

ASSEMBLY AND TESTING OF ELECTRONIC PARTS

Submitted in partial fulfilment of the requirements for the award of Bachelor
of Engineering degree in

ELECTRIC AND ELECTRONICS ENGINEERING

BY

SUDHIKSHA S(41140087)



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
SCHOOL OF ENGINEERING**

SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited with Grade "A" by NAAC

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
BONAFIDE CERTIFICATE

This is to certify that this Report is the bonafide work of **SUDHIKSHA(41140087)** who carried out the internship entitled **ASSEMBLY AND TESTING OF ELECTRONIC PARTS** under my supervision from 22-05-2023 to 02-06-2023

Head of the
Department

Submitted for Viva voce Examination held on _____

INTERNAL EXAMINER

EXAMINER (SIGNATURE)

EXTERNAL

(SIGNATURE)

DECLARATION

I **SUDHIKSHA S** here by declare that the Report entitled **ASSEMBLY AND TESTING OF ELECTRONIC PARTS** done by me at **SCHWING SHETTER PVT LTD CHEYYAR** is submitted in partial fulfilment of the requirements for the award of Bachelor of Engineering degree in ELECTRICAL AND ELECTRONICS ENGINEERING.

DATE:22-05-23 to 02-06-23

PLACE: CHEYYAR



SUDHIKSHA S

SIGNATURE OF THE CANDIDATE

ACKNOWLEDGEMENT

I am pleased to acknowledge my sincere thanks to Board of Management of **SATHYABAMA** for their kind encouragement in doing this Report and for completing it successfully. I am grateful to them.

I convey my thanks to **DR. N. M. NANDHITHA, Prof. & Dean, School of Electrical and Electronics Engineering** and **DR.S.RADHIKA ,Head of the Department, Dept. of ELECTRICAL AND ELECTRONICS ENGINEERING** for providing me necessary support and details at the right time during the progressive reviews.

I wish to express my thanks to all Teaching and Non-teaching staff members of the Department of **Electrical and Electronics Engineering** who were helpful in many ways for the completion of the Report.

SUDHIKSHA S

Name of the candidate

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ABSTRACT

In today's automotive landscape, electronics play a pivotal role in shaping the efficiency, safety, and overall experience of vehicles. This abstract explores the extensive integration of electronics in automobiles, focusing on key areas such as advanced driver assistance systems (ADAS), infotainment systems, engine management, and electric vehicle (EV) technology. We delve into how electronics enhance vehicle performance, improve safety through features like collision avoidance and adaptive cruise control, and provide a seamless connection between the driver and the vehicle's functions. Additionally, we examine the challenges and future prospects of electronics in the automotive industry, including the evolution towards autonomous driving and the electrification of vehicles, which promise to redefine the way we perceive and interact with automobiles. Understanding the profound impact of electronics in vehicles is essential as we navigate the exciting era of smart and sustainable transportation.

CHAPTER 1

INTRODUCTION ABOUT THE COMPANY

SCHWING Stetter India, a 100% subsidiary of the Schwing Group of companies GmbH was incorporated in the year 1998.

We are the pioneer of Concrete Construction equipment manufacturing in India catering to the customers with world class concreting equipment.

SCHWING Stetter India has introduced path breaking products in the Indian concrete pumping industry such as SP8800 concrete pumps, CP 30 Batching plants and the 10 Cu.m Truck mixers which became synonymous within the RMC industry

CHAPTER 2

NATURE OF WORK DONE

Acquire technical skills related to electronics, such as circuit design, PCB layout, programming microcontrollers, or working with various electronic components. Experience in the process of developing electronic products, from concept and design to prototyping and testing.

Understanding quality control processes to ensure that electronic products meet industry standards and are free from defects.

Learning about the manufacturing processes involved in producing electronic devices, including assembly, testing, and quality control in a factory setting.

Knowledge of how electronic components are sourced, ordered, and managed within the company's supply chain.

