

Dr. Sortomme is a co-recipient of the 2010 UW Department of Electrical Engineering Chair's Award. He has been a member of IEEE since 2007 and has served as the Electric Vehicle Working group chair and the IEEE PES Seattle Chapter vice-chair.

*In addition to Prof. Mani Venkata and Dr. Eric Sortomme, a selected group of highly qualified instructors from KFUPM will contribute to the course delivery.*

*Dr. Ali Al-Awami* will undertake the coordination of this newly developed, highly informative short course.

#### COURSE CERTIFICATE AND FEES

Each participant who completes this five-day short course will receive an official certificate from King Fahd University of Petroleum & Minerals.

The course fee is SR 8,500 per participant. This fee covers all course materials, refreshments, daily lunch, a luncheon banquet, and free on-campus parking. The course fee does not include boarding and lodging. The fee should be paid by a certified check payable to King Fahd University of Petroleum and Minerals. Interested persons should complete the attached Application Form and return it to:

**Deanship of Continuing Education,**  
Fax (013) 860-4770  
(full address is given in the form).

#### EARLY REGISTRATION

The course is designed to help participants meet the demands of the industrial society by introducing them to the latest state-of-the-art technologies in smart distribution protection systems. It is expected that the timely and diverse topics in this course will result in high enrollment. As the class size will be limited, early registration is strongly encouraged and recommended to guarantee enrollment for

the class. To ensure your registration, please send the attached application form together with the course fees (or a commitment letter to pay the fees) as early as possible. As an additional incentive, *participants enrolling in the course before February 1, 2015 will be offered a special course fee of only SR8,000 per participant.*



#### MORE INFORMATION

Further information about the course and registration can be obtained from:

*Dr. Ali Al-Awami, Course Coordinator*  
*Department of Electrical Engineering*  
**King Fahd University of Petroleum & Minerals**  
KFUPM Box 5038  
Dhahran 31261, Saudi Arabia  
**Tel:** (013) 860-2712  
**Mobile:** (054) 9331381  
**Fax:** (013) 860-3535  
**e-mail:** [aliawami@kfupm.edu.sa](mailto:aliawami@kfupm.edu.sa)  
**Secretaries:** (013)860-2277;860-2285; 860-1236



عمادة الخدمات التعليمية  
برامج التعليم المستمر



Deanship of Educational Services  
Continuing Education Programs



**Smart Distribution System Protection**

March 1–5, 2015

Short Course

# Smart Distribution System Protection

March 1–5, 2015

## COURSE OVERVIEW:

The distribution system is the part of the bulk power grid where direct interaction between the grid and the end-users takes place. While traditionally passive, distribution networks have experienced a wave of changes as part of the transition to a smart grid. These changes include the addition of distributed generation sources, real-time monitoring of system states with new sensors, automation, and topology changes from radial to looped or even meshed. These changes will require radical philosophical changes in the system protection, with newer devices, adaptive coordination, and accurate fault detection algorithms. However, the legacy protection equipment will not be replaced all at once. This will require coordinating new devices with the legacy devices to detect faults in both the traditional and smart grid conditions.

The primary objective of this five day course is to cover traditional and emerging distribution protection with the goal of teaching the students to be proficient in both so they can work with modern power distribution systems.

## COURSE TOPICS:

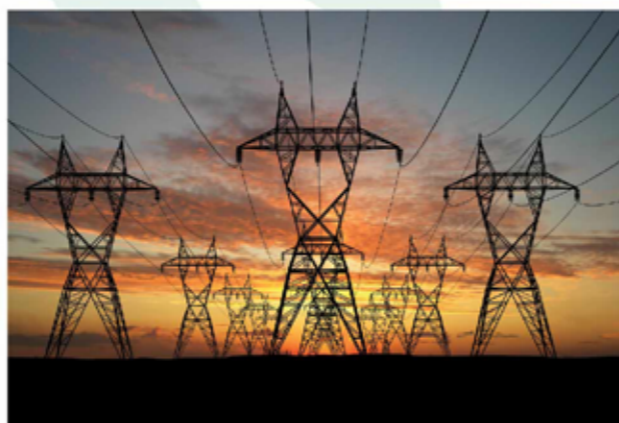
The major topics to be covered in this course include the following:

- Distribution fault analysis
- Fusing equipment and operation
- Automatic circuit recloser types and operation
- Sectionalizer classifications and application factors

- Circuit breakers and relays
- Coordination of different devices on the primary distribution system
- Distribution transformer protection
- Distributed generation protection coordination
- Microgrid protection
- *Tutorial examples and laboratory demonstrations of microgrid and DG protection*

## LANGUAGE OF INSTRUCTION

The language of instruction is English.



## WHO SHOULD ATTEND

This course should be of great interest and benefit to all electrical engineers and staff members who are engaged in design, planning, and operation of distribution systems in power utilities or industrial systems.

The participants should have a basic engineering degree or diploma or its equivalent in Electrical Engineering.

## COURSE FORMAT

Prepared course materials in the form of power point slides will be presented in a sequential flow. Lectures will provide guidelines and recommendations, wherever possible, so as to make the course a highly practical one. *In addition, live laboratory demonstrations will be carried out at the Energy System Laboratories at KFUPM.*

Each participant will receive on the registration day an organized course file containing all lecture notes exclusively prepared for this course. All reference materials will also be supplied.

## LOCATION AND CLASS SCHEDULE

The venue of the course will be Building 54. Classes will be held from Sunday, March 1, 2015 to Thursday, March 5, 2015, daily from 8:00 AM to 4:00 PM, with breaks for refreshments, free daily lunch and prayers.

## INSTRUCTORS



**Prof. S. S. (Mani) Venkata, IEEE Life Fellow**

*S. S. (Mani) Venkata* is a well-recognized authority on electric power distribution systems. He has offered training courses on distribution systems, power quality, reliability, and safety to more than 20 utilities, industries and federal agencies. He has also provided technical and consulting services to many electrical and process industries. He has published and/or presented over 300 publications in refereed journals and conference proceedings, and is a co-author of the book *Introduction to Electric Energy Systems* (Prentice-Hall Publications, 1987). He is a Registered Professional Engineer in the states of Washington and West Virginia.

Before joining Alstom Grid, Mani held administrative and academic positions at Clarkson University, Iowa State University, University of Washington, West Virginia University, and University of Massachusetts. He has been very active in the IEEE for the past 40 years. He has served as a member of the Power Engineering Society (PES) Executive Committee and Governing Board for over three years, as the Vice-President of Publications.

In 1996, Mani received the Outstanding Power Engineering Educator Award from the IEEE Power Engineering Society. He also received the Third Millennium Award from the IEEE in 2000.



**Dr. Eric Sortomme, Alstom Grid**

*Dr. Eric Sortomme* received a B.Sc. degree (magna cum laude) in Electrical Engineering from Brigham Young University,

Provo, UT, in 2007 and a Ph.D. degree from the University of Washington, Seattle, in 2011. He is currently a Senior Power Systems Engineer at Alstom Grid, Redmond, WA and an Affiliate Assistant Professor at the University of Washington, Bothell. He has authored many technical publications on smart grid technologies, including microgrids and microgrid protection.

