बी० आई० टी० सिन्दरी, धनबाद, झारखण्ड
B.I.T Sindri, Dhanbad, Jharkhand
(Higher Technical and Skill Development, Govt. of Jharkhand)

Potentia
DEPARTMENTAL NEWSLETTER
DEPARTMENT OF ELECTRICAL ENGINEERING

FACULTY INCHARGE:

Dr. R. P. GUPTA
Mr. M. MANI SANKAR

STUDENT MEMBERS:

KANISH DUBEY(EE III YEAR)
ARYA GARG(EE III YEAR)

PATRON:

Dr. D. K. SINGH,
DIRECTOR

CO-PATRON:

Dr. D. K. TANTI,
HEAD, EE

1ST EDITION

JUNE 2019

FROM THE DIRECTOR'S DESK

Dr. D. K. Singh

I take immense pleasure in extending my warm wishes to the department of Electrical Engineering, one of the oldest departments of our prestigious institute, B.I.T. Sindri. I, whole heartedly, congratulate the faculty as well as the students who pioneered the inception of this noble endeavour of publishing a newsletter, solemnly dedicated to reflect the activities of the department. It is a matter of great pride to lead an institution where the members are conscious enough to account for their lessons throughout the year and persevere it in a way which could inspire others. This effort of theirs is commendable as it voices the diligence put forth, pushing the levels of knowledge and skills.

Time and again, we need to remind ourselves how far we have come and measure our efforts in the form of achievements as they primarily then become the greatest source of our strength to forge even difficult roads ahead. Thus, the departmental newsletter, 'POTENTIA' is to serve its purpose both for the people reading it and those who are working behind to materialize it. Nothing less than a 'brilliant inspiration', is what I believe, is embedded in this effort.

As the department set their steps to a united summit, I wish them luck for traversing a path of glory in facing the multifarious developments at a praiseworthy pace. Besides aiming to sharpen the technical skills of our students, my vision of an eminent institute envelopes a ground wherein students are skilled holistically, in every aspect of overall growth.

With massive delight and pride, I announce 'POTENTIA', as the departmental newsletter of the Department of Electrical Engineering.

Head Of Department's Address

Dr. D. K. Tanti

"The only thing we should strive to be consistent in, is the hunger for growth."

Being one of the oldest departments in the premises of our prestigious institute, B.I.T. Sindri, the Department of Electrical Engineering has always nurtured this hunger, whether it is among the faculty to push the excellence in their field or the students whose newly-budded creativity and curiosity have worked wonders. The foundation underneath the release of a Departmental Newsletter is based on a similar, if not the same endeavour.

'POTENTIA', the name ignites in me, a fervour to already lay my hands on the newsletter dedicated to the Department of Electrical Engineering. Much to my admiration to Georg Simon Ohm for his laws on resistance, I dare say that no resistance challenged by an obstacle can work to let the potential of my students drop and I feel prouder than privileged to pen down this message for the first time, as we set out to inaugurate a departmental newsletter. This combined venture of the faculty and the student community promises excellence to me and assures of their transcending capabilities in solving problems.

As we mark the beginning of a new journey, I couldn't be more grateful and proud to be leading this Department and remember the words from the great scientist, Nicolas Tesla, which goes,

"Electrical Science has disclosed to us, more intimate relation between widely different forces and phenomena and has thus led to a more complete comprehension of nature and it's many manifestations to our senses."

On the behalf of the entire department, I affirm my determination in pursuing continued progress in every dimension and gradually proliferate our competence as a global level.

I, hereby, convey my wishes and gratitude to the entire team of 'POTENTIA'.

ABOUT THE INSTITUTE

Birsa Institute of Technology, formerly known by the name of Bihar Institute of Technology, is a premier institute under the Department of Science and Technology, Government of Jharkhand. Established in 1949, B.I.T. Sindri boasts of a lush green campus spanning 450 acres and all the amenities to promote the overall development of each student. The college offers Bachelor of Technology (B.Tech) and Master of Technology (M.Tech) programme for the brightest students of the state and aims at the multidimensional grooming of students during their stay. It offers education is ten disciplines of engineering namely- Mechanical, Electrical, Civil, Production, Mining, Metallurgy, Electronics and Communication, Chemical, Information Technology and Computer Science. All the departments are facilitated with laboratories to replenish and boost the practical exposure of students to the theoretical principles. The institute also has several student-run organisations and societies which contribute significantly in polishing students' soft skills, communication and technical skills. With the advancement in placement statistics over the years, B.I.T. Sindri strives to become the Mecca for a multitude of engineers-in-making.

VISION OF THE INSTITUTE

To provide the valuable human resources for the industry and society through the excellence in technical education and scientific research for the sustainable development.

MISSION OF THE INSTITUTE

1. To offer the state-of–the-art undergraduate, postgraduate and doctoral programmes.
2. To generate new knowledge by quality research.
3. To undertake the collaborative projects with industries and society.
4. To develop human intellectual capacity with its full potential.
5. To solve problems of society through innovation in technology.

ABOUT THE DEPARTMENT

The Department of Electrical Engineering was started in the year 1949 when the institute was born. The department offers four years B.Tech. degree course with an annual intake of 100 students. Two years postgraduate program is also offered leading to M.Tech. degree with specialization in Control System and Power System. The annual intake in the postgraduate program is 10. The department is also looking after an electrical sub-station and is maintaining a 14 Km distribution line of BIT campus.

The department has well equipped laboratories required for undergraduate and postgraduate programs. The important laboratories include: Computer Lab, Control System Lab, Microprocessor Lab, Electrical Machines Lab, Instrumentation Lab, Circuit Lab, High Voltage Lab and Electrical Workshop. The prestigious million volt Atkinson High Tension Laboratory of the department is considered as first of its kind in India in the yesteryears.

Vision of the Department

To emerge as a globally recognized centre in the field of Electrical Engineering to provide valuable human resource and ambience for innovative research for sustainable development of industry and society.

Mission of the Department

1. To offer state-of-the-art undergraduate, post graduate and doctorate programmes by providing a conducive environment towards outcome-based teaching learning process with knowledge and skill creation, suitable for contemporary and future needs of industry.

2. To promote creative ambience in order to generate new knowledge by conducting   quality research in collaboration with Electrical, Electronics and allied industries.

3. To bridge the gap between industry and academia by framing curriculum and syllabi based on industrial and societal needs so that competency of the students matches the upcoming challenges in education, profession and life.

4. To instil moral and ethical values among the students through holistic personality development so as to ensure human intellectual capacity to its full potential.

PROGRAM OUTCOMES (POs):

Engineering Graduates will be able to:

PO1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering Fundamentals and an engineering specialization to the solution of complex engineering problems.

PO2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Educational Objectives(PEOs)

PEO1. To inculcate the attitude to solve real life engineering problems with the implication of the fundamental knowledge based on science and electrical engineering.

PEO2. To impart quality technical education to students, which enables them to face challenges in industry, society and pursuing higher studies?

PEO3. To envisage expertise in career enhancement with industrial training and to promote leadership skills.

PEO4. To foster values and ethics with strong foundation to undertake team work with effective communication skills.

Program Specific Outcomes (PSOs)

PSO1: Ability to utilize the knowledge acquired from basic sciences, basic computing and electrical engineering courses to work in multi-disciplinary environment and to cater the diversified needs of industry and academia.

PSO2: Ability to identify and solve different technical issues related with electrical engineering by integrating the knowledge acquired from the curriculum and industry- academia interactions.

PSO3: Able to demonstrate effective communication and inter-personal skills with management principles for career and professional advancement.

FACULTY PUBLICATION

-Dr. U. Prasad

• Intelligent fault analysis in transmission lines using Fuzzy logic, International journal for technical research in Engineering, vol. 7(4), 2019.

• Performance Evaluation Of Micro Grid, International Research Journal of Engineering and Technology, vol. 6 (12), 2019.

-Dr. R.P. Gupta

• Performance, energy loss, and degradation prediction of roof-integrated crystalline solar PV system installed in Northern India, Case studies in Thermal Engineering, vol. 13, 2019.

• Modelling and simulation of solar plant and storage system based Microgrid, IJRECE, vol. 6(3), 2018.

-Dr. Amit Kumar Choudhary

• Order Reduction of z-domain Interval System using an Arithmetic Operator, Circuits, Systems, and Signal Processing, vol. 38, 2019.

• Order Reduction Techniques via Routh Approximation: A Critical Survey, IETE Journal of Research, vol.65(3), 2019.

• Model order reduction of discrete-time interval system based on Mikhailov stability criterion, Circuits, Systems, and Signal Processing, vol. 6, 2018.

• Model Order Reduction of Discrete-Time Interval Systems by Differentiation Calculus, Automatic Control and Computer Sciences, vol.52, 2018.

