ASHOKRAO MANE POLYTECHNIC,VATHAR

Department of Electrical Engineering

NEWSLETTER: ELECTRICA

VOL-10: ISSUE-II ,May 2025

Insights

THEME : HVDC TRANSMISSION-THE SOLUTION OF POWER SYSTEM

Vision

To be a prominent in Electrical Engineering education for students in technical, ethical & social aspects for betterment of society.

Mission

m1 To impart strong fundamental & emerging technical knowledge in Electrical Engineering.

m2 To develop professionalism in the domain of Electrical Engineering.

m3 To create a conductive environment for ethics & lifelong learning.

m4 To produce skilled engineering manpower for contributing effectively towards societal development.

Chief Editor:
Mr.B.V.Kumbhar

Editor Committee:
1.Mrs.A.A.Pethkar
2.Mrs.Y.S.Chougule
3.Ms.D.K.More
4.Mr S.S.Patil

About Institute

Shri Balasaheb Mane Shikshan Prasarak Mandal Ambap's, Ashokrao Mane Polytechnic, Vathar Tarf Vadgaon (AMPV) was established in 2008 and is located near Kolhapur. This Institute has AICTE approval for the seven Diploma Courses. Under the visionary leadership and administration, AMPV has emerged as a leading technological institute and is perfect destination for quality technical education. The institute has NBA accredited Programmes, 100% placements in MNC's, best academic results, well established labs. The institute has also been honoured with notable awards.

About Department

The Department of Electrical Engineering was established in the year 2010 with a sanctioned intake capacity of 60 students. The Department has been accredited by National Board of Accreditation (NBA) and also consistently awarded with excellent remark by MSBTE, Mumbai. To cater to the ongoing industrial demand, the Department has well equipped laboratories with extra facilities and also having a smart classroom with e- learning facility. Department leads to implement energy conservation techniques in the institute and also as a part of green energy, promote the use of non conventional energy sources. The department has an enthusiastic team of qualified and experienced teaching and non-teaching staff. One of the strengths of the Department is that its faculty has published different technical papers in reputed national & international journals & contributed in Research & Technology.

Messages

Message from Principal's desk

Dr.Y.R.Gurav
Principal,
Ashokrao Mane Polytechnic,
Vathar

It's a very prestigious moment to interact with the readers. This Newsletter is an initiative taken by Electrical Department with a specific purpose. The contribution made so far by its teachers, students, academicians and industrialists has compelled it to promote them in the area of Electrical Engineering. Newsletter is also acting as a medium to convey messages about its vision and values along with future strategies and plans. This Newsletter has a unique theme i.e. HVDC Transmission-The solution of Power System. I appreciate the editing team, for their efforts in compiling various news about Diploma Education System in Electrical Department along with the views and information about the theme and distribute it to a cohesive community of stakeholders - students, faculty, parents, administrators, institutes, industry and community at large.

Message from Chief Editor's desk

Mr.B.V.Kumbhar
Head, Department of Electrical Engineering
Ashokrao Mane Polytechnic,Vathar

Dear all..

It gives me immense pleasure to publish this edition of our half yearly newsletter 'Electrica'.First of all I would like to greet all the readers and well-wishers for their ongoing support and kind cooperation to our newsletter. Now I am very happy to announce that, we have successfully completed the first term of academic year 2024-25 with various academic, curricular and extracurricular activities.

We make every semester more informative by imbibing the skills of teamwork, leadership, and applying root level learning to solve real-world problems. Our newsletter plays a vital role in the progress of our department. It is the most powerful platform of the students and faculty members, where they can focus their talents as well as their creativity in their respective field which may be beneficial to all.

I would like to appreciate and congratulate the editorial team for their untiring efforts and wish best luck in all their future endeavors. It is my sincere appeal to all readers to read & enjoy this edition.

I hope all our readers will always be with us and we look forward to a successful next academic year 2025-26 ahead.

Departmental Activity

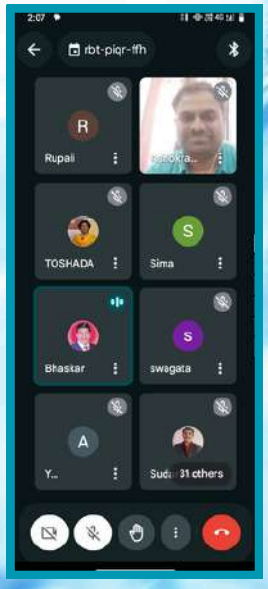
Workshop

As a part of Our Academic curriculum, the department of Electrical Engineering arranged workshop on the topic “Industrial Automation :- PLC,SCADA & HMI”.

