

TRAINING IN ELECTRICAL MAINTENANCE DEPARTMENT REPORT ON 14 DAYS INTERNSHIP IN THE KCP LIMITED

Submitted in partial fulfilment of the requirements for the completion of
PROFESSIONAL TRAINING

By

Dhanush Kumaran M (Reg. No. 41140019)



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

SATHYABAMA
INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

Accredited with grade "A++" by NAAC
JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI – 600119
OCTOBER 2023



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited "A" Grade by NAAC | 12B Status by UGC | Approved by AICTE

www.sathyabama.ac.in

BONAFIDE CERTIFICATE

**This is to certify that this Project Report is the bonafide work of
M.DHANUSH KUMARAN (REG 41140019) Who Carried Out The
Internship Entitled THE KCP LIMITED under our supervision from
24-05-2023 to 07-06-2023**

External Guide

Head of the Department

Submitted for Viva voce Examination held on _____

Internal Examiner

(Signature)

External Examiner

(Signature)

DECLARATION

I DHANUSH KUMARAN M Hear by declare that the Project Report entitled“THE KCP LIMITED” is submitted in partial fulfillment of the requirements for the subject Industry 4.0 for Electrical Engineers of the Degree of Bachelor of Engineering in Electrical and Electronics Engineering.

DATE:24-05-2023 to 07-06-2023

PLACE:CHENNAI



DHANUSH KUMARAN M

SIGNATURE OF THE CANDIDATE

TABLE OF CONTENTS

ACKNOWLEDGEMENT

I pleased to acknowledge our sincere thanks to Board of Management of SATHYABAMA for their kind encouragement in doing this project and for completing itsuccessfully. We are grateful to them.

We convey our thanks to Dr. N. M. Nandhita., Dean, School of Electrical and Electronics Engineering and Dr. S RADHIKA Head of the Department, Dept. of Electrical and Electronics Engineering for providing us necessary support and details at the right time during the progressive reviews. We would like to express our sincere and deep sense of gratitude to our Project Guide Dr. S. Radhika for her valuable guidance, suggestions and constant encouragement paved way for the successful completion of our project work. We wish to express our 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 project

DHANUSH KUMARAN M I

NAME OF THE CANDIDATE

TABLE OF CONTENTS

CHAPTER NO	TITLE	PAGE NO
1	INTRODUCTION ABOUT THE COMPANY	1
	1.1 THE KCP LIMITED	
	1.2 KCP Heavy Engineering	
2	NATURE OF WORK DONE	11
	2.1 Mini Projects In Electrical Domain	
	2.1.1 Rout Card Management System	
	2.1.2 CPR Trial Kit Using Force Sensor	
	2.1.3 Fire Alarm Using IOT	
3	METHOD AND PROCESS	14
	3.1 Thiruvottiur Plant	
	3.2 Foundry Unit	
	3.3 Fabrication Shop	
	3.4 Machine Shop	
	3.5 Transport Sector	

4	KNOWLEDGE AND EXPERIENCE	16
----------	---------------------------------	-----------

4.1	Business sector	
------------	------------------------	--

4.1.1	Sugar Plant And Machineries	
--------------	------------------------------------	--

4.1.2	Oil And Sugar	
--------------	----------------------	--

4.1.3	Defense And Space Sector	
--------------	---------------------------------	--

5	SUMMARY AND CONCLUSION	21
----------	-------------------------------	-----------

LIST OF SYMBOLS AND ABBEREVIATIONS

V_c	Cutting speed (mm/sec)
N	Spindle speed (rpm)
V_c	Penetration rate (mm/sec)
F_n	Feed per revolution (mm/rev)
MRR	Metal Removal Rate (Q)
M_c	Torque (N/m)
T_c	Machining Time (sec)
A_e	Axial depth of cut (mm)
A_p	Radial depth of cut (mm)
R_a	surface roughness factor
L	length of cut (mm)
D	diameter (mm)
F_x	Tangential Force (N)
F_t	Thrust Force (N)

CHAPTER 1

THE KCP LIMITED

KCP is a diversified 250 million US\$ business group based out of Chennai, India with interests in Cement, Sugar, Heavy Engineering, Power, Biotech & IT. It has 9 manufacturing locations over various geographies in India & Vietnam. The KCP Limited, the group's flagship company founded in 1941, is a public listed company in India. Fives Cail KCP Limited is a JV with French engineering pioneer Fives Group to build turnkey Sugar Plant. KCP Vietnam Industries Limited is a sugar manufacturing subsidiary in Vietnam.

