



TEQIP III

Sponsored

**ONLINE INTERNATIONAL
SHORT TERM COURSE**

On

**“MICROGRID OPPORTUNITY:
RENEWABLE ENERGY
RESOURCES AND BUILDINGS”**

16th-20th June 2020



Organized by

Department of Electrical Engineering
(NBA Accredited)
Dayalbagh Educational Institute
(Deemed to be University, NAAC A+),
Agra-282005

PATRON

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About DEI and Dayalbagh

The Dayalbagh Educational Institute is located on the outskirts of Agra in the tranquil surroundings of Dayalbagh, a self-contained ashram, and one of six designated “eco-villages” in the country. The residents of Dayalbagh lead an active, disciplined and co-operative community life dedicated to service, conforming to the high spiritual ideals of their faith. Nestled among lush green fields, the DEI campus provides an excellent ambience and academic setting. This, along with its mission objective of value-based education, undoubtedly contributes to the strength of the Institute's unique educational system.

About Agra

Agra, the city of the Taj Mahal, has a heritage and culture that dates back to the Mughal era. Situated on the banks of the river Yamuna, it is home to several world famous Heritage monuments which include the Taj Mahal, Red Fort, Itmad-Ud-Daulah and the tomb of Emperor Akbar at Sikandra. The city of Fatehpur Sikri (a UNESCO World Heritage City) is situated 45 km from Agra. Agra is also famous for its leather goods, handicrafts, zari, zardozi, marble and stone carving, and inlay work. About a 3½ hour drive from New Delhi, it is also well connected by rail, major stations being Agra Cantt., Agra Fort and Raja Ki Mandi (nearest to Dayalbagh).

The weather in Agra in March is pleasant, with a maximum of 25°C and minimum of about 20°C.



(Faculty of Engineering at DEI, Agra)

About Programme

Recently there has been growing interest in renewable energy and it has become one of the primary sources of energy generation. The biggest concern in the field of renewable energy are power generation depending on natural resources that are uncontrollable by humans. Due to uncontrollable and uncertainty in energy production in renewable energy technologies is making integration more complex. Also, there are several technical challenges with renewable energy resources (RES), such as availability of power, power quality issues, resource location, information barrier and cost issues. All these challenges with RES can be addressed by microgrid system due to its ability during utility grid disturbances, to separate and isolate itself from utility seamlessly with little or no disruption to the load within the microgrid.

Due to the recent developments in power electronics, the proliferation of DC nature electrical loads, renewable energy sources and energy storage devices, research focused on both the system and component levels of modelling, control and stability of structured microgrids. New high-efficiency topologies and protections are also key nontrivial issues when developing practical microgrids. For this reason, the objective of this course is to disseminate the recent technological advancement in microgrids and distribution systems both from academia and industry. The solutions using advanced technologies/ methodologies will also be discussed.

Expert/Resource person

Resource Persons are experts from the Internationally renowned Universities and Industrial organization and consultant as detailed below:

1. Dr. Josep M. Guerrero | University of Aalborg, Denmark
2. Dr. Haiyu Li | University of Manchester UK
3. Dr. Alireza Soroudi | University of Dublin, Ireland
4. Dr. Ashok Jhunjhunwala | IIT Madras
5. Dr. S.P Das | IIT Kanpur
6. Dr. S.N Singh | MMMUT Gorakhpur
7. Dr. S.P. Singh | IIT Roorkee
8. Dr. R.P. Saini | IIT Roorkee
9. Dr. Ajay Kumar Saxena | DEI Agra
10. Dr. D.Bhagwan Das | DEI Agra
11. Expert | OPAL RT
12. Expert | Mathworks

Target Audience

The course is open for faculty/students of engineering colleges, practicing engineers and policy maker from utility, industry and other organizations.

Registration Fee

There is no registration fees for the course. Seats are limited. Registrations will be considered on first cum first serve basis.

Registration Link

<https://forms.gle/hs1MUzKPUxDpF5XY8>

Last date of registration: 15.06.2020

Registration Form

Short Term Course

on

“Microgrid Opportunity: Renewable Energy Resources and Buildings”

June16-20, 2020

Sponsored by



Name:.....

Designation:.....

Company/Organization:.....

Address:.....

Phone:.....

Fax:.....

E-mail:.....

Highest Academic Qualification.....

Specialization:

DECLARATION

I do hereby agree to abide by the rules and regulations of the FDP.

Place:

Date:.....

