

K.K. WAGH INSTITUTE OF ENGINEERING
EDUCATION AND RESEARCH
**DEPARTMENT OF
ELECTRICAL ENGINEERING**



VIDYULATA

A Half Yearly Newsletter Issue/Vol. No. 1
December 2015

NEWSLETTER



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FROM THE DESK OF HOD



Friends,

It's immense pleasure to present this semi-annual newsletter "Vidyulata". Electrical Engineering Department is the dynamic and vibrant department with the blend of young and experienced Faculty.

Department is actively involved in academic as well as research work in current areas of Electrical Engineering and multi-disciplinary streams. The department has well equipped labs with the state-of-the-art software, hardware and machineries.

The faculty members are constantly publishing technical papers in National and International journals and conferences. Also, the department is offering consultancy services to many National/Multinational industrial organizations.

The department is fortunate to have dedicated teachers, devoted students, and committed supporting staff and expert technical staff.

Specially, I congratulate my students for participating in various extra-curricular activities, research work and competitive examinations. My best wishes to all for their bright carrier and successful life.

Dr. B. E. Kushare
Head of Electrical Engineering Dept.
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VISION AND MISSION

Mission of the Institute

Committed to serve the needs of the society at large by imparting state-of-the-art Engineering education and to provide knowledge and develop ATTITUDE, SKILLS and VALUES, leading to establishment of quality conscious and sustainable research oriented Educational Institute.

Vision of the Institute

Empowering through quality technical education.

Mission of the Department

Vision of the Department

Development of all round, socially responsible, innovative electrical professionals and researchers leading to empowerment to serve needs of society, meet global challenges and emerge as Centre of Excellence.

M1:

Establish vibrant learning environment to enable students for lifelong learning with ethical practices to face challenges of electrical engineering field and globalization by providing state-of-the-art infrastructural facilities.

M2:

Promote active learning, critical thinking and engineering judgment coupled with business, entrepreneurial skills.

M3:

Expose to recent technological advancements and industrial professional practices.

M7:

Establish centre of excellence in the field of power quality and energy management.

M4:

Introduce PG Programs and establish recognized research centre.

M6:

Offer consultancy and R&D services to various social, educational, industrial and commercial organizations for self reliance.

M5:

Provide conducive environment and promote intellectual (scholarly) pursuits for encouraging innovation, research, real world problems with multidisciplinary approach.

Program Educational Objectives

PEO1: To provide solid foundation in mathematics, science, humanity, environment and engineering fundamentals.

PEO2: To train students with wider electrical engineering concepts so as to comprehend, simulate, analyze, design, solve, draw inferences, realize and foster creativity, innovation and research to excel in technical field.



PEO3: To provide conducive academic environment to inculcate professional skills, ethical practices and soft skills leading to the entrepreneurship development, enhancement of employability, success in competitive examinations and life-long learning.

PEO4: To relate engineering issues to socio-economic context with multidisciplinary approach to address the problem of real world.



Program Outcomes: Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **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.
3. **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.
4. **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.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
6. **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.
7. **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.



DEPARTMENT OF ELECTRICAL ENGINEERING
K.K. Wagh Education Society's
K. K. Wagh Institute of Engineering Education
and Research, Nashik

Program Outcomes: Engineering Graduates will be able to:

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. 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.
11. 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.
12. 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 Specific Outcomes (PSO)

Students will be able to:

PSO1: Apply fundamentals of Electrical Engineering to solve real time problems with social and multi-disciplinary approach.

PSO2: Model, simulate, analyze, critically evaluate and interpret the results with acquired professional skills and ethical practices, leading to enhancement of employability.

TECHNICAL ARTICLE

Virtual Synchronous Machine: Inertia Contributor to Future



Omkar N. Buwa
ME Power System (Pursuing)
Senior Engineer
L & T Power,
Baroda.

Modern society is very much dependent on the availability of cheap and reliable electricity. Environmental concerns, research in the field of renewable energy, availability of open electricity markets are some of the reasons due to which generation technology is shifting from conventional units to small renewable units near load. This concept evolves new technology called distributed generation (DG) and generating units in this technology are called as distributed generators (DGs) or distributed energy resources (DERs). DGs like solar photo voltaic (PV), wind are having very less gestation period. Thus gap between supply and demand due to infrastructure expansion issues can be reduced by addition of these renewable energy sources (RES) in electrical power system (EPS). The current EPS thus is being transformed into smart electrical energy network.

DERs generate electricity in the form of DC (solar PV, fuel cell) or variable AC (wind). DERs are interfaced with grid and local loads through DC-AC converters called as grid tied inverters (GTI). Inverter control in converter coupled generation (CCG) technology decides behaviour of RES with grid. Power system inertia plays vital role in system stability during disturbances. In conventional system, synchronous generators are contributors of this inertia.

Higher penetration of renewable energy sources is displacing proportion of traditional generation in Indian grid. RES characterised by either very low or no inertia can not contribute to system stability and dynamic performance similar to SGs. Thus back down of synchronous generators (SGs) will ultimately result into loss of system inertia and high frequency oscillations. As a solution to this problem, inertia can be added virtually in power system with short term energy storage and suitable control mechanism for converter. Energy storage devices can be used to compensate reduced inertia of power system due to higher penetration of RES. This compensation is called as virtual inertia.

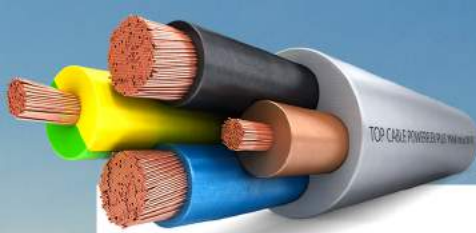
TECHNICAL ARTICLE

Virtual Synchronous Machine: Inertia Contributor to Future

With emulation of rotational inertia, stability problems at system level can be mitigated. In a nutshell, inverters lack properties of conventional SG like power compensating effect due to rotor inertia and inherent damping. The same grid support may be obtained from inverters if they are operated in a manner to behave as SG. This may be achieved by a proper control mechanism and short term energy storage. Such an inverter behaving as SG may be thus called as “virtual synchronous generator (VSG)”. This may be the basis for future grids with 100% renewable in India.

VSG concept was demonstrated first in the VSYNC project started in 2007 under the 6th EU research framework program. Inertia emulation technologies like Virtual Synchronous Machine (VSM) are also being entitled in literatures as Synchronverter, Generator Emulation Control (GEC), Swing Equation Based Inertial Response (SEBIR) and Inductverter. Synchronverter is based on detailed modelling of synchronous machine. It does not depend on tracking of currents and voltages. GEC is proposed technology for embedding load following functions in solar PV. SEBIR technique is implemented with PLL synchronised dq axis- frame controllers. Inductverters are PLL-Less converters with emulated inertia capability.

Commercialization of VSM technology is being done by Dr. Qing-Chang Zhong and his team with the vision of making worldwide power system stable, reliable and sustainable. The start-up name is Syndem LLC. It is a Chicago-based and pioneering the development of technologies that empower all power electronics-interfaced suppliers and loads to behave like virtual synchronous machines. (website ---syndem.com).



ALUMNI SUCCESS STORIES



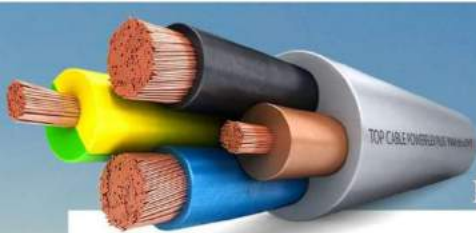
Kiran Pal Sagoo
MS in Industrial Design and Engineering.
Working as Senior Designer – “Advanced Design
& UX”– BSH Design Studio,
Munich at the cusp of Design and Technology.
Achievement- 11 patents

Being the first batch was very special. Our batch was a funny mix of people from all over the country, which made our department more interesting.

