

INDUSTRY IMMERSION PROGRAMME REPORT

Hands-On Workshop on Surface Mount Technology (SMT) & PCB Assembly Process

Organized by	: Amara Raja Skill Development Centre, Dhiguvamagam.
Sponsored by	: Ramachandra College of Engineering, Eluru.
Venue	: ARSDC Campus, Diguvamagham, Chittoor, Andhra Pradesh Pin: 517129
Date(s) & Duration	: From 08.06.2026 to 13.06.2026 & 6 Days
Time	: 09.30 AM to 5.30 PM
Target Audience	: Engineering ECE Faculty Members

Brief Profile of the Company

The Amara Raja Skill Development Centre (ARSDC), located at Diguvamagham, Chittoor District, Andhra Pradesh, is an initiative of the Rajanna Foundation under the Amara Raja Group — founded in 1999 with the vision of creating a "better way" for communities through skill empowerment.

ARSDC specializes in providing industry-aligned vocational and technical training programmes in electronics manufacturing, with access to state-of-the-art SMT and PCB assembly equipment. This center bridges academia and industry by training faculty, students, and technicians on live production-grade machinery.

Poster of the Event

AMARA RAJA
SKILL DEVELOPMENT CENTRE
DIGUVAMAGHAM

Hands-On Workshop on
SURFACE MOUNT TECHNOLOGY
PCB ASSEMBLY PROCESS
(HANDS-ON SMT LINE TRAINING)

Learn on a Semi-Automatic SMT Line:

- Screen Printer
- Pick & Place Machine
- Reflow Oven

TARGET AUDIENCE:
Engineering
ECE Faculty Members

DATES:
08-06-2026 (Monday)
TO
13-06-2026 (Saturday)
ONE WEEK

TIMING:
09:30 AM
TO
05:30 PM

VENUE:
Diguvamagham
Chittoor
Andhra Pradesh

FEE:
₹5000/- + 18% GST
(Including Food & Accommodation)

- Introduction to SMT & PCB Assembly Process
- Hands-on Training on Semi-Automatic SMT Line
- Screen Printing, Pick & Place & Reflow Process
- Quality Checks & Troubleshooting
- Best Practices for High-Quality PCB Assembly

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SCAN TO REGISTER

Report in brief

The Amara Raja Skill Development Centre (ARSDC), Diguvmagham, Andhra Pradesh, in association with the Rajanna Foundation, conducted a one-week intensive Hands-On Workshop on Surface Mount Technology (SMT) and PCB Assembly Process. The programme was specifically designed for Engineering ECE Faculty Members, equipping them with practical, industry-relevant skills in modern electronics manufacturing.

(A) Programme Objective:

The workshop aimed to bridge the gap between academic knowledge and industry practice by providing faculty members with real-world exposure to SMT and PCB assembly operations. The key objectives were:

- To provide a comprehensive understanding of the SMT and PCB assembly process flow.
- To enable participants to gain hands-on experience on a semi-automatic SMT production line.
- To familiarize faculty with key equipment: Screen Printer, Pick & Place Machine, and Reflow Oven.
- To impart knowledge of quality checks, Automated Optical Inspection (AOI), and troubleshooting methods.
- To expose participants to best practices for high-quality PCB assembly in an industrial setting.
- To enhance the teaching effectiveness of engineering faculty by grounding theory in current industry practices.

(B) Training Activity Content

The one-week programme covered a structured curriculum encompassing theoretical sessions, extensive hands-on practice on the SMT line and Industrial Visit:

Theoretical Sessions

- Introduction to PCB Types: Single-Sided, Double-Sided, Multi-Layer, and Flex PCBs — including layer compositions (FR4 base, Copper Foil, Solder Mask, Silk Screen).
- Overview of Surface Mount Technology (SMT) and its advantages over Through-Hole Technology.
- SMT Process Flow at Amara Raja's Chennai Factory: MPM Solder Paste Printing, SPI (Solder Paste Inspection / Thickness Inspection), Reflow Soldering, AOI (Automated Optical Inspection), ICT (In-Circuit Tester), and final functional testing.
- Quality standards, defect analysis, and best practices in PCB manufacturing.