.....
Signature of the Applicant

INTERNATIONAL SHORT-TERM COURSE

On

“MICROGRID OPPORTUNITY: RENEWABLE ENERGY RESOURCES AND BUILDINGS”

16th-20th June 2020

Introduction

Recently there has been growing interest in renewable energy and it has become one of the primary sources of energy generation. The biggest concern in the field of renewable energy are power generation depending on natural resources that are uncontrollable by humans. Due to uncontrollable and uncertainty in energy production in renewable energy technologies is making integration more complex. Also, there are several technical challenges with renewable energy resources (RES), such as availability of power, power quality issues, resource location, information barrier and cost issues. All these challenges with RES can be addressed by microgrid system due to its ability during utility grid disturbances, to separate and isolate itself from utility seamlessly with little or no disruption to the load within the microgrid.

Due to the recent developments in power electronics, the proliferation of DC nature electrical loads, renewable energy sources and energy storage devices, research focused on both the system and component levels of modelling, control and stability of structured microgrids. New high-efficiency topologies and protections are also key nontrivial issues when developing practical microgrids. For this reason, the objective of this course is to disseminate the recent technological advancement in microgrids and distribution systems both from academia and industry. The solutions using advanced technologies/methodologies will also be discussed.



Scope of The Course

The objective of this short-term course is to enhance the knowledge of the participants in the area of integration of microgrids with renewable energy resources and explore the next generation distribution networks to empower future Low-Carbon emission.

This is a unique course where the eminent international and national level speakers from various quarters of academia, industries, policy maker and governing bodies will discuss in-depth, high-level and strategic issues relating to the integration of renewable energy with microgrids. The course offers the practical strategies that energy generators, project developers, and grid operators can implement to overcome obstacles posed by local planning schemes and regulations. The course will provide a platform to an in-depth discussion on the various challenges and their possible remedies which will benefit participants from academic and R&D institutions, engineers of utilities and policy makers.

Successful integration of microgrids with renewable energy resources, calls for diversified technologies and expertise from various disciplines. A course with focus on researches such as the one proposed will enrich the technological repertoire of the research

community in the field of renewable resources as well as for the country. As the leading researchers and policy makers from all around the world are being invited, the course is expected to result in a well-defined road-map for the development and integration of microgrids with renewable resources in India.

Target Audience

The course is open for faculty/students of engineering colleges, practicing engineers and policy maker from utility, industry and other organizations.

Keynote Speakers



SN Singh (SM'02, F'17) obtained his M. Tech. and Ph. D. in Electrical Engineering from Indian Institute of Technology Kanpur, in 1989 and 1995. Presently, he is Vice-Chancellor, Madan Mohan

Malviya University of Technology Gorakhpur and leave from Professor (HAG), Department of Electrical Engineering, Indian Institute of Technology Kanpur, India. Before joining IIT Kanpur as Associate Professor, Dr Singh worked with the UP State Electricity Board as Assistant Engineer from 1988 to 1996, with the Rookree University (now IIT Roorkee) as Assistant Professor from 1996 to 2000 and with Asian Institute of Technology, Bangkok, Thailand as Assistant Professor from 2001 to 2002. Dr Singh received several awards including Young Engineer Award 2000 of Indian National Academy of Engineering (INAE), Khosla Research Award of IIT Roorkee, and Young Engineer Award of CBIP New Delhi (India), 1996. Prof Singh is receipt of Humboldt Fellowship of Germany (2005, 2007) and Otto-monsted Fellowship of Denmark (2009-10). Prof

Singh became first Asian to receive 2013 IEEE Educational Activity Board Meritorious Achievement Award in Continuing Education. He is also recipients of INAE Outstanding Teacher Award 2016 and IEEE R10 region (Asia-Pacific) Outstanding Volunteer Award 2016. His research interests include power system restructuring, FACTS, power system optimization & control, security analysis, wind power, etc. Prof Singh has published more than 440 papers in International/national journals/conferences and supervised 29 PhD (11 PhD under progress). He has also written two books one on Electric Power Generation, Transmission and Distribution and second is Basic Electrical Engineering, published by PHI, India. Prof Singh has completed three dozen of projects in India and abroad. Prof Singh was Chairman, IEEE UP Section for 2013 & 2014, and presently, he is IEEE Region 10 (Asia-Pacific) Conference and Technical Seminar Coordinator 2015-18. Prof Singh is also India Council Chairman-Elect 2017 of IEEE, the largest professional body in engineering. Prof. Singh is Fellow of The Institution of Elect. & Electronics Engineers, Indian National Academy of Engineering- (FNAE), The Institution of Engineering and Technology, UK-(FIET), The Institution of Engineers (India)- (FIE), The Institution of Electronics & Telecom. Engineers -(FIETE), Life Member of Indian Society of Continuing Education Engineering -(ISCEE).



