

# One day Online Webinar training

On

## “Cyber Physical System Security for Smart Grid”

December 11, 2020



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.in](http://www.cpri.in)

## About the Online Webinar training:

Smart Grid (SG) is a new and modern power grid, which uses the modern technological innovation and development trend in the 21st century to the efficient and reliable power transmission and distributions. SG is considered as one of the most critical infrastructures, is defined as the classical power grid augmented with a large-scale Information and Communication Technology (ICT) and Renewable Energy integration. A Cyber-attack on devices that protect power and control the power grid could result in power distribution and damaged equipment. Risks from the cyber system as well as non-conventional physical power system contingencies start to contribute to the overall grid security. Cyber security is a growing concern and a key success factor for smart grid deployment. It is therefore imperative to understand the fundamentals and engineering aspects of cyber physical mechanisms that can lead to critical failures. Based on this understanding, system designers and operators may implement robust defenses for attack detection, mitigation, and forensics to improve the grid's reliability and resilience. An understanding of security vulnerabilities and solutions in the Smart Grid and future research scope for Smart Grid security will be covered in this workshop. Ministry of Power, Govt. of India has initiated many initiatives to provide smarter, reliable and efficient power and has also enacted the policies which support the expansion of Cyber Security concerns in Smart Grid development.

The following topics will be covered in the webinar:

- **Cyber Physical System Security for Power Station (Thermal, Nuclear and Hydro)**
- **Cyber Physical System Security for Renewable Energy (RE)**
- **Cyber Security issues in Substation Automation**
- **Cyber Security issues in Advanced Metering Infrastructure (AMI)**

## 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 Planners, Consultants, Officers of Power Utilities/Corporations, State Govt./SEBs, Policy makers, Entrepreneurs, Energy Planners, Renewable Energy Providers, Private Entrepreneurs, Manufacturers, Research/Academic Institutions and Financial Institutions, etc.

## Registration

Participation Fee Details	
Organizations/Institutions	Per person/day
<b>1 State Power Utilities/Government agencies</b>	
Up to 5 Participants	Rs: 1500/-
5-15 Participants	Rs:1300/-
15-30 Participants	Rs: 1200/-
<b>2 Private Sector Organizations</b>	
Up to 5 Participants	Rs: 2000/-
5-15 Participants	Rs:1500/-
15-30 Participants	Rs: 1200/-
<b>3 Educational Institutions with Min 5 to Max 30 Nos</b>	
Students	Rs:500/-
Faculty members	Rs:1000/-
GST of 18% Extra is Applicable	

Registration form, a part of this brochure, complete in all respect shall be sent to the webinar Coordinator along with the registration fee in the form of crossed DD drawn in favour of Accounts Officer, CPRI, payable at Bangalore.

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 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/Fax/Post to  
Shri Kaliappan P, Joint Director  
Mobile: +91 94491 49924, Email: kaliappan@cpri.in  
Power Systems Division  
Central Power Research Institute  
(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 2919/2207 2829/2207 1454, Extn: 2449/2443 Fax no: 080 2207 4465  
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### Speaker Cum Online Webinar training Coordinator



Shri Kaliappan Perumal, B.Tech., M.E., (Ph.D). He has 26 years of experience with Central Power Research Institute (CPRI), Ministry of Power, A Govt of India Society, working in the field of Power System Protection, Synchrophasor, Wide Area Monitoring, Protection and Control (WAMPAC) and Smart Grid Technology and Applications. His areas of interests are Adaptive Relaying, Computer Relaying, Protection issues in Distributed Generation, Validation of Phasor Measurement Unit, and Synchrophasor for Power system Protection and Control applications, Internet of Things with Renewable Energy, Internet of Things with Smart Grid, and Cyber Physical System Security for the Smart Grid. Presently he is holding the Post of Joint Director with Power Systems Division of CPRI, Bangalore. He is a Senior member IEEE (Bengaluru Section) and he is also pursuing his Ph.D at National Institute of Technology (NIT), Tiruchirappalli. Mobile: +91 94491 49924, Email: kaliappan@cpri.in

## REGISTRATION FORM



### CENTRAL POWER RESEARCH INSTITUTE

PROF. SIR. C.V. RAMAN ROAD, PO BOX 8066,  
SADASHIVANAGAR PO, BANGALORE 560 080  
Phone: +91(0)80 2207 2449

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Mr. Ms. Mrs. Dr. Prof. Others (please specify) \_\_\_\_\_  
Full Name of the Participant

Designation \_\_\_\_\_ Nationality \_\_\_\_\_

Full address of Organisation

(for correspondence)

Country: \_\_\_\_\_ ZIP/PIN Code: \_\_\_\_\_

Phone/Fax Nos.: (Please Mention Country & STD Code)

Office: \_\_\_\_\_ Res(Optional): \_\_\_\_\_

Fax: \_\_\_\_\_ Mobile/Cell: \_\_\_\_\_

E-mail: \_\_\_\_\_

Enclosed is a Demand Draft No: \_\_\_\_\_ dated \_\_\_\_\_ for Rs. \_\_\_\_\_ drawn on  
\_\_\_\_\_ bank towards delegate fee drawn in

favour of “Accounts Officer, CPRI” payable at “Bangalore.”

Signature:

(participant or nominating authority)

Name:

Designation:

Date:

Note: Kindly mention your Name, Name of the Company and Name of the online webinar behind  
the Demand Draft

CPRI reserves the right to accept/reject the participant

Kindly use separate form for each participant, downloaded/photocopies of this registration form is acceptable.