1.1 KCP Heavy Engineering

Established in 1955, KCP Heavy Engineering (KCP HE), a division of The KCP Limited offers a world class Build to Order heavy manufacturing facility, with a fully integrated Steel Foundry, Heavy Fabrication, Heavy Machine Shops with Assembly facilities. Strategically it is located in the northern suburbs of the southern coastal port city of Chennai, India, with very close proximity (9 km) to the Chennai port for sea transport.

KCP HE, over the last 5 decades, has become synonymous with uncompromising commitment to quality and delivery in the manufacture of heavy equipments for Cement, Sugar, Power, Mining (Minerals), Mineral Processing, Metals, Oil & Gas, Chemicals & Fertilizers, Industrial Gases, Space & Defence and General Engineering sectors with a diversified global Customer base in Australia, Malaysia, Mauritius, Vietnam, Korea, Indonesia, China, Nepal, Bangladesh, Sri Lanka, UAE, Saudi Arabia, Oman, Qatar, Madagascar, Nigeria, Uganda, Ethiopia, Kenya, Rwanda, France, Germany, Austria, Russia, Brazil and USA.

CHAPTER 2

NATURE OF WORK DONE

KCP has been engaged with various world class EPC & OEM engineering firms in the infrastructure sectors for over 5 decades. This has consistently enhanced our design, engineering and manufacturing capability by way of assimilation of various new technologies and this has helped us develop import substitution equipment.

Our design and engineering group consists of a team of highly qualified and experienced professionals with engineering workstations with state of art software used for design, engineering analysis and simulation purpose. We offer process and mechanical design of complex process equipments for given process parameters and working conditions. We use various domestic and international codes/standards for the design of process equipments along with variety of suitable software