Josep M. Guerrero received the B.S. degree in telecommunications engineering, the M.S. degree in electronics engineering, and the Ph.D. degree in power electronics from the Technical University of Catalonia, Barcelona, in 1997, 2000 and 2003, respectively. Since 2011, he has been a Full Professor with the Department of Energy Technology, Aalborg University, Denmark, where he is responsible for the Microgrid Research Program.

From 2012 he is a guest Professor at the Chinese Academy of Science and the Nanjing University of Aeronautics and Astronautics; from 2014 he is chair Professor in Shandong University; from 2015 he is a distinguished guest Professor in Hunan University; and from 2016 he is a visiting professor fellow at Aston University, UK, and a guest Professor at the Nanjing University of Posts and Telecommunications. He was an Associate Professor with the Department of Automatic Control Systems and Computer Engineering, Technical University of Catalonia, teaching courses on digital signal processing, field-programmable gate arrays, microprocessors, and control of renewable energy. In 2004, he was responsible for the Renewable Energy Laboratory, Escola Industrial de Barcelona. His research interests is oriented to different microgrid aspects, including power electronics, distributed energy-storage systems, hierarchical and cooperative control, energy management systems, and optimization of microgrids and islanded mini-grids. Prof. Guerrero is an Associate Editor for the IEEE Transaction on Power Electronics, the IEEE Transaction on Industrial Electronics, and the IEEE Industrial Electronics Magazine. He has been Guest Editor of the IEEE Transaction on Industrial Electronics Special Issues: Power Electronics for Wind Energy Conversion and Power Electronics for Microgrids, and the IEEE Transaction on Industrial Electronics Special Sections: Uninterruptible Power Supplies systems, Renewable Energy Systems, Distributed Generation and Microgrids, and Industrial Applications and Implementation Issues of the Kalman Filter. He was the chair of the Renewable Energy Systems Technical Committee of the IEEE Industrial Electronics Society.



Dr. R.P. Saini is working as Professor in Department of Hydro and Renewable Energy of IIT Roorkee. He obtained his Bachelor of Engineering in Mechanical from University of Mysore in 1982, Master of Engineering and Ph.D. in Mechanical Engineering from IIT Roorkee in the years of 1989 and 1996 respectively. He has research and teaching experience of more than 30 years and has been working in the research areas of renewable energy especially Hydro Power, Solar and

Wind. He is also working as MNRE Chair Professor (Renewable Energy) for the Ministry of New and Renewable Energy, Government of India. He has published more than 320 Research Papers in International/National Journals and Seminars/Conferences, 1 Book and 2 (two) Manuals. 26(twenty six) Ph.D. thesis have been completed and another 17 (seventeen) are in progress under his supervision. He has guided 142 (one hundred forty two) M.Tech. dissertations and 66 (sixty six) M.Tech. projects. Two patents on Micro Hydro Turbines have been granted from his research. More than 268 (Two hundred sixty eight) Consultancy and Sponsored R&D projects in the area of hydro power and other renewable energy have been handled by him. He has also co-ordinated about 35 International/National training courses. He has visited more than 22 countries for different activities in the area of hydro power and other renewable energy. He also undertook administrative responsibilities at Institute level from time to time including Head of the Department. He has received several awards including “Best Teacher award of IIT Roorkee” in 2012, “Bharat Jyoti Award” by India International Friendship Society in 2015. He was also adjudged as “star performer of IIT Roorkee” in 2003-04 and 2004-05. He is member of several societies including Fellow of Institute of Engineers India.



S.P. Singh received the B.Sc degree from AMU Aligarh in 1978 and M.E and Ph.D degree from Indian Institute of Technology Roorkee in 1980 and 1994, respectively. He is currently working as a Professor with

Department of Electrical Engineering at Indian Institute of Technology Roorkee. His research interest includes, Power Electronics and Electric Drives, Electric Drives, Power Electronic Converters, Renewable Energy Systems, Variable Speed Generators. He is the Fellow of the Institution of Engineers (India). Dr. Singh has completed/ongoing over 9 research and 11 consultancy projects.

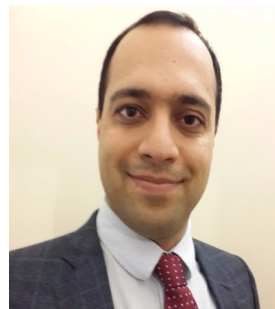
Haiyu Li (M'99) received the Ph.D. degree in power system protection and automation from the University of Bath, Bath, U.K., in 1994. He is currently a Reader with the School of Electrical and Electronic Engineering, University of Manchester (formerly, the University of Manchester Institute of



Science and Technology), Manchester, U.K. His research interests include power system automation and communication, and digital substation architecture designs and applications. Dr Haiyu Li (BSc, MSc, PhD, CEng, MIET, MIEEE) is a Reader and an expert of "Power Systems Digitization and Automation" with emphasis on the applied sciences for the development of more flexible and sustainable electric power systems or "Smart Grid" for the future. His previous industry career included 5 years (1985-1989) research and development experience in the First Research Institute of the Ministry of Information Industry in Shanghai, China, and 2 years (3/1998- 1999) R&D experience in AREVA T&D Power System Protection and Control Ltd (formerly ALSTOM), Stafford, UK.

Dr Li's recent research activities mainly involve (i) "Active distribution network voltage management systems" and (ii) "IEC61850 digital substation and intelligent systems". By proposing flexible control of tap changers of distribution transformers to provide alternative frequency and reactive power ancillary services to transmission networks, new business opportunities are created for UK distribution network operators. Based on this work, his journal paper won IEEE Power Energy Society Prize Paper in 2017. The generalization of the Customer Load Active System Service (CLASS) method in the paper has generated a positive impact on the academic research in this area worldwide. The economic benefit by deploying

CLASS technology is evaluated as an expected £100m over 25 years to UK north west customers and £300m over 25 years to the UK customers. His research in the IEC61850 digital substation automation systems area has also started to yield high impact on the UK power industry. He helped UK transmission system operators including National Grid, Scottish Power Energy Networks and Scottish Southern Energy to roll out digital substation automation technologies and make next generation substations more flexible and sustainable. The Virtual Site Acceptance Testing and Training (VSATT) project has successfully established the VSATT test platform at Manchester and demonstrated how multiple vendor's equipment by 5 key suppliers can achieve interoperability on a 400kV full digital substation in a virtual real-time simulation environment. In addition, he helped Scottish Power Energy Networks to win £11m Ofgem FITNESS project as the academic lead. FITNESS project team won the "Sustainable Development Award" category in 2017 Scottish Green Energy Awards. Currently he has started a NG funded project titled "IEC61850 Cyber Resilient Electrical Substation Technologies (CREST)".



Dr. Alireza Soroudi is currently an assistant professor at University College Dublin, Ireland. He is the author of the book "Power System Optimization Modelling in GAMS" in 2017. His research interests include optimization techniques in power system operation and planning, risk and uncertainty modelling of integrated energy systems. He is a member of the ESIPP project at UCD. He received the prestigious ENRE Young Researcher Prize at the INFORMS. He is a senior member of IEEE and the associate editor of IET - Generation Transmission & Distribution journal.

Registration

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Last date of registration: 15.06.2020

Contact Us (Coordinators)

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Department of Electrical Engineering

Faculty of Engineering

Dayalbagh Educational Institute (To be Deemed University), Agra

Dayalbagh | Agra | Uttar Pradesh -282005 | website:

www.dei.ac.in

Programme

Shared Soon!

About DEI and Dayalbagh

The Dayalbagh Educational Institute (DEI) was founded in 1917 as a co-educational middle school, the Radhasoami Educational Institute, by the August founder of Dayalbagh Sir Anand Sarup Ji. The Dayalbagh Educational Institute is located on the outskirts of Agra in the tranquil surroundings of Dayalbagh, a self-contained ashram, and one of six designated "eco-villages" in the country. The residents of Dayalbagh lead an active, disciplined and co-operative community life dedicated to service,

conforming to the high spiritual ideals of their faith. Nestled among lush green fields, the DEI campus provides an excellent ambience and academic setting. This, along with its mission objective of value-based education, undoubtedly contributes to the strength of the Institute's unique educational system. The mission objective of DEI education is to evolve a complete person through physical, intellectual, emotional and ethical integration. The Policy, which is rooted in Indian culture, philosophy and spirituality, outlines how this may be achieved via its Aims & Objectives, Educational and Organizational structures. A unique aspect of DEI is the integration of education from pre-nursery to Ph.D. on the one side, and skilling to entrepreneurship as part of formal education on the other. The opportunity for mobility from general to skill-based education and vice versa through well-defined pathways has spurred creativity, frugal innovation and an entrepreneurial mindset in the students. **The DEI is a NAAC A+ Institute and is among one of the top 100 Universities in India (NIRF-2020 ranking).**