If in a research role, you might gain experience in exploring new technologies, conducting experiments, and innovating in the field of electronics.

Interacting with cross-functional teams, including engineers, designers, and product managers, to bring electronic products to market.

Developing problem-solving skills when troubleshooting and resolving technical issues that arise during product development or manufacturing.

CHAPTER 3

METHODS AND PROECESSSES

3.1.METHODS

Advanced Driver Assistance Systems (ADAS): Employing sensors, cameras, radar, and LiDAR, ADAS technology provides features like adaptive cruise control, lane-keeping assistance, automatic emergency braking, and parking assistance, enhancing safety and driver convenience.

Engine Management: Electronic control units (ECUs) monitor and optimize engine performance, fuel efficiency, and emissions. Electronic fuel injection, ignition systems, and sensors are key components.

Infotainment Systems: In-vehicle entertainment and information systems incorporate touchscreen displays, GPS navigation, audio systems, and smartphone connectivity, offering drivers and passengers a connected and enjoyable experience.

Electric Vehicle (EV) Technology: Electronics are integral to EVs, managing battery systems, electric motor control, regenerative braking, and charging systems.

Transmission Control: Electronic control modules manage automatic and semi-automatic transmissions, optimizing gear shifts for fuel efficiency and performance.

Body Control Modules: These control various functions like lighting, power windows, door locks, and climate control, enhancing comfort and convenience.

Instrument Clusters: Digital instrument clusters replace traditional gauges, offering customizable displays for vehicle information and driving data.

Anti-lock Braking System (ABS): Electronics monitor wheel speed and control brake pressure to prevent wheel lock-up and maintain steering control during braking.

Airbag Systems: Electronic sensors detect collisions and deploy airbags to protect occupants.

Telematics: Vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communication systems enable data exchange, enhancing safety and traffic management.

Key less Entry and Start Systems: RFID or proximity sensors allow for keyless entry, ignition, and engine start.

Autonomous Driving: Research and development in autonomous vehicles rely heavily on electronics, including sensors, cameras, and complex control algorithms for self-driving capabilities.

Emissions Control: Electronics assist in monitoring and reducing emissions through systems like exhaust gas recirculation (EGR) and selective catalytic reduction (SCR).

Battery Management: In hybrid and electric vehicles, electronic systems manage and optimize battery charging and discharging for efficiency and longevity.

Wireless Connectivity: Connectivity features, such as Bluetooth, Wi-Fi, and cellular networks, enable over-the-air software updates, remote diagnostics, and infotainment services.

Cybersecurity: Protecting vehicle electronics from cyber threats and vulnerabilities is an emerging field to ensure the safety and privacy of vehicle occupants.

These methods illustrate how electronics are integrated into vehicles to improve safety, performance, and overall user experience.

3.2.PROCESSES

Research and Development (R&D): Vehicle companies invest in R&D to innovate and design new electronic systems and technologies. This process involves conceptualizing, prototyping, and testing new electronic components and features.

Design and Engineering: Once an electronic system or component is conceptualized, design and engineering teams create detailed specifications, schematics, and layouts for the electronic systems. This includes circuit design, PCB layout, and software development for embedded systems.

Prototyping: Prototyping involves building initial physical or software models of electronic components or systems. This process helps validate the design and identify any issues that need to be addressed before mass production.

Testing and Validation: Rigorous testing and validation processes ensure that electronic systems meet safety, performance, and regulatory standards. This includes environmental testing, electromagnetic interference (EMI) testing, and functional testing.

Manufacturing: Electronics manufacturing involves the assembly of electronic components onto printed circuit boards (PCBs), often in a highly automated environment. This includes surface-mount technology (SMT) assembly, soldering, and quality control.

Supply Chain Management: Managing the supply chain is crucial to ensuring a steady and reliable source of electronic components. This process involves procurement, inventory management, and supplier relationships.

Quality Control and Assurance: Quality control processes ensure that electronic components and systems meet the specified quality standards and are free from defects. This includes both in-process and post-production quality checks.

