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ENGINEERING

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

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ACHIEVEMENTS

Sri V.S.N.K. Chaitanya, Assistant Professor, has successfully completed an **8-Week NPTEL Course** titled “**Accreditation and Outcome Based Learning**”, offered by **IIT Kharagpur** and earned **Gold + Elite** certification.



K. S.C.D. Lakshmi, III B.Tech student, has successfully completed an **12-Week NPTEL Course** titled “**Programming in Java**”, offered by **IIT Kharagpur** and earned **Gold + Elite** certification.

V. Sai Sri Narasamani III B.Tech student, has successfully completed an **12-Week NPTEL Course** titled “**Programming in Java**”, offered by **IIT Kharagpur** and earned **Silver + Elite** certification.



V. Kavya Sri, III B.Tech student, has successfully completed an **12-Week NPTEL Course** titled “**Programming in Java**”, offered by **IIT Kharagpur** and earned **Elite** certification.

SERVICE ACTIVITIES

- On 5th November, III B.Tech students attended a service program organized by the **Indian Red Cross Society at NTR Beach**. As part of the program, the students created awareness among the public regarding cleanliness and environmental responsibility and actively participated in a beach cleaning activity.
- On the occasion of the **Swachh Andhra Program**, our students actively joined hands and participated in a cleanliness drive in the department on the third Saturday of November. The students collectively cleaned surrounding areas of the department. This activity helped in promoting cleanliness, hygiene, and a sense of responsibility towards maintaining a healthy and clean academic environment.



PLACEMENTS

The Department of Electrical & Electronics Engineering proudly congratulates the students for securing placements and internships in reputed organizations. These achievements reflect the students' dedication, technical competence, and the department's continuous efforts toward academic and professional excellence.



With CTC of 8LPA



SHIRI MOULICA REVU



Ch. PRAGYA



With CTC of 4-6 LPA



MEDISETTY SANGEETHA



BIRUDA SATISH



With CTC of 7.5 LPA



THOTA SAI
GOVINDA KRISHNA



Ch. PRAGYA



BORRA THULASI



RAYUDU K. Y.
SATYA SREE



Ch. PRAGYA



With CTC of 5.5 LPA



M. CHAITANYA



Y. TEJESWARA RAO



CHITTI ADITYA



Ch. SRI SATHVIK



CH SRAVANTHI

HEAVY PLATES AND VESSELS PLANT, BHEL: INDUSTRIAL TRIP

BHEL Heavy Plates and Vessels Plant (HPVP) in Visakhapatnam is one of the country's major centres for the manufacture of process plant equipment, cryogenic systems, industrial boilers, waste heat recovery units, and heavy-duty vessels used in refineries and power plants.



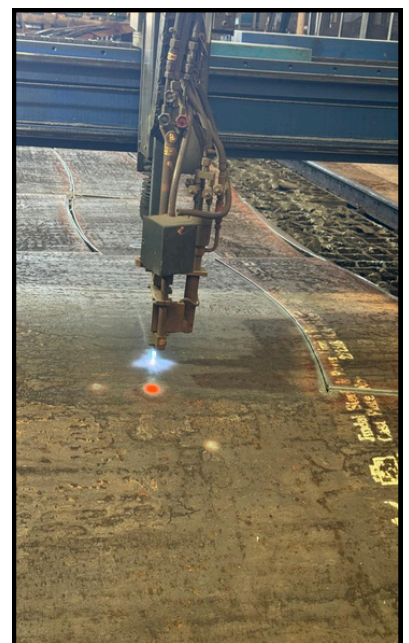
During our industrial visit, we mainly observed the Heavy Machine Shop and the Oxygen Plant, which are two important sections of the facility. These areas gave us a good understanding of how heavy engineering, manufacturing processes, and electrical systems work together to support large industrial operations.

The plant receives electrical supply through an internal 33/11 kV substation. The single-line diagram includes the 33 kV incoming feeders, step-down transformers, circuit breakers, isolators, metering units and busbars. Power is stepped down to 11 kV and then distributed to different shops using Ring Main Units and compact substations. The CSS units, which are generally rated 1250 kVA at 11 kV/415 V, feed the low-tension panels used for machines, furnaces, cranes, compressors and other equipment. The ring distribution through RMUs helps maintain continuity of supply and allows any part of the system to be isolated when required.

HEAVY MACHINE SHOP

The Heavy Machine Shop is one of the most important production areas in HPVP. It is designed to handle large components such as reactors, boiler parts, heat exchanger shells and pressure vessels. The shop floor covers a wide area and is equipped with cranes that can lift and move materials weighing over 200 tonnes. The machines in this shop are used for rolling, forming, machining, cutting, welding and heat treatment.