1.Completed mini projects in electrical domain

1.1 ROUT CARD MANAGEMENT SYSTEM

1.2 CPR TRIAL KIT USING FORCE SENSOR

1.3 FIRE ALARM USING IOT

2.Hands on Training in Electrical unit

1.1 ROUT CARD MANAGEMENT SYSTEM

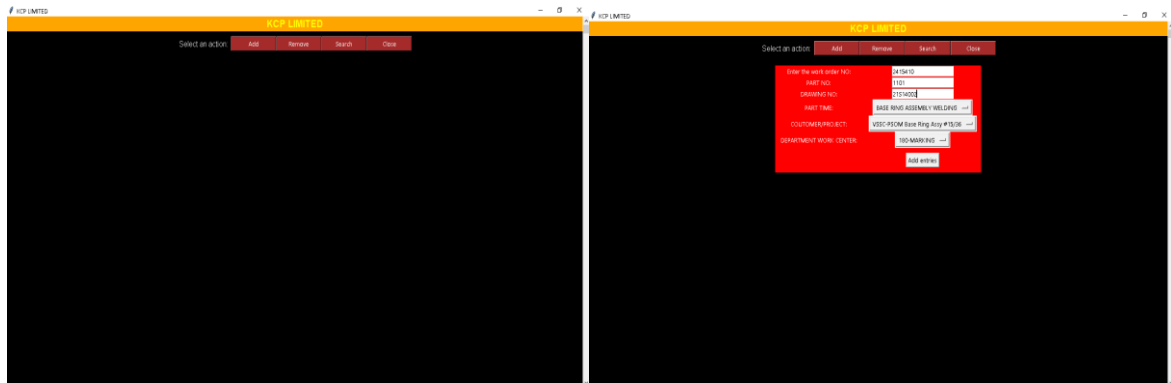


FIG:1.1 ROUT CARD DASHBOARD USING PYTHON IDLE/VS CODE

1.2 CPR TRIAL KIT USING FORCE SENSOR

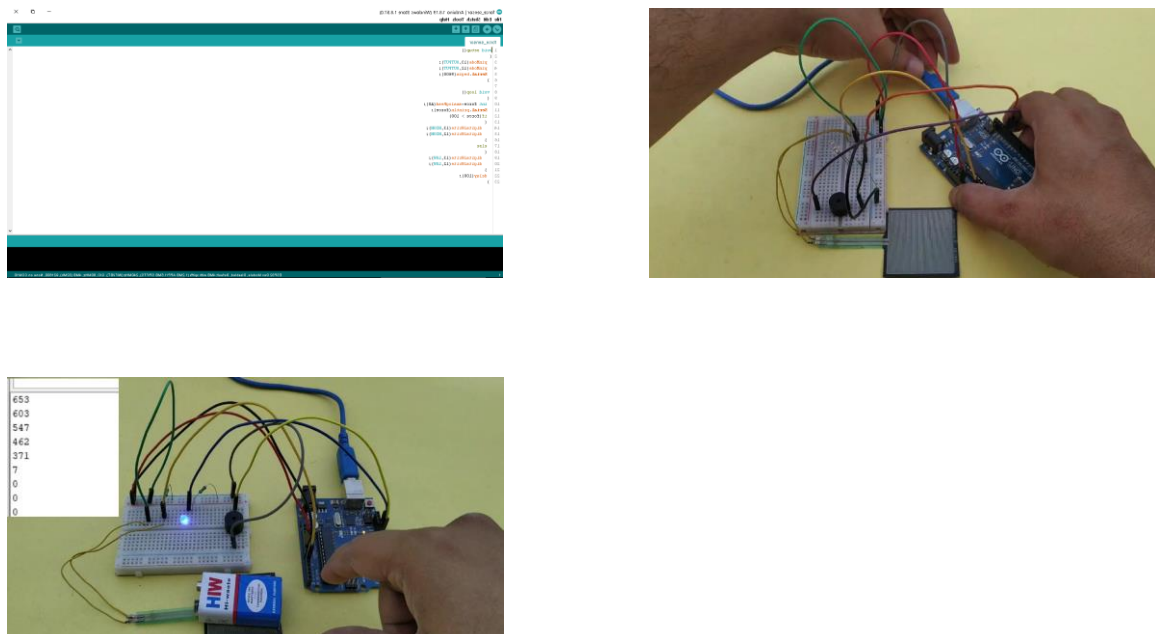


FIG:1.2 MEASURE PRESSURE APPLIED IN CPR KIT

1.3 FIRE ALARM USING IOT

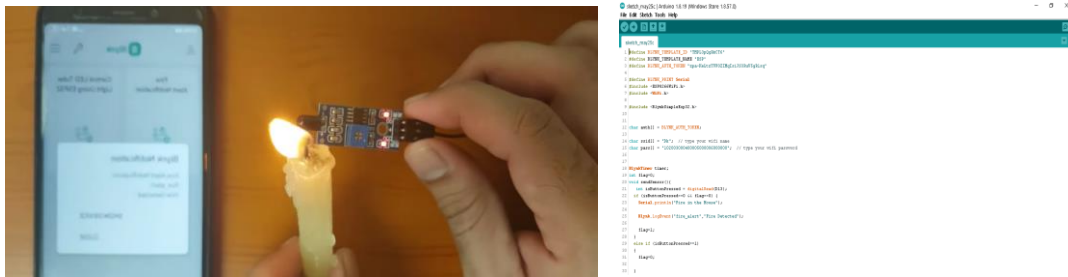


FIG1.3 FIRE ALARM USING IOT AND MONITATION

2.1 Hands on Training in Electrical unit



FIG:2.1 WORKING MACHINES

Chapter 3

METHOD AND PROCESS

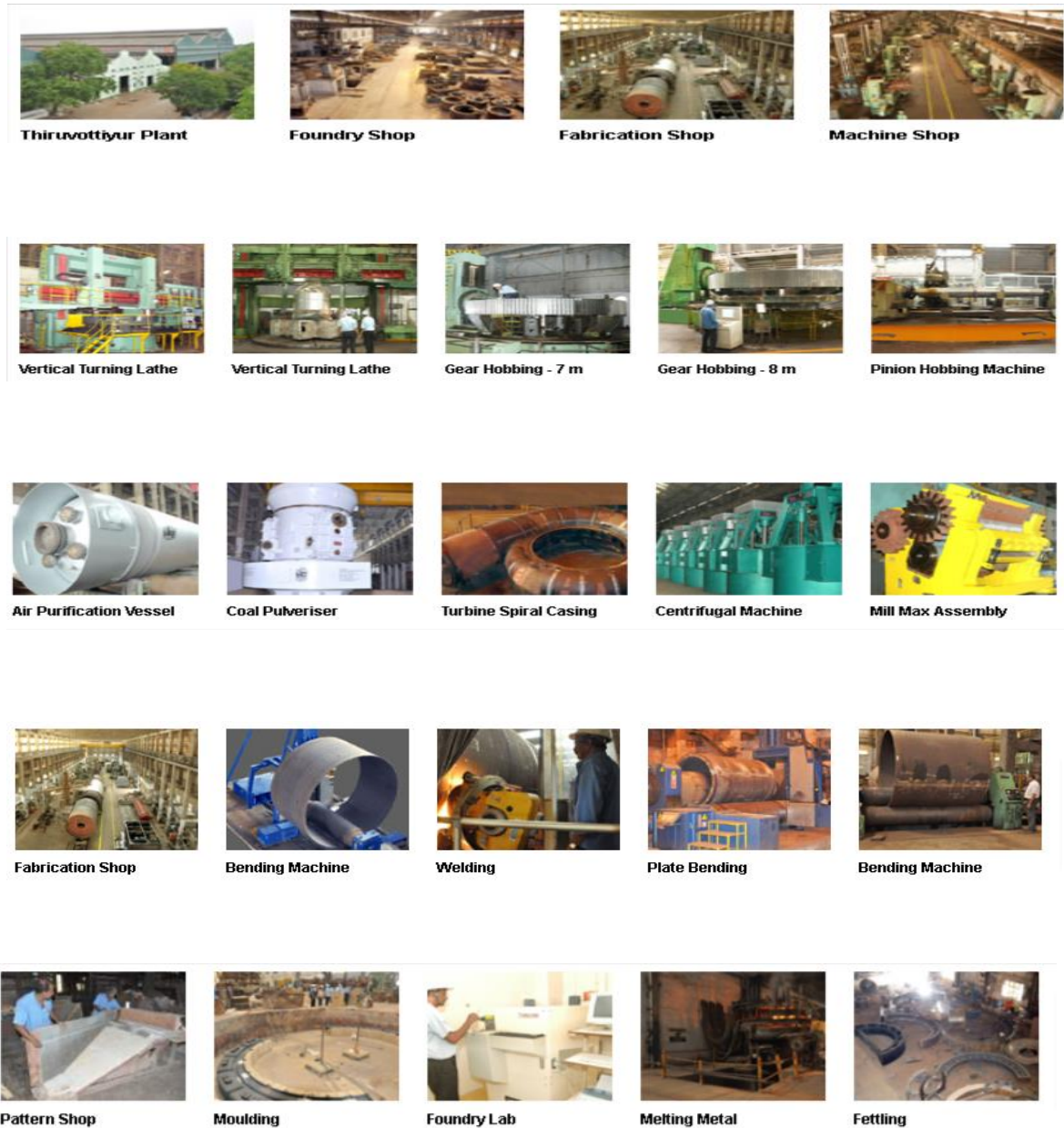


FIG:3.1 METHODS AND PROCESSES IN MANUFACTURE

Thiruvottiyur Plant

KCP HE Plant I at Thiruvottiyur, Chennai, setup in 1955, is one of the largest and fully integrated Heavy Engineering workshops in India that caters to a wide range of heavy mechanical equipments and sub-systems for the core sector industries.

Foundry

Process Equipment Capacity Stress Relieving by internal firing method and large jobs using temporary furnaces. The Steel Foundry has the basic foundry infrastructure consisting of sand mixing plants, pattern shops, moulding tools, and heat treatment. A computerised optical spectrometer for chemical analysis upto 19 elements during melting sequence ensures chemistry of molten metal to suit diverse range of steel castings for different applications

Fabrication Shop

