

# **BHARAT HEAVY ELECTRONICS LIMITED BHOPAL**

## **VOCATIONAL TRAINING REPORT**



Under the guidance of:

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IMM Division

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# CERTIFICATE

This is to certify that ku.Prachi Tandiye, a student of Bachelor of Engineering(CSE),UIT RGPV,BHOPAL has successfully completed two weeks training (From 28<sup>th</sup> December 2018 till 9<sup>th</sup> January 2019) in IT Department of BHEL,BHOPAL.

During the period of training with us she was found hardworking,punctual and inquisitive

Signature

# ACKNOWLEDGMENT

I am grateful to the HR Department of BHEL,BHOPAL for giving me an opportunity to work in a renowned organization. I am obliged for confidence shown in me and helping me to complete my vocational training in BHEL,Bhopal.

I am thankful to Shri Chetan Baraskar for guiding us and giving us an opportunity to undergo this training.

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# INTRODUCTION

**Bharat Heavy Electricals Limited (BHEL)** owned and founded by the Government of India, is an [engineering](#) and [manufacturing](#) company based in [New Delhi, India](#). Established in 1964, BHEL is India's largest power generation equipment manufacturer.

It has been granted the prestigious Maharatna status for outstanding performance.

## HISTORY

BHEL was established in 1964 ushering in the indigenous Heavy Electrical Equipment industry in India. Heavy Electricals (India) Limited was merged with BHEL in 1974. In 1991, BHEL was converted into a public limited company. Over time, it developed the capability to produce a variety of electrical, electronic and mechanical equipments for all sectors, including transmission, transportation, oil and gas and other allied industries. However, the bulk of the revenue of the company is derived from sale of equipment for power generation such as turbines, boilers, etc. As of 2017, BHEL supplied equipment contributed to about 55% of the total installed power generation capacity of India. The company has also supplied thousands of Electric Locomotives to [Indian Railway](#), as well as defence equipment such as the Super Rapid Gun Mount (SRGM) naval guns and Defence Simulators to the Indian Armed Forces.

## OPERATIONS

BHEL is engaged in the design, engineering, manufacturing, construction, testing, commissioning and servicing of a wide range of products, systems and services for the core sectors of the economy, viz. power, transmission, industry, transportation, renewable energy, oil & gas and defence.

It has a network of 17 manufacturing units, 2 repair units, 4 regional offices, 8 service centres, 8 overseas offices, 15 regional centres, 7 joint ventures, and infrastructure allowing it to execute more than 150 projects at sites across India and abroad. The company has established the capability to deliver 20,000 MW p.a. of power equipment to address the growing demand for power generation equipment.<sup>[4]</sup>

BHEL has retained its market leadership position during 2015-16 with 74% market share in the Power Sector. An improved focus on project execution enabled BHEL record its highest ever commissioning/synchronization of 15059 MW of power plants in domestic and international markets in 2015-16, marking a 59% increase over 2014-15. With the all-time high commissioning of 15000 MW in a single year FY2015-16, BHEL has exceeded 170 GW installed base of power generating equipments.<sup>[5]</sup>

It also has been exporting its power and industry segment products and services for over 40 years. BHEL's global references are spread across over 76 countries across all the six continents of the world. The cumulative overseas installed capacity of BHEL manufactured power plants exceeds 9,000 MW across 21 countries including [Malaysia](#), [Oman](#), [Iraq](#), [UAE](#), [Bhutan](#), [Egypt](#) and [New Zealand](#). Their physical exports range from turnkey projects to after sales services

### Products and Services:

1. Thermal Power plants
2. Nuclear Power Plant
3. Gas based Power Plant
4. Hydro power plant
5. DG power plants
6. Boilers
7. Boiler Auxiliaries
8. Gas generator
9. Hydro Generator
10. Steam Turbines
11. Gas Turbines
12. Hydro turbine
13. Transformer
14. Sweatgear
15. Oil field Equipments
16. Boiler drum
17. Valves
18. Seamless Steel tubes
19. Pumps
20. Desalination and water treatment plants
21. Transmission System Control
22. Semiconductor devices
23. Solar photo voltaic
24. Bus ducts
25. Insulators
26. Control panels
27. Capacitors
28. Bushing
29. Electrical Machines
30. DC, AC heavy duty Motors
31. Compressor
32. Control gears
33. Traction motors

## MANUFACTURING DIVISION OF BHEL

BHEL have its manufacturing unit in Bengluru, Jodhpur, Varanasi, hydrebad, Sites and division of its unit in various places in mentioned.

BHEL Manufacturing Units	Bengaluru	<a href="#">1. Electronics Division (EDN)</a>
		<a href="#">2. Electronics Systems Division (ESD)</a>
		<a href="#">3. Electro Porcelain Division (EPD)</a>
	Bhopal	<a href="#">4. Heavy Electrical Plant (HEP)</a>
	Goindwal	<a href="#">5. Industrial Valves Plant (IVP)</a>
	Haridwar	<a href="#">6. Heavy Electrical Equipment Plant (HEEP)</a>
		<a href="#">7. Central Foundry Forge Plant (CFFP)</a>
	Hyderabad	<a href="#">8. Heavy Power Equipment Plant (HPEP)</a>
	Jagdishpur	<a href="#">9. Insulator Plant (IP)</a>
		<a href="#">10. Centralised Stamping and Fabrication Plant (CSF)</a>
	Jhansi	<a href="#">11. Transformer Plant (TP)</a>
	Rudrapur	<a href="#">12. Component Fabrication Plant (CFP)</a>
	Ranipet	<a href="#">13. Boiler Auxiliaries Plant (BAP)</a>
	Tiruchirappalli	<a href="#">14. High Pressure Boiler Plant (HPBP)</a>
		<a href="#">15. Seamless Steel Tube Plant (SSTP)</a>
	Thirumayam	<a href="#">16. Power Plant Piping Unit (PPPU)</a>



BHEL Units	Repair	Mumbai	<a href="#">1. Electrical Machine Repair Plant (EMRP)</a>
		Varanasi	<a href="#">2. Heavy Equipment Repair Plant (HERP)</a>
BHEL Power Sector Regions		PSNR	<a href="#">Power Sector Northern Region</a>
		PSER	<a href="#">Power Sector Eastern Region</a>
		PSWR	<a href="#">Power Sector Western Region</a>
		PSSR	<a href="#">Power Sector Southern Region</a>

# NETWORKING

BHEL uses STAR Network for LAN. There are total 165 switches in BHEL supplied by CISCO.

Cisco works on a package depends on LSM (LAN Management System). CISCO Switches are divided in two layers based on its function:

Layer 2:

- It is Implemented on data link layer.
- It uses only MAC address.

Layer 3:

- It is implemented on network layer.
- Hub, Switches and routers are used.
- It keeps the MAC Address and works on IP Address.

## LAN IN BHEL:

Works on three stages on a network:

- Core Switch which initiates a signal. Its model name is CISCO 6513. It works on layer 3 of OSI model of networking. It is the core switch which

is the main switch used in BHEL which direct all other switches in