- A Novel Technique for Order Reduction of Discrete-Time Interval System, 4th SICE International Symposium on Control Systems (ISCS), Tokyo, Japan, 2018.

-Mr. Suman Ranjan

- Performance analysis of triple asymmetrical optical micro ring resonator with 1x3 input-output waveguide for application as optical filter, Applied optics, vol. 57(9), 2018.

- Performance analysis of quadruple asymmetrical optical micro ring resonator as optical filter, Optik, vol. 171, 2018.

- Mathematical modelling of extrinsic Fabry-Perot Interferometer cavity, IEEE sponsored ICMAP, IIT (ISM) Dhanbad, 2018.

- Performance analysis of quadruple asymmetrical optical microring resonator, IEEE sponsored RAIT, IIT (ISM) Dhanbad, 2018.

- Z-domain modelling of a quadruple asymmetrical micro optical ring resonator and its performance as optical filter, SPIE, Germany, 2018.

-Mrs. Kumari Sarwagya

- High Impedance Fault Detection in Electrical Power Distribution System Using Moving Sum Approach, IET Science, Measurement and Technology, vol. 12(1), 2018.

-Miss Niharika

- Day-ahead demand side management using symbiotic organisms search algorithm, IET, Generation, Transmission &Distribution, vol.12 (14), 2018.

-Mr. Biswaranjan Mishra

- Optimal Placement of PMUs for Power System State Estimation, IEEE International Conference on Sustainable Energy Technologies and Systems (ICSETS), 2019.

• A New Concept for Monitoring Of Power Line Outages through Double Observability Of Buses, Journal of Advance Research in Dynamical and Control Systems, special issue,no.6, 2018.

• A New Approach of Multiple Line Outage Identification Using Phasor Measurement Unit (PMU) with Bad Data, IEEE International conference on Current Trends towards Converging Technologies, Coimbatore (ICCTCT), 2018.

• Assessment of the Impact of Line Outage in Modern Power System, IEEE International conference on Current Trends towards Converging Technologies, Coimbatore (ICCTCT), 2018.

-Mr. Matta Mani Sankar

• A fuzzified Pareto multiobjective cuckoo search algorithm for power losses minimization incorporating SVC, Soft Computing, vol. 23, 2019.

-Mr. Ramesh Devarapalli

• A Framework for H2/Hinf Synthesis in Damping Power Network Oscillations with STATCOM, Iranian Journal of Science and Technology, Transactions of Electrical Engineering, DOI: https://doi.org/10.1007/s40998-019-00278-4, 2019

• Impact of Energy systems accumulation on power system stability and stabilization methods, 11th International Exergy, Energy and Environment Symposium (IEEES-11), Chennai, India, 2019.

• Modeling and Control of Integrated Battery Storage System, Renewable Energy Based Grid, 11th International Exergy, Energy and Environment Symposium (IEEES-11), Chennai, India, 2019.

• Interval Modeling of Riverol-Pilipovik Water Treatment Plant and Its Model Order Reduction, ICCAEEE, 2019.

• Salp Swarm Algorithm for solving the Economic Dispatch of Real Power Generation by Considering Generator Constraints, IPEICS'19,2019.

- Optimal Parameter Tuning of Power Oscillation Damper by MHHO Algorithm, 20th International Conference on Intelligent System Application to Power Systems (ISAP), IIT Delhi, 2019.

- Application of Modified Harris Hawks Optimization in Power System Oscillations Damping Controller Design, 8th International Conference on Power Systems (ICPS) 2019, MNIT Jaipur, 2019.

- Enhancing Oscillation Damping in a Power Network using EWOA Technique, International Conference on 'Emerging Trends for Smart Grid Automation and Industry 4.0' (ICETSGAI4.0), BIT Mesra, 2019.

- Improved Moth Flame Optimization in Systematization of STATCOM and PSS, International Conference on 'Emerging Trends for Smart Grid Automation and Industry 4.0' (ICETSGAI4.0), BIT Mesra, 2019.