The Fabrication shop has 3 bays dedicated to Heavy, Medium and Light work and fitted with fabricating process equipment with a capacity To manufacture single piece weight of up to 350 T, Thickness of up to 250 mm, Diameter up to 660 mm and Length of 34 m. The Fabrication shop consists of a group of forming machinery, which are supported with a large material preparation shop. These equipments use computer generated digital drawings and plate allocation diagrams for material profile generation. The welding technicians are fully qualified & specialised in various state of art welding methods.

Machining Shop

The shop is spread over 3 bays dedicated to Heavy, Medium and Light with an assembly facility. A wide range of CNC based heavy machines are available capable of producing rough machining to finished components.

Transport

Close to Chennai, Ennore & L&T Katupalli ports with excellent facilities for transporting large size vessels. We also undertake site fabrication and erection in case of extra large equipments which cannot be transported. Road: Close to NH 4 (to Mumbai), NH 5 (to Kolkatta) and NH 45 to transport equipments up to 150 T. Airport: Approx 30 km from the Chennai Airport. 100 km to Chennai, Ennore & L&T Katupalli ports with excellent facilities for transporting large size vessels. We also undertake site fabrication and erection in case of extra large equipments which cannot be transported. Road: Close to NH 4 (to Mumbai), NH 5 (to Kolkatta) and NH 45 to transport equipments up to 150 T.

Chapter 4

KNOWLEDGE AND EXPERIENCE

An electrical internship can offer a wide range of benefits, including skill development, networking, career exploration, and potential job offers. It can be an essential stepping stone in your electrical engineering career, helping you to gain valuable experience and set a strong foundation for your future.