We observed various operations including plate rolling, hydraulic pressing, profile cutting and machining. The rolling section handles thick plates used for shells and heavy vessels. The hydraulic presses are used for forming dished ends and spherical segments. Heat treatment furnaces are available for stress relieving and annealing of welded components. CNC lathes and other precision machines are used for accurate machining. The shop also has special machines such as wrapping machines for multilayer shells, panel welding machines for boiler walls and swaging machines for reducing tube diameters. The electrical load for these machines is supplied from the internal 11 kV/415 V substation located within the shop itself.



HEAVY PLATES AND VESSELS PLANT, BHEL: INDUSTRIAL TRIP



OXYGEN PLANT

The Oxygen Plant in BHEL HPVP is based on cryogenic air separation technology. The plant separates oxygen, nitrogen and argon from atmospheric air and supplies industrial gases required within the factory. The process involves compression of air, removal of impurities, cooling, liquefaction and separation through distillation columns. The plant contains compressors, heat exchangers, expansion equipment, storage tanks, piping systems and control panels.

Stable and clean electrical power is essential for the Oxygen Plant because compressors, refrigeration units and control systems must run without interruption. The plant is fed through the 11 kV network and protected using standard electrical safety devices to prevent faults and voltage fluctuations.



Conclusion

The visit to BHEL HPVP gave us clear exposure to large-scale industrial manufacturing. The Heavy Machine Shop helped us understand how heavy components are formed, welded and heat treated, while the Oxygen Plant showed the working principles of cryogenic air separation. We also saw how the electrical distribution system, through its 33/11 kV substation and RMU-based network, supports all the major operations in the plant. Overall, the visit provided valuable practical knowledge of industrial processes and engineering practices used in major manufacturing units.

Quantum Computing: India's Next Technological Revolution

From Bits to Qubits

What Is Quantum Computing and Why Is Everyone Talking About It?

Technology keeps changing the way we live, but some innovations change the future itself. Quantum computing is one such breakthrough. Unlike ordinary computers, quantum computers are based on the laws of quantum physics. Though it sounds complex, its impact is simple to understand it can solve certain problems much faster than today's computers. Because of this potential, countries around the world, including India, are investing heavily in this technology.

How Do Classical Computers Work and Where Do They Fall Short?

Classical computers work using bits, which can be either 0 or 1. Even the fastest computers process information step by step. When problems become extremely complex such as weather prediction, drug discovery, or breaking encryption the number of possible solutions becomes huge. Classical computers must go through these possibilities one at a time, which makes the process slow and inefficient.

What Makes Quantum Computers Different?

Quantum computers use qubits instead of bits. A qubit can exist in more than one state at the same time, allowing quantum computers to handle many possibilities simultaneously. This unique ability gives quantum computers an advantage in solving specific complex problems much faster than classical machines.

What Is Superposition ?

To understand superposition, imagine a volume slider on your phone. A normal switch is either off or on, just like a classical bit being 0 or 1. But a volume slider can be low, medium, high, or anywhere in between until you finally set it. Similarly, a qubit is not fixed as 0 or 1. It can exist in multiple states at the same time until it is measured. This flexibility allows quantum computers to explore many solutions at once.

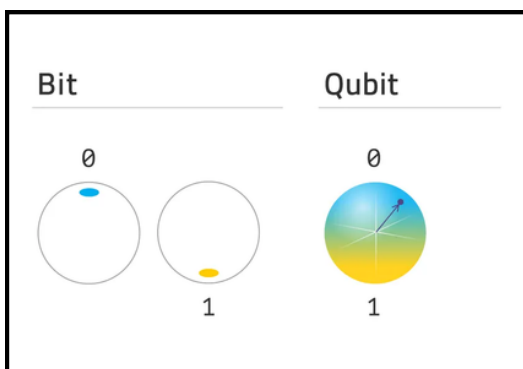


Fig 1

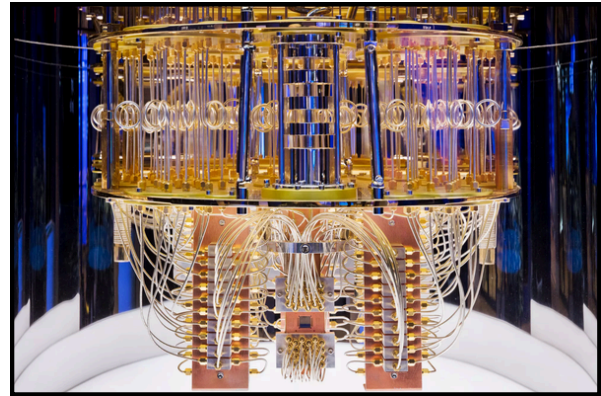


Fig 2

How Does This Lead to Faster Computing?