- Islanding Detection for the Power System Connected With Distributed Generators, Control & Automation in Electrical Engineering, 2018
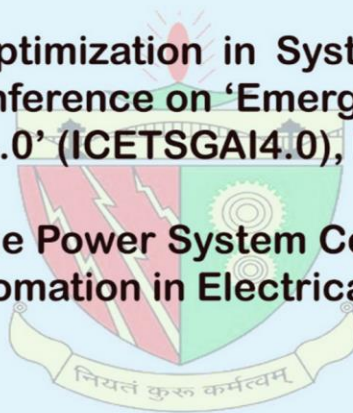
SPONSORED RESEARCH

Name of PI	Title of Project	Sanctioned Amount	Funding Agency	Duration
Mr. Biswaranjan Mishra	"Linear State Estimation based on PMU Measurements"	₹653000	TEQIP III	One Year
Mr. Ramesh Deverapalli	"Controller design for interval-modeledRive rolPilipovik water treatment plant."	₹265000	TEQIP III	One Year
Mr.Suman Ranjan	"Design and modelling of microring resonator based biosensor"	₹1496000	TEQIP III	One Year
		₹2,414,000		

S.No	Name of Faculty	Event and Venue
1.	Prof. (Dr.) P. Rai	Faculty Development Program (FDP) on "Advancement and Application of Soft Computing in Electrical System" during 13th to 17th July 2018, BIT Sindri
2.	Dr. R. P. Gupta	Faculty Development Program (FDP) on " Advances in Control and Its Application in Power Technology (ACAPT) " during 24th to 28th September, 2019 Integral University, Lucknow
		Faculty Development Program (FDP) on "Advancement and Application of Soft Computing in Electrical System" during 13th to 17th July 2018, BIT Sindri
		Faculty Development Program (FDP) on "Advances in Industrial Automation" during 10th to 14th December, 2018 Netaji Subhas Institute of Technology (NSIT), Amhara, Bihta

WORKSHOPS ATTENDED BY FACULTY

2018-2019			
Name of Faculty	**Name of Workshop**	**Organised by**	**Duration**
Dr. R. P. Gupta	Antenna Trends	E&ICT Academy, NIT, Patna	1st to 5th July 2019
	VLSI Chip Design Hands on using open source EDA	E&ICT Academy, NIT, Patna	8th -12th July 2019
	Advanced Industrial Automation using PLC & SCADA	Department of EE & ECE in collaboration with SIEMENS COE BIT, Sindri	1st to 5th Nov. 2018
Mr. Biswaranjan Mishra	Advancement and application of soft computing in Electrical Systems	Electronics and ICT Academy, NIT Patna & Department of Electrical Engineering by MeitY, Govt. of India at B.I.T. Sindri.	13th-17th July 2018
	Advanced Industrial Automation using PLC& SCADA	Department of EE & ECE in collaboration with SIEMENS COE,	1st-5th November 2018
Mr. Gunturu. Vijaya Kumar	Advancement and application of soft computing in Electrical Systems	Electronics and ICT Academy, NIT Patna & Department of Electrical Engineering by MeitY, Govt. of India at B.I.T. Sindri.	13th-17th July, 2018
	Wireless & Mobile Communication	Electronics and ICT Academy, NIT Patna & Department of Electrical Engineering by MeitY, Govt. of India at B.I.T. Sindri.	3rd-7th Dec 2018

Mr. Suman Ranjan	Advancement and application of soft computing in Electrical Systems.	Electronics and ICT Academy, NIT Patna & Department of Electrical Engineering by MeitY, Govt. of India at B.I.T. Sindri.	13th-17th July 2018
Mrs. Kumari Sarwagya	Advancement and application of soft computing in Electrical Systems	Electronics and ICT Academy, NIT Patna & Department of Electrical Engineering by MeitY, Govt. of India.	13th-17th July 2018
Mr. Mukhlesur Rahman	Design and Implementation of Power Converters with EMC/EMI Modelling for Micro Grid & Electric Vehicle Applications	IIT Ropar	8th - 21st July,2018
	Advanced Industrial Automation using PLC& SCADA	Department of EE & ECE in collaboration with SIEMENS COE BIT Sindri	1st-5th Nov 2018
	DSP & Sensors	Jointly organised by E&ICT and Dept. of ECE, BIT Sindri	10th-4th Dec, 2018
Mr. Anuj Kumar Pandey	Advancement and application of soft computing in Electrical Systems	Electronics and ICT Academy, NIT Patna & Department of Electrical Engineering by MeitY, Govt. of India at B.I.T. Sindri.	13th-17th July 2018
	Advanced Industrial Automation using PLC& SCADA	Department of EE & ECE in collaboration with SIEMENS COE, BIT Sindri	1st-5th Nov 2018
Mr. Matta Mani Shankar	Advancement and application of soft computing in electrical systems	Electronics and ICT Academy, NIT Patna & Department of Electrical Engineering by MeitY, Govt. of India at B.I.T. Sindri	13th–17th July, 2018