This internship helps me to understand deep into electrical field and plays major role in my academic and placement. Hands-on experience will make you more confident and competent in your work. experience in embedded systems can really enhance your skills and knowledge. It gives you the chance to work on real-world projects and collaborate with experts in the field. This practical experience will make you more confident and capable in your work.

4.1.1 Cement plants

India and globally since 1960 both as OEM to World Leaders and also replacement spares. Incidentally KCP is also involved in the manufacture of Cement in India

Equipment

1. Crushers

2. Rotary Kiln, Kiln Tyre, Girth Gear & Pinion for Kiln, Support Roller with Shaft Assembly for Kiln

3. Horizontal Ball Mill, Mill Head/Ends, Trunnion, Girth Gear & Pinion for Ball Mill and Bearings Base

4. Vertical Roller Mills - Foundation Frames, Internals Components & Trial Assembly

5. Roller Press



FIG:4.1.1 CEMENT PLANT

4.1.2 Sugar Plant & Machineries

KCP is a leader in the manufacture of complete Sugar Plant & Machineries since 1955, having successfully executed over 40 turnkey sugar plants in India and other countries like Sri Lanka, Vietnam and Ethiopia. Since 1995 Fives Cail – KCP Limited, a JV with Fives group of France, has been involved in the role of providing support in designing and developing innovative products as per the changing market demand. KCP HE provides the manufacturing capability.

Equipment

- 1.Shredders
- 2.Head Stocks
- 3.Mills
- 4.Diffuser
- 5.Gears & Pinions
- 6.Continuos & Batch Centrifugal Machine
- 7.Vacuum Pans
- 8.Boiler House Equipments
- 9.Evaporators & Dryers
- 10.Co Generation Boilers



FIG:4.1.2 SUGAR PLANT

4.1.3 POWER

KCP HE has the capability of manufacturing high efficiency, multi fuel boilers, steam generators and other heavy equipments for Thermal, Hydroand Wind Power sectors. Our state-of-the-art HE workshops has facilitated us to manufacture and fabricate a wide range of engineered-toorder heavy equipments. We have a proven list of installations completed for our clients in India and globally.

Equipment

- 1.Vertical Coal Pulveriser Mills
2. Columns
3. Reactors
4. Heat Exchangers
5. Low Pressure (LP) Feed Water Heaters/Reformers
6. Boiler Furnace
7. Superheater
8. Condensers
9. Steam Drum
10. Storage Tanks
11. Turbine Casing (Outer & Inner) Castings & Fabrication
12. Valve Body Castings
13. Compressor Casings
14. Deaerator
15. Steam Surface Condensers
16. Air Pre Heaters



Fig:4.1.3 POWER PLANT

4.1.4 Oil & Gas

KCP HE has been present in the Hydrocarbon (Oil & Gas) sector since 1980 servicing Oil & Gas Exploration, Refining and Down Stream Petrochemical Plants. We continue to collaborate with Global majors to harness and develop new technologies to maximise opportunities and further strengthen our capabilities towards becoming a leading global player.

Equipment

1. Heater Treater
2. Indirect Bath Heaters (Water, Oil & Salt
3. Bath Heaters)
4. Separators
5. Scrubbers
6. Desalters
7. Dehydrators
8. Filters
9. Coalescers
10. Knock Out Drums



FIG:4.1.4 OIL AND GASS PLANT

4.1.5 Defence And Space sector

KCP HE has been involved with the Indian Defence sector in the Missile Development program for over 3 decades. The involvement has been in the area of critical equipments for Agni & Pritvi Missile using indigenous manufacturing technologies. A dedicated dust free & humidity controlled Clean Room facilities have been built for this purpose.

KCP HE has an established presence since 1980 in supplying equipment to the Space sector focusing on state of the art technology. The objective has been to indigenously develop genuine force multipliers that will contribute to providing a decisive edge to the Indian Defence & Space sectors and to develop capability and infrastructure, which can be effectively leveraged for defence programmes.

Equipment

1. Missile Fuel & Oxidiser Tanks
2. Pressure Test Capsule
3. Vacuum Casting Chamber
4. CE Mandrels
5. Metal Canister for Missile Launching



FIG:4.1.5 DEFENSE AND SPACE PLANT

Chapter 5

Conclusion

The total period while I worked THE KCP LIMITED was very pleasant. It will help me a lot in future life. During This period of time learned about how to execute an Embedded project. This gave me a lot more insights about the embedded systems and IOT system. An embedded system is a microprocessor-based computer hardware system with software that is designed to perform a dedicated function, either as an independent system or as a part of a large system. At the core is an integrated circuit designed to carry out computation for real-time operation. And This Great Experience During My Internship Period And Gives Me More Confidence In My Future Aspect.