SCADA 101: FUNDAMENTALS WITH A FOCUS ON ENERGY MANAGEMENT SYSTEM (EMS)

December 10-11, 2018
Hyatt Place Denver Tech Center
Denver, CO
OVERVIEW

Learn the fundamentals of SCADA systems with focus on Energy Management systems (EMS).

SCADA systems are generally used to monitor and control equipment in industries such as telecommunications, water and waste control, energy, oil and gas refining and transportation - mainly, systems that are geographically wide spread. The course explores the evolution of SCADA systems, learning the differences in the SCADA types and how they evolved from monolithic to distributed to networked.

This course will explain the typical SCADA hardware components, through a different view points and how they work together

- Hardware standpoint: administrator, data acquisition servers and front-end processors redundancies
- Security standpoint: for Primary and backup system
- Data maintenance standpoint: Quality control system, production system

There will be an explanation the data flow all the way from field, through RTU to front end processor to control room and how different telemetry points are processed. Learn about analogs, status points, accumulators, different ways that they can be collected in field RTU for data exchange, scan rates, and protocols. Discuss how the data can be processed for the end user, alarm processing, switching controls, processing logic in database, and putting it into the dynamic graphic user interface for end to end control and monitoring.

We will explore the best data maintenance practices, such as maintaining the data standards, templates, creating the point list and checkout lists, performing point to point testing, maintaining the quality assurance systems independent from productions where jobs are run first.

The course will talk about data storage in historic servers and how data can be used or replayed. Uses of dispatch training system for the real time data and data analysis for performing various actions to the system and how they affect the systems. In the end, student should gain solid understanding of how SCADA systems work, how and why they were developed, how they are structured, the database and data collection techniques and uses of the dynamic data by the end user.

LEARNING OUTCOMES

- Discuss the history and evolution of SCADA Systems
- Identify the basic hardware and software components of a SCADA system
- Examine communication protocols that are used to transmit, collect, store and manage data
- Discuss the increase need for cyber security for ICS
- Describe different instrumentation measurement technologies
- Review SCADA system architecture
- Discuss the data flow from field to control room
- Identify alarm processing and supervisory control
AGENDA
MONDAY, DECEMBER 10, 2018

8:00 – 8:30 am  Registration and Continental Breakfast

8:30 am – 5:00 pm  Course Timing

12:00 – 1:00 pm  Group Luncheon

- SCADA Overview
- SCADA Definition
- SCADA History and Evolution
  - By technological evolution
  - Telemetry based SCADA
  - Minicomputers
  - Microprocessors - PLC
- SCADA Types
  - By market evolution
  - Monolithic
  - Distributed
  - Networked
- SCADA Systems Components
- Common SCADA Abbreviations
- Typical Hardware SCADA Architecture
  - Master administrator - data repository
  - Communicator - data acquisition
  - Front end processor - RTU
  - Historian - data archiving
  - Human Machine Interface - individual users
- Typical System Division
  - Primary system
  - Backup system
  - Training system (DTS)
- RTUs
  - RTU protocols types
  - RTU scans rates and options
  - Field devices
- SCADA Data Collection - Point Types and Uses
  - Analog points (measurements)
    - limits
    - setpoints
    - secondary sources
  - Accumulators (periodic collection)
    - meter collections
    - counter values
  - Status points (indication and controls)
    - alarm processing
    - supervisory controls
- Data Collection and Q&A Session
- Course Adjourns for Day
AGENDA

TUESDAY, DECEMBER 11, 2018

8:00 – 8:30 am  Continental Breakfast

8:30 am – 12:00 pm  Course Timing

- Review of Day 1
- Data Management
- Maintaining the Data and Best Practices
  - Constructions project
  - Engineering points list
  - Data standards
  - Safe job processing (QAS and productions systems)
  - Station one-line drawings and dynamic graphic user interface
  - Point to point testing
  - Checklist and procedures
- SCADA Security and Additional Applications
- Network Processing
- Dispatch Training
- Cyber Security of SCADA
- Course Concludes

INSTRUCTOR

Ivana O’Deen
Principal Database Specialist, Xcel Energy

Ivana O’Deen is a current Principal Database Specialist at Xcel Energy. She has been with Xcel Energy for 12 years where she has been responsible for managing and training employees on SCADA/EMS systems. Prior to her employment at Xcel Energy she worked 11 years for Siemens, EMS division in Minnetonka, MN. During her employment at Siemens she helped prototype numerous client’s database and displays and conducted the in-house training of Siemens Spectrum database and display systems management.
IACET CREDITS

EUCI has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET). In obtaining this accreditation, EUCI has demonstrated that it complies with the AN-SI/IACET Standard which is recognized internationally as a standard of good practice. As a result of their Authorized Provider status, EUCI is authorized to offer IACET CEUs for its programs that qualify under the AN-SI/IACET Standard.

EUCI is authorized by IACET to offer 1.1 CEUs for the course.

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Participants must sign in/out each day and be in attendance for the entirety of the course to be eligible for continuing education credit.

INSTRUCTIONAL METHODS

Power Point presentations and open discussion will be used in this course.

EVENT LOCATION

A room block has been reserved at the Hyatt Place Denver Tech Center, 8300 E Crescent Pkwy, Greenwood Village, CO 80111, for the nights of December 9-11, 2018. Room rates are US $135, plus applicable tax. To reserve your room, please call 1-303-804-0700. Attendees need to reference the EUCI Meeting Group to get the group rate. The cutoff date to receive the group rate is November 9, 2018 but as there are a limited number of rooms available at this rate, the room block may close sooner. Please make your reservations early.

REGISTER 3, SEND THE 4TH FREE

Any organization wishing to send multiple attendees to this course may send 1 FREE for every 3 delegates registered. Please note that all registrations must be made at the same time to qualify.
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Please make checks payable to "PMA"

EVENT LOCATION
EVOLUTION OF DISTRIBUTION FEEDER NETWORK ANALYSIS AND AUTOMATION

December 12, 2018
Hyatt Place Denver Tech Center
Denver, CO

“A very good course with a lot of great information.”
Project Coordinator,
Lubbock Power & Light
OVERVIEW

While advanced transmission network analysis (aka energy management systems) steadily advanced from the 1970s through the 1990s, distribution management systems never enjoyed the same attention, or funding, so it never advanced beyond SCADA, aka D-SCADA. Today, distribution network analysis and automation are more challenging and more advanced in every aspect compared to its transmission brother. