

One day Webinar

On

“Design of Protection Schemes for Ultra Mega Solar Power Plants”

June 30, 2022



आयोजक / Organised By



विद्युत प्रणाली प्रभाग (पीएसडी)
Power Systems Division (PSD)

केंद्रीय विद्युत अनुसंधान संस्थान / Central Power Research Institute
(भारत सरकार की सोसाइटी, विद्युत मंत्रालय) / (Govt. of India Society, Ministry of Power)
प्रोफेसर सर सी. वी. रामन रोड, पो बा सं: 8066 / Prof Sir C V Raman Road, P.B.No: 8066
सदाशिवनगर डाकघर / Sadashivanagar Post Office,
बेंगलूरु / Bengaluru 560 080, कर्नाटक, भारत / Karnataka, India
वेब / Web: www.cpri.res.in

About the Online Webinar training:

Renewable Energy (RE) usage is growing exponentially all over the world due to increased concern for climate change and environmental preservation. The central and state governments of India are also stepping in and encouraging the widespread installation of renewable energy in a continuous manner. The RE-rich states are now equipped with dedicated control centers, called Renewable Energy Management Centers (REMCs), for monitoring and control. The past, present and future projects in India involve either standalone solar power plants or hybrid wind-solar power plants. The fault current contribution from these RE plants depends upon the technology, resulting in various impacts on the protection schemes. Therefore, it becomes necessary to evaluate the protection schemes of solar power plants and recently evolving hybrid wind-solar plants. Further, real-time monitoring of operational Solar power plants will be very helpful for solar power owners and utilities to smoothly handle the steady-state and dynamic conditions of the grid.

The following topics will be covered in the webinar:

- **Ultra-Mega Solar Power Plants Overview**
- **Renewable Energies Impacts on Protection Schemes**
- **Solar Power Interconnecting to Grid**
- **Distance Protection Schemes**
- **Bus bar Protection Schemes**
- **Transformer Protection Schemes**
- **Relay Coordination Schemes**
- **Backup Protection Schemes**
- **Assessment of Protection Schemes**
- **Synchrophasor/PMU Enabled WAMs for Monitoring**

Pre-requisites

The Participant should have good internet connection and good quality headphone/speaker set with Laptop/Desktop. The participant should also have notepad/pen to note down important points.

Who should attend?

The webinar is aimed at Engineers, Managers responsible for the operation and maintenance of Renewable Energy Systems, Distribution Systems, Transco's, Discoms, Transmission & Distribution Designers, Planners, Consultants, Officers of Power Utilities/Corporations, State Govt./SEBs, Substation Managers, Substation Engineers, System operators, Substation Designers, Policy makers, Entrepreneurs, Energy Planners, Renewable Energy Providers, Private Entrepreneurs, Manufacturers, Research/Academic Institutions and Financial Institutions, etc.

Registration

Sl. no	Institutions	Fee per person per day
1	State Power utilities/Government agencies	
	up to 5 participants	Rs 1500+GST
	5-10 participants	Rs 1300+GST
	10-30 participants	Rs 1200+GST
2	Private Sector organizations	
	up to 5 participants	Rs 2000+GST
	5-10 participants	Rs 1500+GST
	10-30 participants	Rs 1200+GST
3	Students of educational institutions	Rs 500+GST
4	Faculty Members of educational institutions	Rs 1000+GST

Registration form, a part of this brochure, complete in all respect shall be sent to the webinar Coordinator along with the registration fee and participants from international may transfer the fee via Swift code No.: SBININBB425, SBI A/C No. 10270577483, and participant from National may transfer fee to SBI A/C No.10356553310, IFSC code: SBIN0002215. Beneficiary Name: SBI, IISc Branch, Bangalore under intimation to the webinar coordinators.

Kindly use separate form for each participant, Downloaded/ Photo copies of Registration form are acceptable.

The Registration fee includes training material-soft copy and Digitally signed Electronic/Soft Copy certificate will be provide to the participants.

Power Systems Division (PSD)

Power Systems Division with its state-of-the-art facilities and latest software tools offers a wide range of power system simulation services, including real time performance analysis of various types of controllers such as FACTS, HVDC, SVC and protection relays. It has been conducting power system studies for the past two decades for its own needs and at the request of utilities and manufacturers. To carry out such studies the division possesses Real Time Digital Simulator (RTDS), RT Lab and various Power System Analysis Software Packages. Power Systems Division has carried out for the first time in the country the pilot project on “Protection system study and Protection audit” of selected DTL transmission system. Furthermore the Division is accredited by ISO: 9001-2015.

The Relay Testing Laboratory (RTL) is equipped with sophisticated Computerized Relay testing systems for testing of Protection relay for all its characteristics/functions meeting its accuracy requirements as per IS:3231 series and IEC:60255 series of standards. The laboratory conforms to ISO/IEC 17025-2017 requirements. Field-testing of protection relays is also carried out for major power stations and utilities and also undertakes pre-dispatch Third Party Inspection (TPI) on Relay and Control panel.

Central Power Research Institute, Bangalore has established **country's first** Phasor Measurement Unit (PMU) test facility. Fluke make 6135A/PMUCAL Phasor Measurement Unit Calibration system is a automated system and has traceable solution for PMU testing and Calibration. It's a unique facility for carrying out Validation/Evaluation of PMU both M-class and P-Class steady state and Dynamic conditions as per IEEE C37.118.1-2011, IEEE C37.118.1a-2014, IEEE C37.242.2013, IEEE Synchrophasor Measurement Test suite Specification-Version 2-2015 and IEC/IEEE 60255.118.1:2018.

6135A/PMUCAL at a Glance

The 6135A/PMUCAL system enables you to:

- * Calibrate and test a PMU from a client PC, either at the site of the test system or remotely over the Internet
- * Quickly set up a PMU test, Speed through automated calibration procedures
- * Provide the required static and dynamic voltage and current conditions that occur in a power distribution grid specified by the standard
- * Apply those signals to a phasor measurement unit, Capture the PMU's reported results
- * Compare those results with the original stimulus
- * Evaluate against the thresholds defined in IEEE Std C37.118.1a™-2014 & IEC/IEEE 60255-118-1:2018
- * Create test reports, graphs and calibration certificates that can be readily printed or shared electronically

CPRI'S Profile

Central Power Research Institute (CPRI) set up in 1960 by the Government of India, functions as a National organization for applied research in power sector and also serves as an Independent Laboratory for testing and certification of power equipment. CPRI is a member of STI (Short Circuit Testing Liaison) of Europe and is accredited by M/s ASTA of UK. CPRI also provides consultancy services on various facets of power sector. CPRI has expertise in the area of Simulation, Diagnostics, System Analysis and Testing. CPRI laboratories have modern equipment needed for Power system simulation, Short circuit testing, Diagnostics of equipment, Materials engineering, Seismic qualification etc. CPRI has experienced faculty in different subjects concerned to power sector with practical experience in their areas of interest, as well as extensive experience in presenting courses/seminars.

Over the period, CPRI officers have gained lot of practical knowledge concerning to testing and operational problems of the industry. CPRI is a leading provider of Training and Continuing Education to Utilities, PSUs across the country for the past 50 years. CPRI is continually setting new standards in training and continuing education from basic theoretical information to practical hands-on electrical equipment training. CPRI courses have made substantial impact on the level of training and education to India's electricity utilities, manufacturing companies, transmission and distribution companies. By upgrading the occupational skill of technical workers, CPRI training courses have improved the career path of many electrical personnel as well as contributed to an improvement in electricity efficiency, plant productivity, electrical system reliability an overall competitiveness of Indian industry.

**Registration form shall be sent by E-mail to
Dr.P.Kaliappan, PhD (NIT, Tiruchirappalli)**

Joint Director

Mobile: +91 94491 49924, Email: kaliappan@cpri.in

Power Systems Division

Central Power Research Institute

(A Govt of India Society, Ministry of Power)

Prof Sir C V Raman Road, P.B.No: 8066, Bangalore 560 080, Karnataka, India

Phone: 080 2207 2449

www.cpri.res.in

Faculty



Dr.P.Kaliappan, PhD (NIT, Tiruchirappalli), presently he is holding the post of Joint Director with Power Systems Division of Central Power Research Institute (CPRI), Bangalore, Ministry of Power, A Govt. of India Society. He has 28 years of experience working in the field of Power System Protection, Numerical Protection IEDs, Smart Grid Technology and Applications, Synchrophasor, Wide Area Measurement System (WAMs), Wide Area Monitoring, Protection and Control (WAMPAC) and Renewable Energies:Wind Farm-Solar Plant. His areas of researches are Adaptive Relaying, Computer Relaying, Protection issues in Distributed Generation and DERs, MicroGrid Protection, Assessment of compliance of both M class & P class Synchrophasor, Synchrophasor for Power system Protection and Control applications, Internet of Things (IoT) Enabled Smart Grid, Renewable Energies: Wind Farm, Solar Power and Hybrid Wind Farm-Solar Plant.

Cyber Security in Power Sector, Cyber Physical System Security for the Smart Grid, Information Security Management System for Industrial Control System, Cyber Security in Power Station, Cyber Security in SCADA System, Cyber Security Requirements for Industrial Control System, OT Cyber security, Cyber Security in Digital Substation, Cyber Security Compliance for IEDs, Cyber Security for Substation Automation, IEC 61850 Cyber Security, Cyber Security in Synchrophasor, Cyber Security in WAMs, Cyber Security in WASA, Cyber Security in WAMPAC, Cyber Security in Data and Communication system, Cyber Security in Renewable Energies, Cyber Security in Wind Farm, Cyber Security in Solar Plant, Cyber Security in MicroGrid, Cyber Security in DERs, Cyber Security in DERMs, Cyber Security in Smart Distribution System, Cyber Security in Smart Meters, Cyber Security in Advanced Metering Infrastructure, DLMS/COSEM Cyber Security, Cyber Security Standards and CEA Guidelines for Cyber Security in Power Sector.

He has organized more than 112 events including Cyber Security domain and He has also delivered around 349 expert lectures in PSU, Central, IISc, IITs, NITs and reputed academia colleges/Universities. He is a Senior member IEEE, ISA Senior Member and Fellow IE. He is also pursuing Ph.D at National Institute of Technology (NIT), Tiruchirappalli. Mobile: +91 94491 49924, Email: kaliappan@cpri.in