	Advanced industrial automation using PLC & SCADA	Department of EE & ECE in collaboration with SIEMENS COE BIT Sindri	5 days, 1st - 5th Nov, 2018
	DSP & Sensors	Jointly organised by E&ICT and Dept. of ECE, BIT Sindri	5 days, 10th- 14th Dec, 2018
Miss Niharika	Advancement and application of soft computing in Electrical Systems	Electronics and ICT Academy, NIT Patna & Department of Electrical Engineering by MeitY, Govt. of India at B.I.T. Sindri.	5 days 13th-17th July, 2018
	Real-world applications of Distributed constraint optimization techniques and autonomous systems-RADCOPAS-20	Department of CSE &IT, BIT Sindri.	5 days 24th-28th Sept, 2018
	Advanced Industrial Automation using PLC& SCADA	Department of EE & ECE in collaboration with SIEMENS COE, BIT Sindri	5 days 1st-5th Nov, 2018
	AI & Machine Learning	Electronics and ICT Academics, Govt. of India at B.I.T. Sindri	5 days 17th- 21st Dec 2018
	Microgrid Stability , Protection and Control	IIT Kharagpur	5 days 27th - 31st May, 2019
	Advance Pedagogy & Digital Tool for TEQIP Faculty Members	IIT Roorkee	5 days 10th – 14th June, 2019
	Introduction to Smart Grid	NPTEL On-line Certification	July-Sept. 2019
Mr. Avinash Mishra	Flow and process simulation in process industries	Fapsipi -2018	29th - 2nd Nov, 2018

	Manufacturing automation, robotics &factory of future		3rd -7th Oct 2018
	Advancement and application of soft computing in Electrical Systems	Electronics and ICT Academy, NIT Patna & Department of Electrical Engineering by MeitY, Govt. of India at B.I.T. Sindri.	5 days 13th-17th July 2018
Mr. Rakesh Rohan	Design and implementation of power converters with EMC/EMI Modelling for "Micro Grid & Electric Vehicle Applications"	IIT Ropar	5 days 18th-21st July, 2018
	Real-world applications of Distributed constraint optimization techniques and autonomous systems-RADCOPAS-2018	Department of CSE &IT, BIT Sindri	5 days 24th-28th Sept 2018
	Advanced Industrial Automation using PLC& SCADA	Department of EE & ECE in collaboration with SIEMENS COE, BIT Sindri	5 days 1st-5th Nov. 2018
Mr. Praveen Kumar	Advancement and application of soft computing in Electrical	Electronics and ICT Academy, NIT Patna & Department of Electrical Engineering by MeitY, Govt. of India	5 days 13th-17th July 2018
	Real-world applications of Distributed constraint	Department of CSE &IT, BIT Sindri	5 days 24th-28th Sept. 2018
	Advanced Industrial Automation using PLC& SCADA	Department of EE & ECE in collaboration with SIEMENS COE, BIT Sindri	5 days 1st-5th Nov 2018

	Wireless & Mobile Communication	Electronics and ICT Academy, NIT Patna & Department of Electrical	5 days 3rd-7th Dec 2018
Mr. Amit Kumar	Faculty Development Programme on " Advancement and application of soft computing in Electrical Systems"	Electronics & ICT Academy, NIT Patna	5 Days 13th– 17th July, 2018
	Faculty Development Programme on " Advanced industrial automation using PLC & SCADA "	Department of EE & ECE in collaboration with SIEMENS COE BIT Sindri	5 Days 1st – 5th Nov, 2018
	Faculty Development Programme on " AI and machine learning"	Electronics & ICT Academy, NIT Patna	5 Days 17th – 21st Dec, 2018.

WORKSHOPS ORGAINIESD BY DEPARTMENT

1) One week FDP on "Advancement and Application of Soft Computing in Electrical Systems" jointly organised by Electronics and ICT Academy, NIT Patna and Dept. of EE, BIT Sindri during 13th – 17th July 2018.

2) One week FDP on "Advanced Industrial Automation using PLC & SCADA" jointly organised by Dept. of ECE and Dept. of EE in collaboration with SIEMENS COE, BIT Sindri, under TEQIP-III during 1st – 5th Nov. 2018.