We had small but very talented and dedicated professors who did their best to impart knowledge. Who always encouraged to explore and go beyond academics. Professors were also instrumental in building the foundation of our department including knowledge building, labs etc. and made sure that our first batch will be as successful as other departments with lot of history.

Even though we were electrical department the exposure to different fields such as electronics and computer science was encouraged. This led me to enrol at small computer institute to increase my knowledge and apply that knowledge back to my projects. The fact that I was exploring different fields with encouragement from our department made me a holistic engineer, where I could combine knowledge of different fields to solve a problem or provide a creative solution.

Title	Publication Number	Publication Date
Method of providing service for user search, and apparatus, server, and system for the same	US2017097998 (A1)	06/04/2017
Systems and methods for rapid qualification of products created by additive manufacturing processes with doped materials	WO2015095074 (A1)	25/06/2015
Apparatus and method of wirelessly sharing energy by an inductive method	EP2945256 (A3); EP2945256 (A2)	18/11/2015
Apparatus and method for making digital collage	KR101537331 (B1) KR20140021802 (A)	20/02/2014
Galley unit and galley monument	US2013181587 (A1)	18/07/2013
Galley unit and galley monument	JP2013126540 (A)	27/06/2013
Apparatus and method for searching media data	CN101849363 (B) CN101849363 (A)	29/09/2010



System, Methods and Media for Providing Selectable Video Using Scalable Video Coding.	US2010008416 (A1); US9532001 (B2)	14/01/2010
Method and apparatus for selecting recommendation songs for user for music reproducing device	KR101410928 (B1); KR20090012004 (A)	02/02/2009
Apparatus and Methods for synchronizing virtual character with music and sharing it through xml based language	KR20090002292 (A)	09/01/2009
Apparatus and method for making digital collage	KR20090000577 (A); KR101537329 (B1)	08/01/2009

INDUSTRIAL VISITS

S. E. Electrical Engineering

Sr. No.	Subject	Name of Industry	Date
1	Electrical Measurements & Instrumentation	Motwane Ltd. Nashik	23/07/2015
2	Material Science	BEICO Industries Pvt. Ltd.	20/09/2015
3	Power Generation Technology	Wind World India Pvt Ltd.	25/09/2016
4	Power Generation Technology	Enercon India Pvt. Ltd.	25/09/2015
5	Electrical Measurement & Instrumentation	The Motwane Manufacturing Comp. Pvt. Ltd.	28/09/2015
6	Analog & Digital Electronics	S. P. Electronics, Nashik	30/09/2015

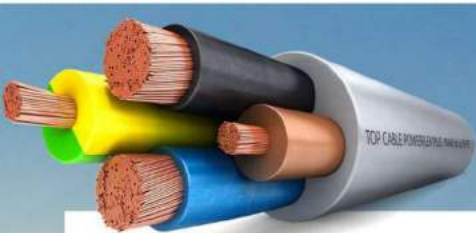


T. E. Electrical Engineering

Sr. No.	Subject	Name of Industry	Date
1	Electrical Machines-II	Traction Machine Workshop, Indian Railway, Nashik Road	6 - 7/08/2015
2	Electrical Installation Maintenance & Testing	132 kV Substation, MSETCL, Takali, Nashik	03/09/2015
3	Power Electronics	Delta UPS, Satpur, Nashik	07/09/2015
4	Power Electronics	Delta UPS, Satpur, Nashik	08/09/2015
5	Electrical Installation Maintenance & Testing	132 kV Substation, MSETCL, Takali, Nashik	15/09/2015
6	Advanced Microcontroller and its Applications	Visionary Technology, MIDC, Satpur	22/09/2015
7	Power Electronics	±500 kV HVDC Link, MSETCL, Padghe	28/09/2015
8	Electrical Machines-II	Traction Machine Workshop, Indian Railway, Nashik Road	29/09/2015