Think of searching for a lost file in a huge office. A classical computer is like one person checking rooms one by one. A quantum computer is like many people searching all rooms at the same time. By processing multiple possibilities together, quantum computers reach solutions much faster for certain tasks.

What Are Other Countries Achieving in Quantum Technology?

The United States has made major breakthroughs through companies like Google and IBM. China leads in quantum communication and secure data transfer. Several European countries are investing heavily in quantum research for industrial and scientific growth. These milestones show that quantum computing is becoming a global priority.

Why Is Quantum Computing Important for India?

India has launched the National Quantum Mission to develop quantum computers, secure communication systems, and skilled professionals. With strong research institutions and a growing startup ecosystem, India aims to become a global leader rather than just a user of quantum technology. For Indian students, this field offers exciting future opportunities.

Conclusion: Are We Ready for the Quantum Era?

Quantum computing is not science fiction. It is the next step in technological evolution. By using ideas like superposition, quantum computers can solve problems beyond the reach of classical machines. As India moves forward in this field, today's students may become tomorrow's quantum innovators, shaping the future of technology and the nation itself.

Written by
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GLAREX-THE SMART ANTI-GLARE ADAPTIVE HEADLIGHT MODULE

Glare is a visual disturbance caused by excessive brightness that significantly impairs clear vision, particularly during night driving. With the widespread use of high-intensity headlights, glare has emerged as a major road-safety concern, increasing the risk of accidents. This highlights the growing need for intelligent, adaptive headlight control systems that can automatically adjust brightness and direction to ensure safer and more comfortable driving conditions.

This project proposes an advanced adaptive headlight system designed to ensure “safe visibility without glare” during night driving. The Glarex module intelligently and automatically regulates beam intensity and direction in real time, enhancing both driver comfort and overall road safety. Traditional vehicle headlights rely on manual beam adjustment, which can result in delayed response, visual strain, and increased risk of accidents. By integrating smart automation and adaptive technology, this system addresses these limitations, offering a proactive solution for safer, more comfortable, and efficient night driving in modern traffic conditions.



Fig 1. Headlights modes

Conventional vehicle headlight systems operate using fixed high & low beam modes, as illustrated in Figure 1. High beams offer extensive road illumination, allowing drivers to detect distant obstacles & hazards, while low beams are intended to reduce glare and prevent discomfort for oncoming drivers. However, these fixed beam systems are inherently limited, they cannot adapt to changing traffic density, ambient lighting. This often results in visual strain, delayed reaction times, and a higher risk of night-time accidents. With the increasing prevalence of high-intensity headlights, the need for intelligent, adaptive headlight technologies has become critical—systems that can automatically adjust beam direction and intensity to ensure optimal visibility, minimize glare, and enhance overall road safety for all users.



Fig 2. GlareX module

The Glarex module shown in Fig. 2 is an intelligent adaptive headlight system that automatically adjusts vehicle headlight intensity based on traffic and surrounding light conditions. It can detect the glare from oncoming vehicles and reduce brightness to prevent dazzling, then restore normal intensity once the vehicle has passed. If there are no vehicles nearby, it sets the headlights to full brightness for optimal visibility. The module also responds to very high-intensity beams by switching to the lowest mode, and it offers optional warm lighting for aesthetic effects. Designed as a plug-and-play solution, it can be installed in about 15 minutes without any technical expertise, making advanced adaptive headlight features—typically available only in luxury cars—accessible, practical, and safe for two-wheeler vehicles.

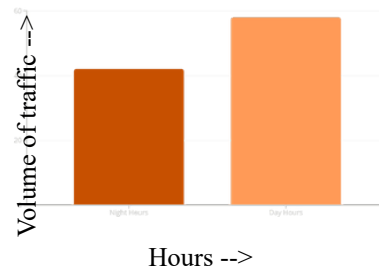


Fig 3. Graph showing volume of traffic

by the reference of fig 3 it can be said that traffic is lower at night, still about 40% of accidents occur during this time, with 20–25% caused by headlight glare. This underscores the importance of adaptive anti-glare systems like the Glarex module for safer night driving, such solutions are essential to prevent accidents and protect lives.

In today's world, safe and comfortable night driving is more important than ever. Glarex brings intelligent, adaptive headlights to two-wheelers, reducing glare and making night travel safer, more convenient, and practical for everyday road users.

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