Students learned the following concepts:

- Basic concept of PLC.
- Communication between PLC and SCADA.
- PLC programming in ladder diagram.
- How to map the data between PLC and HMI.
- What is difference between HMI and SCADA.
- What is the role of SCADA.

faculty Development Program



The department of Electrical Engineering organized a 3 day online faculty development program on “NEP-2020 Amendment in Technical Education”. The National Education Policy (NEP) 2020 is a policy that aims to improve India’s education system using technology for vocational education and skill development. The Faculty Development Program is aimed to create an effective forum for exchanging innovative ideas to create a more flexible, Multidisciplinary, and holistic education system. Eminent Speakers from the field of Academia delived their lectures on the thematic areas of the program. They shared their expertise on techniques & Innovation in accordance with NEP 2020.

Industrial Visits

An industrial visit to "Kolhapur Metals Gokul Shirgaon" was organized by the Electrical Engineering Department on Thursday,Feb 6, 2025 for second year students. The aim of the visit is that students should know the foundry management & emphasized the importance of safety during casting operation. The foundry demonstrated several modern advancement such as use of CAD and Simulation tools for creating precise model designs. The industrial visit was helpful in upgrading the practical knowledge of students by understanding the foundry operations and importance of technical integration with automation for improving production efficiency.

Department of Electrical Engineering organized industrial visit to "Precise cables Gokul Shirgaon" for second year students on February 14 ,2025.The purpose of visit is to minimize gap between the theoretical Knowledge and practical industry applications. They gave brief introduction about constructional details of transformer. Also demonstrate practical of varnishing of winding and its drying method .All students were benefited from this industrial visit as they got chance to oserve all transformerb parts.

As part of our academic program Electrical Engineering students visited "Menon Bearings Pvt. Ltd. Shiroli" on February 25, 2025.From that visit student got knowledge about foundry. This visit was helpful for upgrading the practical knowledge of students.

On February 28, 2025, students of Electrical Engineering Department visited "Narayani Foundry Pvt. Ltd. Shiroli" as a part of academic curriculum. The purpose of the visit was to understand practical applications of electrical systems and observe the functioning of industrial equipment. It was a very informative and valuable experience. It gave students better insight into how electrical engineering is applied in real-world industries and motivated them for their future careers.

Expert Lecture

An expert lecture on the topic "Microcontroller and its Applications" was organized by the Electrical Engineering Department on February 15, 2025. The session was conducted by Mr. Avdhut R. TelePatil, a specialist in embedded systems and industrial automation. The purpose of the lecture was to provide students with a deeper understanding of microcontrollers, their architecture, programming, and real-life applications in the field of Electrical Engineering. Students gained valuable insights into the importance of microcontrollers in modern electrical systems and how they can be programmed for specific tasks. The session was highly informative and helped bridge the gap between theory and practical implementation.

Alumni meet-ऋणानुबंध

The Alumni Meet-2025 of Electrical Engineering Department, Ashokrao Mane Polytechnic Vathar was held on Saturday 04 January 2025 in college campus lawn. The meet started at6.00 pm. Hon. Shree. Vijaysinh Mane Director KDCC Bank Kolhapur, was Chief guest for the function. Dr.Y.R. Gurav Principal of Ashokrao Mane Polytechnic, was chairperson. Academic co-ordinator & event convenor Prof.P.T.Hasabe, central alumini co-ordinator & event co-ordinator Mr.R.B.Mulik, alumini representative Ms. Mayuri Mali(working as Engineer RBM software pune). All Alumni association members, all Alumni staff co-ordinators, all the head of departments, teaching & non teaching staff members were present for function.

Soft Skill Training

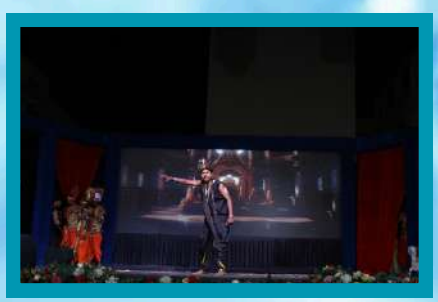
The soft skill training was conducted from 13 Jan 2025 to 15 Jan 2025 by the training & placement cell of Ashokrao Mane Polytechnic. The soft skill trainer Mrs. Tanushri Ghosh conducted this training. All sessions were attended by final year students. She gave a brief introduction about soft skills or social skills which are personal values & interpersonal skills that determine a person's ability to work well with others in a project team.

