introduced to advanced PCB processes such as:

- **Applying Solder Mask:** A solder mask was applied for better protection and durability.
- **Silk Screening and Surface Finish:** These optional steps involved applying labels, logos, and a surface finish to improve solderability and aesthetics.

4. PCB Inspection and Assembly:

The final stage of the fabrication process involved cleaning and visually inspecting the PCB for defects or shorts. Once the boards passed inspection, students manually assembled the components and tested their functionality.

Guest Lecturers' Contributions:

- **Mr. Prabhakar Ghawali** provided comprehensive insights into the PCB fabrication process, ensuring that students understood each step from design to assembly. His clear and methodical explanation of DFM principles ensured that the teams' PCB designs were practical for manual fabrication.
- **Mr. Suyog Vyawahare** supported the teams throughout the fabrication process, assisting them with the practical challenges of etching, soldering, and assembling their PCBs. His experience with reflow oven techniques proved invaluable during the soldering and surface mount stages of the workshop.



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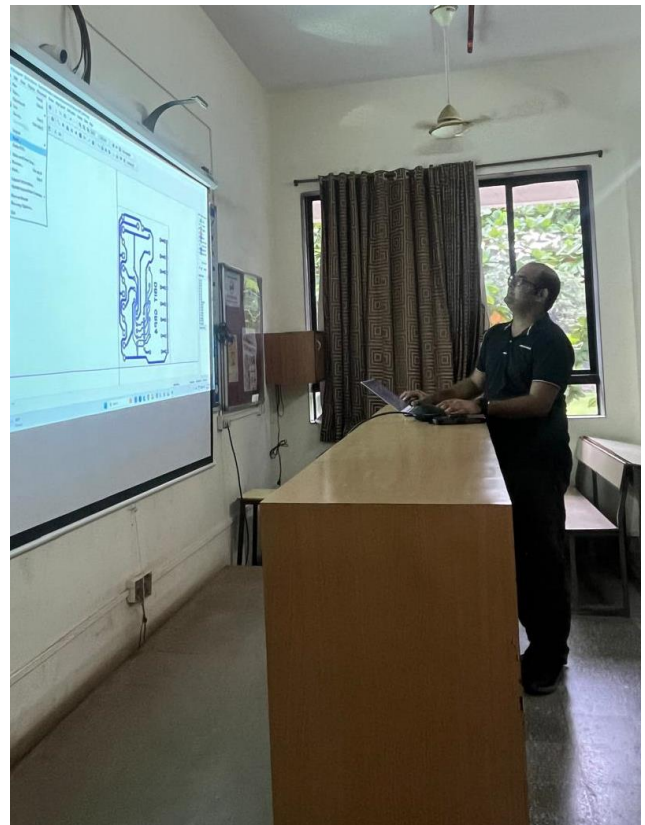
Snapshot of the Event:





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Event Poster:



The poster features a light blue background with a dark blue wavy shape at the bottom. On the right side, there is a circular inset showing a detailed image of a blue printed circuit board (PCB) with various electronic components like chips, capacitors, and resistors. The text is arranged in a clean, professional layout with bold fonts for emphasis.

 **The Bombay Salesian Society's
Don Bosco Institute of Technology** 

IEEE-DBIT brings you

PCB Making Workshop
[Printed Circuit Board]

Expert Speakers from the Industry
Mr. Prabhakar Ghawali
Mr. Suyog Vyawahare
(Field Application Engineer, Quectel)

 **28th September 2024**
 **9am - 5pm**
 **EXTC Lab 5**

 **ieee_dbit**  **Kartik -9136452486
Narayan -9969619428**

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Registration Details:

No. of DBIT Students: 27



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Sr no.	Name	Roll No.	Group No.
1.	Deepak	10	06/1
2.	Anant Deshmukh	11	06/1
3.	Kapil Labde	24	06/1
4.	Samiksha	14	06/1
5.	Vinayak Yadav	47	08/2
6.	Daniel Sebastian	28	05/1
7.	Nikhil Shetty	42	10/2
8.	Raman Sharma	40	11/2
9.	Dhruv Taree	45	11/2
10.	Janhavi Shejwal	41	09/2
11.	Jashith Shinde	43	12/2
12.	Atharva Bhade	02	02/1
13.	Vipak Gaikwad	46	12/2
14.	Pratham Auth	51	-
15.	Ansari Aaraf	-	13/2
16.	Shaikh Mohd Tasheef	-	13/2
17.	Jancy Pattikadan	-	14/2
18.	Prabhat Kharat	-	/2
19.	Harshad Harad	-	/2
20.	Om Kurlekar	-	/2
21.	Ishant Patil	-	15/2
22.	Sakshi Salunke	50	09/2
23.	Kripa Dewoolkar	12	1/1
24.	Nirmiti Bait	03	1/1
25.	Yashvi Jain	18	3/1
26.	Mrunmai Paktekar	30	3/1
27.	Amey Dalvi	09	05/1

Report Prepared By: IEEE DBIT reporting team

Name of the Student: Aditya Punekar

Post of the student: Joint Reporting head

Report Approved By:

Name of the Faculty: Freda Carvalho

Post of the Faculty: IEEE DBIT SB Counselor