Hands-On SMT Line Training

- Screen Printing: Operation of the semi-automatic screen printer (ETS-SP-5070 model); stencil handling, solder paste application, and alignment.
- Pick & Place Machine: Component placement programming, feeder setup, and machine operation.
- Re-flow Oven: Temperature profile setting, conveyor speed control, and thermal management.
- Solder Paste Inspection (SPI): Post-print inspection techniques and thickness measurement.

- Quality Checks & Troubleshooting: Identifying soldering defects, bridging, tomb stoning, and corrective measures.

Industrial Visit

As part of the programme's emphasis on real-world industrial exposure, participants undertook structured industrial visits to two flagship manufacturing units of the Amara Raja Group during the course of the week: Amara Raja Electronics Limited and the Amara Raja Two-Wheeler Battery Manufacturing Plant, both located in Chittoor District, Andhra Pradesh. These visits complemented the classroom and SMT-lab training by exposing faculty participants to live, large-scale production environments.

(C) Day-wise Activity Log

Day / Date	Location	Resource	Activities Conducted
Day 1 08.06.2026 (Mon)	ARSDC Campus	Mr. Ramachandra Rao, Nokia, Chennai.	Inauguration and orientation. Theory sessions on Types of PCBs (Single-Sided, Double-Sided, Multi-Layer, Flex). Introduction to SMT Process Flow. Participants briefed on safety protocols in SMT/ PCBA labs.
Day 2 09.06.2026 (Tue)	SMT Lab	Mr. M. Baskaran, Trainer, ARSDC, Dhiguvamagam.	Hands-on session on Screen Printer (ETS-SP-5070). Participants practiced stencil loading, solder paste application, and alignment. Demonstration of solder paste inspection. Group activity at the SMT line workbench with ESD-protected lab coats.
Day 3 10.06.2026 (Wed)	Computer Lab & SMT Lab ARSDC	Mr. E. Balajee, software Trainer & Mr. M. Baskaran, Trainer, ARSDC.	Computer lab session — participants working on software tools i.e., Eagle 7.5 version related to PCB design and SMT programming in Pick and Place Machine at SMT lab. Group practical exercises with all participants at workstations.
Day 4 11.06.2026 (Thu)	Amara Raja Electronics Ltd. & SMT Lab ARSDC	Mr. Sanjay Sarkar, Production Manager, AREL. & Mr. M. Baskaran, ARSDC.	Industrial Visit to Amara Raja Electronics Limited, Chittoor in the Morning — guided tour of the SMT/PCB production facility under ESD protocol observing live assembly operations on the shop floor. Continued hands-on practice at ARSDC in the afternoon on mounting components on PCB using Pick and Place Machine.
Day 5 12.06.2026 (Fri)	Amara Raja 2-Wheeler Battery Plant & SMT Lab ARSDC	Mr. Babu, Amara Raja 2-Wheeler Battery Plant. & Mr. M. Baskaran, Trainer, ARSDC.	Industrial Visit to the Amara Raja Two-Wheeler Battery Manufacturing Plant, Chittoor in the morning — overview of the battery manufacturing process flow and plant infrastructure. Re-flow Process Machine in demonstration, Quality checks, AOI demonstration, and troubleshooting exercises at ARSDC in the morning.
Day 6 13.06.2026 (Sat)	ARSDC Campus	Mr. Ravi Kumar, Dean- ARSDC.	Practice Session, Assessment and feedback. Valedictory session and certificate distribution.

(D) Industrial Visit to Amara Raja Group Companies

Visit to Amara Raja Electronics Limited, Chittoor

On Day 4 (11 June 2026, Thursday), following the morning's hands-on session at the ARSDC campus, participants travelled to Amara Raja Electronics Limited for an afternoon industrial visit. After being received at the company premises, the group proceeded toward the production facility. Before entering the restricted manufacturing area, participants and the accompanying faculty trainer donned ESD-protective lab coats, hair caps, and shoe covers in line with the company's electrostatic discharge and hygiene protocols. Inside, participants observed live SMT and PCB assembly operations on the shop floor, relating the screen printing, pick-and-place, and reflow processes studied earlier in the week to an actual industrial production line.