Other Activity

ANNUAL SPORTS

Annual sports were organized by Ashokrao Mane Polytechnic,Vathar. Students of Electrical Engineering Department participated in different sports like kho-kho,kabaddi,cricket,vollyball,football etc

ANNUAL SOCIAL FUNCTION-YUVATARANG 2K25



Other Activity

REFLEX-2K25

Paper Presentation



The Department of Electrical Engineering arranged paper presentation on March 11, 2025.Many topics related to research methodology were provided for paper presentation to the students. Participants from various academic institutions presented their papers on given topics. This event provided a platform for networking amoung participants and judges & proved useful to enhance the skills of students. It facilitated discussions on potential collaborations,future research directions within the Electrical Engineering.

Electro-Fest




Electro-fest competition among Electrical engineering students created a fantastic oppourtunity to showcase practical knowledge,engineering skills in making circuit,fault finding and resolve the fault. Electrofest competition not only enhanced technical skills but also encouraged creativity,teamwork and practical application of engineering principles among the participants.It made a memorable and valuable experience for electrical engineering students.

FAREWELL FUNCTION



Faculty Views...

Mrs.A.A.Pethkar
Lecturer,Electrical
Engineering Department

Mrs.Y.S.Chougule
Lecturer,Electrical
Engineering Department

HVDC (High Voltage Direct Current) Evolution

Early Days (1880s–1930s)

The concept of DC transmission dates back to the late 1800s, with early experiments like the 1882 Miesbach–Munich transmission in Germany.

Mid-20th Century Breakthroughs

The first commercial HVDC link was built in 1954 between Sweden and Gotland,using mercury-arc valves—a major milestone that proved HVDC's viability for submarine cables.

In the 1970s, thyristor valves replaced mercury-arc technology, enabling more reliable and scalable HVDC systems (Line Commutated Converters or LCCs).

Modern Era (1990s–Present)

The 1990s introduced Voltage Source Converters (VSCs), allowing HVDC to connect weak or isolated grids and support renewable energy integration. Modular Multilevel Converters (MMCs) emerged in the 2000s, improving efficiency, reducing harmonics, and enabling multiterminal HVDC systems.Today, HVDC is central to global renewable energy strategies, with ultra-high voltage links (like China's ±1100 kV Zhundong–South Anhui line) spanning thousands of kilometers.

As India continues its remarkable journey of economic growth & sustainable development, the demand for reliable, efficient & clean energy is escalating at an unprecedented speed. Our power system, already one of the dual challenge of integrsting a massive influx of renewable energy sources & transmitting power efficiently over vast distances. In this dynamic scenario emerges not just as an alternative, but increasing as a vital solution.

For decades, alternating current has been backbone of our power grids. However, AC trasmission inherently suffers from limitations over long distance & the need for synchronous operation. This is where HVDC technology truly shines.

Why HVDC is a Game-Changer for India:

- **Long distance bulk power transmission:**

HVDC lines offer significantly lower transmission losses over long distance compared to AC, making them ideal or evacuating from remote power plant to densely populated load centers.

- **Integration of renewable energy :**

our nations ambitious renewable energy targets necessitate the seamless integration of intermittent sources like solar &wind power HVDC like provide superior control over power flow &enabling better grid stability .

Social Activity

Republic day celebration
26/01/2025

Women's day celebration
08/03/2025

Student Views...

Mr.S.S.Patil
Second Year Electrical Engineering Student

High Voltage Direct Current(HVDC) is a method of transmitting electricity using direct current, unlike the more common alternating current system. HVDC is often used to connect two separate Ac grid, allowing power exchange while a isolating grid. This isolating can prevent unwanted transients and system anomalies from affecting a healthy AC grid. HVDC system typically use voltage between 100KV and 800KV.The high voltage direct current has a lower losses and can transmit power over longer distance more efficiently than AC. The main components include convertor station, transformers and transmission lines. The converter stations are heart of the system. Converters generate harmonic distortions, AC filters and sometimes DC filters are used to smooth out these unwanted frequencies. DC transmission lines can be overhead lines or underground/submarine cables, depending on geography and environmental concerns. Control and Protection Systems are used in HVDC system for the purpose of monitor voltage, current, temperature, and detect faults to trigger protective actions when needed.