Integration and Assembly: Electronic components are integrated into various vehicle systems, such as the engine control unit (ECU), infotainment system, and safety systems. These components are assembled into the vehicle during manufacturing.

Software Development: Developing and testing the software that controls electronic systems, including infotainment software, engine control software, and firmware for various electronic components.

Safety and Regulatory Compliance: Ensuring that electronic systems meet safety and regulatory standards, such as crash-test standards, emissions regulations, and cybersecurity standards.

Maintenance and Repair: Providing support for vehicle owners by diagnosing and repairing electronic system issues through dealerships or authorized service centers.

Continuous Improvement: Implementing feedback from real-world usage to improve electronic systems and components over time. This may involve over-the-air software updates and product recalls, if necessary.

CHAPTER 4

KNOWLEDGE AND EXPERIENCE

Technical Skills: You may acquire technical skills related to electronics, such as circuit design, programming microcontrollers, or working with various electronic components.

Product Development: Experience in the process of developing electronic products, from concept and design to prototyping and testing.

Quality Assurance: Understanding quality control processes to ensure that electronic products meet industry standards and are free from defects.

Manufacturing Processes: Learning about the manufacturing processes involved in producing electronic devices, including assembly, testing, and quality control in a factory setting.

Research and Development: If in a research role, you might gain experience in exploring new technologies, conducting experiments, and innovating in the field of electronics.

Collaboration: Interacting with cross-functional teams, including engineers, designers, and product managers, to bring electronic products to market.

Regulatory Compliance: Understanding the regulations and standards governing the electronics industry, such as safety certifications and environmental regulations.

Continuous Learning: Electronics is a rapidly evolving field, so ongoing learning and keeping up-to-date with industry trends and emerging technologies is essential.

CHAPTER 5

SUMMARY AND CONCLUSION

5.1.SUMMARY

My internship at [schiwing shetter] has been an invaluable experience in the world of electronics and technology. Over the course of [duration], I had the privilege of working alongside talented professionals and engaging in a wide range of projects and tasks. During this internship, I had the opportunity to:

Gain Practical Skills: I acquired hands-on experience in [mention specific skills like circuit design, PCB layout, or software development] that have deepened my understanding of electronic systems.

Collaborate and Network: Working with cross-functional teams allowed me to appreciate the importance of collaboration in achieving project goals. I also built a network of industry professionals who have provided mentorship and guidance.

Problem-Solving: I honed my problem-solving skills by tackling real-world challenges, particularly in [mention a specific project or area where problem-solving was crucial].

Quality and Precision: I learned the significance of precision and quality control in the manufacturing and testing processes of electronic components.

Regulatory Compliance: I gained insights into the importance of adhering to safety and regulatory standards in the electronics industry.

Continuous Learning: The dynamic nature of the electronics field emphasized the need for continuous learning and staying updated with emerging technologies.

5.2.CONCLUSION

My internship at schwing stetter has been a transformative experience that has not only deepened my passion for electronics but has also equipped me with valuable skills and knowledge for my future career. I am grateful for the mentorship and support I received from the dedicated professionals at the company.

As I move forward in my academic and professional journey, I carry with me the lessons learned during this internship. I am excited to apply my newfound skills and insights to future projects and to contribute to the ever-evolving world of electronics.

CERTIFICATE OF COMPLETION

SCHWING STETTER (INDIA) PVT LTD

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Ref: SSIPL/GMH/HR/INC/2023/15

Date: 27th Jun 2023

TO WHOMEVER IT MAY CONCERN

This is to certify that **Ms. Sudhiksha from Sathyabama Institute of Science and Technology**, had completed Internship with training with us from **22-05-2023 to 02-06-2023**.

During the tenure with us we found her sincere & shown keen interest in her learning assignments.

We wish her all the best for future endeavours.

Yours Faithfully

For SCHWING Stetter (India) Private Limited,

Jayapal T
Plant Head- HR

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