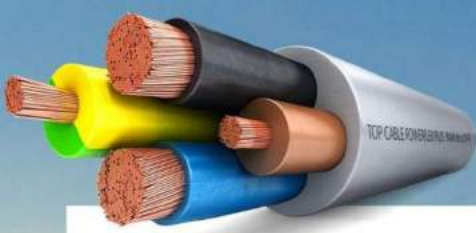
B. E. Electrical Engineering

Sr. No.	Subject	Name of Industry	Date
1	Renewable Energy	ENERCON-Pachpatta	04/09/2015
2	PLC & SCADA Applications	220 kV OCR, EHV Substation, MSETCL, Eklahare, Nashik	04/09/2015
3	Control System – II and PLC & SCADA Applications	Thyssenkrupp Electric Steel India Pvt. Ltd. Gonde MIDC, Dist. Nashik	10/09/2015
4	Control System – II and PLC & SCADA Applications	Thyssenkrupp Engine Component India Pvt. Ltd. Gonde MIDC, Dist. Nashik	10/09/2015
5	Power Quality	Times of India, Airoli, New Mumbai	15/09/2015
6	Power Quality	Times of India, Airoli, New Mumbai	25/09/2015
7	Power System Operation and Control	Load Dispatch Center (MSLDC), Kalwa, Navi Mumbai	29/09/2015
8	Power System Operation and Control	Load Dispatch Center (MSLDC), Kalwa, Navi Mumbai	30/09/2015
9	EHV AC Transmission	400 kV Receiving Substation (O&M) Dn. MSETCL, Babhaleshwar	01/10/2015
10	Introduction to Electrical Transportation Systems	Mahindra & Mahindra Ltd. MIDC, Satpur, Nashik	05/10/2015



EXPERT LECTURES

Sr. No.	Name of Expert Person	Industry (or) Organization Name	Topic
1	Ms. Kanchan Mandanekar	Step-Up Training Solutions, Nashik	Test for Career Clarity
2	Prof. Dr. M. Deol	Electrical Department, IIT Roorkee	Temperature Measurement for 200MW Turbo Generator
3	Mr. Sudhir Patil	TDK (EPCOS), Nashik	Basics of Capacitor
4	Mr. Chetan Dhake, Mr. Chainsesh Patil, Mr. Hemant	Schneider Electric, Nashik	L. T. Distribution
5	Mr. Kedar Gangopadhye	TDK (EPCOS), Nashik	Active Harmonic Filter
6	Dr. Manoj Mandlik	Crompton Greaves Ltd., Nashik	Basics of Transformer
7	Mr. John Yesuraj	Crompton Greaves Ltd., Nashik	Project Guidance and Selection
8	Mr. Raghunath Shukla	Crompton Greaves Ltd., Nashik	M. V. Switchgear
9	Mr. Ganesh Bhavsar	Crompton Greaves Ltd., Nashik	Relay Protection
10	Mr. Amrish Gokhale	L&T, Nashik	Demonstration of L&T Products and Automation
11	Mr. Dhiraj Methikar	General Maintenance Company, Ambad, Nashik	Battery and UPS
12	Mr. Chetan Dhake	Schneider Electric, Nashik	L. V. Distribution
13	Mr. Kedar Gangopadhye		Active Harmonic Filter
14	Mr. Manoj Mandlik	Crompton Greaves Ltd., Nashik	Basics of Transformer
15	Mr. Sudhir Patil	EPCOS-TDK, Satpur, Nashik	Power Capacitors
16	Mr. Chainsesh Patil	Schneider Electric, Nashik	Fundamentals of Harmonics
17	Mr. J. P. Shah	KKWIEER	Electric Vehicles
18	Mr. John Yeshraj	Crompton Greaves Ltd., Nashik	Project Guidance
19	Mr. Chainsesh Patil	Schneider Electric, Nashik	Energy Management
20	Mr. Kaushal Kansara	L&T Ltd., Nashik	Switchgear Product Life Assessment

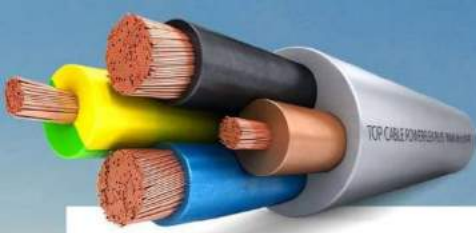


EVENTS ORGANISED BY DEPARTMENT

Sr. No.	Title of Event	Dates of Event	Total No. of Participants
1	Training Programme on "MATLAB Applications in Electrical Engineering"	3 rd Aug. 2015	34
2	Workshop on "iSENSOBOTz-PIC18"	23 rd and 24 th Sep. 2015	47

EVENTS ATTENDED BY STUDENTS

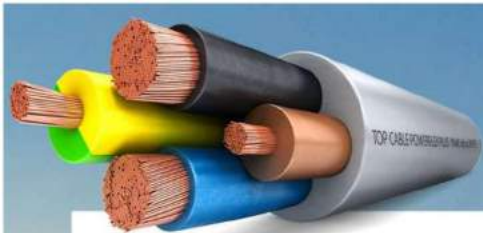
Sr. No.	Name of Student	Title of Event	Name of event	Organizing Institute	Date	Prize / Award	Level
1	Dube Bina	NICE 2k15	Poster	IET Mumbai Local Network, Mumbai	20/09/2015	Second	State
2	Gawande Kanan	NICE 2k15	Poster	IET Mumbai Local Network, Mumbai	20/09/2015	Second	State
3	Nandurdikar Pooja	NICE 2k15	Poster	IET Mumbai Local Network, Mumbai	20/09/2015	Second	State
4	More Shweta D.	IGNITE	Pirates of Web	MET Inst. of Engg. Nashik	21-22/09/2015	Participation	District
5	More Shweta D.	IGNITE	Industrial Building	MET Inst. of Engg. BKC, Nashik	21-22/09/2015	Participation	District
6	Saxsena Abhishek	EDP-Solar Energy	Entrepreneurship Development	TRA International, Nashik (NIESBD, Delhi)	12-13/12/2015	Participation	National
7	Ishan Gujrathi	Idol Collection	Godavari Pollution Control	Sanvardhan, Nashik	Sept. 2015	Participation	District
8	Thakare Pooja B.	EMF-2015	Tech-Google	MET Inst. of Engg. Nashik	21-22/09/2015	Participation	State
9	More Shweta D.	EMF-2015	Tech-Google	MET Inst. of Engg. Nashik	21-22/09/2015	Participation	State
10	Roshan Kumar	World Space Week-2015	Model Making	Nashik Municipal Corporation, Nashik	04-10/10/2015	Participation	District



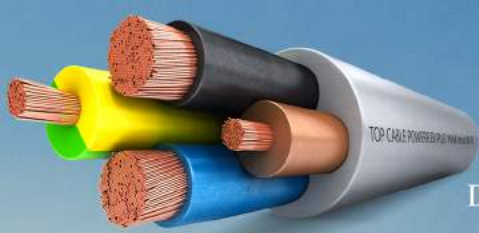
11	Chavan Divyani S.	Ganesh Murti Collection	Godavari Pollution Control	Swapnapurti Foundation Nashik	27/09/2015	Participation	Regional
12	Rohan Pandurang Patil	NRC India	Isensoboty- PIC 18	IIT Madras	23/09/2015	Participation	International
13	Hemangi Kulthe	NRC India	Isensoboty- PIC 18	IIT Madras	23/09/2015	Participation	International
14	Ashwini Kulthe	Local Level Competition	Local Level Competition	IET	12/08/2015	Participation	National
15	Ashwini Puranik	NRC India	Isensoboty- PIC 18	IIT Madras	23/09/2015	Participation	International

EVENTS ATTENDED BY FACULTY

Sr. No.	Name	Title	Organized by	Date	Duration
1	A. M. Jain	Solar Energy (EDP)	National Institute of Entrepreneurship and small Business Development (UP)	12-13 December 2015	2 Day
2	S. S. Khairnar	IET FDP: Energy & Power Quality Management and High Voltage Engineering	GES's R.H. Sapat College of Engineering, Management Studies & Research, Nashik	22-24 August, 2015	3 day
3	N. N. Jangle	IET FDP: Energy & Power Quality Management and High Voltage Engineering	GES's R.H. Sapat College of Engineering, Management Studies & Research, Nashik	22-24 August, 2015	3 day
4	M. R. Rade	IET FDP: Energy & Power Quality Management and High Voltage Engineering	GES's R.H. Sapat College of Engineering, Management Studies & Research, Nashik	22-24 August, 2015	3 day
5	R. A. Ahire	IET FDP: Energy & Power Quality Management and High Voltage Engineering	GES's R.H. Sapat College of Engineering, Management Studies & Research, Nashik	22-24 August, 2015	3 day
6	S. A. Sagare	IET FDP: Energy & Power Quality Management and High Voltage Engineering	GES's R.H. Sapat College of Engineering, Management Studies & Research, Nashik	22-24 August, 2015	3 day
7	D. Y. Dubey	IET FDP: Energy & Power Quality Management and High Voltage Engineering	GES's R.H. Sapat College of Engineering, Management Studies & Research, Nashik	22-24 August, 2015	3 day
8	A. M. Jain	STTP on "Renewable Energy, Opportunities and Challenges"	Sinhgad Institute of Technology, Lonavala	26-30 October 2015	5 days



9	P. M. Sonwane	TEQIP-II Sponsored STTP on," Exploring 32 bit Microcontroller for Power Electronics Applications"	SVNIT, Surat	21 -25 December 2015	1 Week
10	R. K. Munje	STTP on "Renewable Energy, Opportunities and Challenges"	Sinhgad Institute of Technology, Lonavala	26-30 October 2015	5 days
11	N. N. Jangle	STTP on "Renewable Energy, Opportunities and Challenges"	Sinhgad Institute of Technology, Lonavala	26-30 October 2015	5 days
12	S. K. Shinde	TEQIP-II Sponsored STTP on," Implementation of Power Electronics System".	SVNIT, Surat	7th-11th December 2015	1 Week
13	T. N. Date	STTP on "Renewable Energy, Opportunities and Challenges"	Sinhgad Institute of Technology, Lonavala	26-30 October 2015	5 days
14	T. N. Date	Sensitivity analysis and failure mode analysis of ASD for RMS voltage variations	Dr. D.Y. Patil Institute of Engg. management & Research Akurdi Pune	06th July,2015	1day
15	G. N. Jadhav	Energy and Power Quality Management and High voltage engineering	IET Nashik Local Network at R.H. Sapat College of Engineering, Nashik	22-24 Aug 2015	3 day
16	R. S. Mane	Research Trends in Control and Signal Processing	Dept of Instrumentation Engg, RAIT Nerul.	17-19 July 2015	3 day
17	P. V. Gautam	STTP on "Renewable Energy, Opportunities and Challenges"	Sinhgad Institute of Technology, Lonavala	26-30 October 2015	1 Week



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Department of Electrical Engineering

2) Mr. Deshmukh Kartik Vijay

President, IET (UK) Young Member Section, Department of
Electrical Engineering

This newsletter has covered all the events which organized in and by Electrical Engineering Department, K. K. Wagh Institute of Engineering Education & Research, Nashik. We are here going to invite suggestions, feedback and query for improvement in future newsletters, if any, with the warm regards.