Faculty participants outside Amara Raja Electronics Limited, Chittoor, prior to the plant tour



Participants and trainer in ESD-protective lab coats, hair caps, and shoe covers at the entry to the restricted production area, Amara Raja Electronics Limited.

Visit to Amara Raja Two-Wheeler Battery Manufacturing Plant

On Day 5 (12 June 2026, Friday), participants visited the Amara Raja Two-Wheeler Battery Manufacturing Plant as part of the afternoon programme. The visit provided an overview of large-scale battery manufacturing for the two-wheeler segment, including a walkthrough of the plant's production infrastructure and an interaction with plant personnel on manufacturing scale, automation levels, and quality assurance practices.



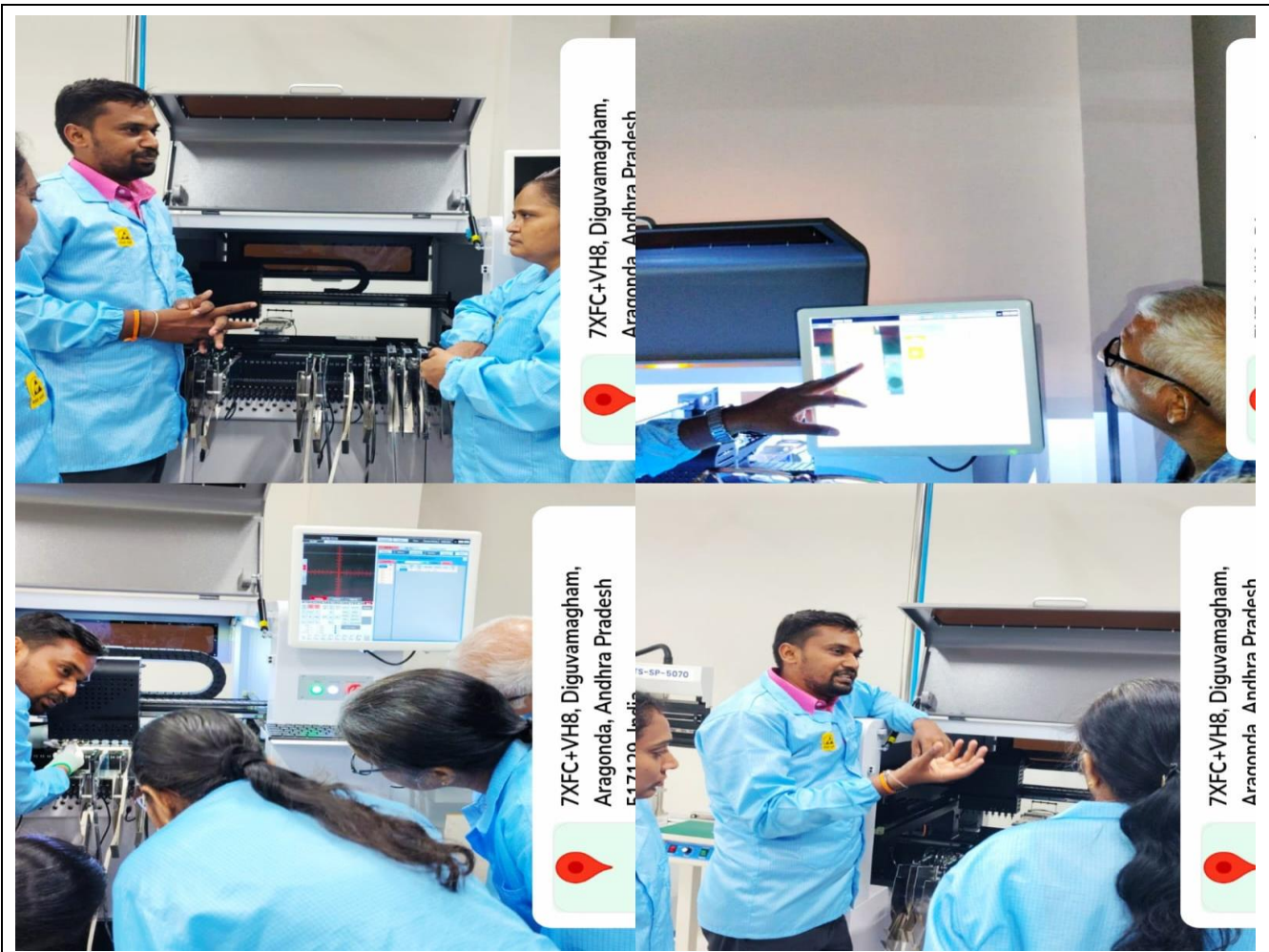
Faculty participants outside the Amara Raja Two-Wheeler Battery Manufacturing Plant, Chittoor