Ms. D.K.More
Third Year Electrical Engineering Student

HVDC means transmission of electricity over long distance using direct current instead of alternating current. HVDC system are particularly useful for long distance bulk power transmission, underwater cable systems & interconnecting asynchronous power grids. Unlike AC, which suffers from reactive power losses and requires synchronization between systems, HVDC transmission offers lower electrical losses and enhanced stability. In HVDC system power is converted from AC to DC at the sending end using a conveter station, transmitted via overhead lines or underground or submarine cables and then converted back to AC at receiving end for distribution to consumers. HVDC lines can carry more power over longer distance with less conductor material and lower energy losses compared to AC lines. This makes them ideal for transmitting power from remote renewable energy sources, such as hydrogen plants, offshore wind farms, or solar parks, to urban centers. HVDC technology also allows better control over power flow, improves system stability and can help in reducing short circuit currents in interconnected grids.

PLACEMENT

Industry Expert Views...

Mr.Digambar Birbal Pujari
Deputy Executive Engineer
PAC Division Kolhapur,MSTCL
Bapat camp, Near Market yard
Kolhapur

HVDC (High Voltage Direct Current) transmission is a technology used for the efficient long-distance transmission of electricity. Unlike traditional alternating current (AC) systems, which rely on the periodic reversal of direction of the current, HVDC transmits electricity in one direction only, using direct current (DC). This method is highly beneficial i.e .HVDC systems are more efficient than AC systems for transmitting power over long distances (typically over 500 km for overhead lines and 50 km for underwater cables). This is because DC minimizes the energy losses that occur due to the resistance of conductors and the reactive power losses in AC systems. HVDC allows for the interconnection of different power grids, including those operating at different frequencies or from different regions. This is especially useful for linking renewable energy sources like wind and solar farms, which may be located far from the consumption centres .HVDC transmission provides better control over the flow of power, allowing grid operators to regulate power more effectively. It also enhances the stability of the network by preventing cascading failures, as HVDC lines can isolate faults in a grid. Although HVDC systems are more expensive to install initially due to the need for specialized converters (AC to DC, and DC to AC), the lower transmission losses over long distances can make them cost-effective over time, especially in cases of undersea cables (e.g., connecting islands).HVDC systems can improve the overall power quality by reducing harmonics and flicker, which are common issues in AC transmission.

Mr. Vikram Bhimrao Patil
Suzlon Energy Ltd.(OMS Division)
Lead-Learning & Development,
MH & MP

An HVDC system (High Voltage Direct Current system) is a type of power transmission that uses direct current to move electricity over long distances. It is like the express highway of electrical power efficient, high-capacity, and great for spanning hundreds or even thousands of kilometers.

AC (alternating current) from power stations is converted into DC using a converter station. This DC power travels through HVDC transmission lines with significantly lower losses compared to traditional AC lines. At the destination, another station converts the DC back to AC so it can be used in homes and businesses. HVDC can be used to increase the power transfer capacity of existing transmission lines, avoiding the need for new infrastructure.

HVDC transmission is not merely a technological advancement, its a strategic improvement for India to ensure a sustainable, reliable & secure energy fiture. It is without a doubt, a significant part of solution for the challenges & opportunities facing our power system today & in the decades to come.

HVDC is especially useful when:

Connecting renewable energy sources like offshore wind farms.

Linking two different power grids that operate at different frequencies.

Delivering electricity over long distances (like between states or even countries).

Success Story

Mr.Avadhut Ananda Lambe , an alumnus of the Electrical Engineering Department, has been selected as Technical Assitant at MSETCL.

Achievements...

ACADEMICS

Third Year

Injal OnkarSubhash
92.60%

Jadhav Pranav Prakash
90.00%

Dongale Tanuja Dilip
88.80%

Second Year

Patil Prathmesh Tukaram
89.06%

Nachare Sanika Sunil
83.65%

Patil Sanket Sadashiv
82.59%

First Year

Chougule Prajakta Netaji
91.53%

Khot Soniya Jaydip
89.65%

Hajarat Samir Amit
82.35%

NON ACADEMICS

Winner of Traditional day Yuvatarang 2k25

Runner-up of volleyball 2k25

Winner of Electrofest at Reflex 2K25

Runner up Electrofest at Reflex 2K25

Next theme: ***AI Powered Innovations in Electrical Engineering***