Together, these industrial visits gave participants direct exposure to high-volume manufacturing operations beyond the SMT training line at ARSDC, reinforcing the workshop's objective of grounding academic instruction in current industry practice.

Few Glimpses of the event:

Inauguration and orientation. Theory sessions on Types of PCBs (Single-Sided, Double-Sided, Multi-Layer, Flex). Introduction to SMT Process Flow.





Reflow Oven: Participants studied temperature profile management and the soldering process that permanently bonds SMT components.



Showing Final output of the SMT machine for LED display and Valedictory



7XFC+VH8, Diguvamagham, Aragonda, Andhra Pradesh 517129, India, Lat:13.2760843,Long:13.2760843



7XFC+VH8, Diguvamagham, Aragonda, Andhra Pradesh 517129, India, Lat:13.2760843,Long:13.2760843



Certificate

AMARA RAJA SKILL DEVELOPMENT CENTRE (ARSDC)
DIGUVAMAGHAM, CHITTOOR (AP)



Certificate of Participation

This is to certify that Mr./Ms./Dr. YAKKALA LAVANYA, ASSOCIATE PROFESSOR of Electronics and Communication Engineering at RAMACHANDRA COLLEGE OF ENGINEERING, ELURU has successfully completed a One-Week Industrial Training on Surface Mount Technology (SMT) and PCB Assembly (PCBA) at Amara Raja Skill Development Centre (ARSDC) from 08-06-2026 to 13-06-2026.

The workshop provided practical hands-on training in SMT and PCBA manufacturing processes.

C.No : SMT26014
DATE : 13-06-2026



G. V. Hari Kumar
Dean - ARSDC

Conclusion

The Hands-On Workshop on Surface Mount Technology and PCB Assembly Process conducted at the Amara Raja Skill Development Centre, DiguvaMagham from 08–13 June 2026 was a highly successful initiative that achieved its intended objectives. The programme effectively combined theoretical instruction, intensive hands-on practice on industrial-grade SMT equipment, and industrial visits to Amara Raja Electronics Limited and the Amara Raja Two-Wheeler Battery Manufacturing Plant.

Participant engagement was consistently high throughout the week, as documented through geo-tagged photographs taken across multiple sessions. The use of ESD-protected lab coats, industrial SMT equipment, structured practical exercises, and exposure to live production environments at both Amara Raja facilities ensured that participants received an authentic manufacturing experience.

This workshop serves as a model for industry-academia collaboration, enhancing the technical capabilities of engineering faculty and enabling them to deliver more industry-relevant instruction to their students. Amara Raja Skill Development Centre and the Rajanna Foundation are commended for providing world-class training infrastructure and expertise to the academic community.

Key Learning Outcomes

After successful completion of this Program we the participants are able to

- Identify and explain the structure and types of PCBs including Single-Sided, Double-Sided, Multi-Layer, and Flex PCBs.
- Describe the end-to-end SMT process flow from solder paste printing to final functional testing.
- Observe the operation of the Screen Printer, Pick & Place Machine, and Reflow Oven under industrial conditions.
- Perform or interpret Solder Paste Inspection (SPI) and understand quality metrics.
- Apply understanding of AOI (Automated Optical Inspection), ICT (In-Circuit Test), and functional testing in a PCB quality context.
- Relate academic theoretical concepts to real-world manufacturing processes, enabling richer classroom instruction.


Faculty


HoD-ECE


Dean-SoE


Principal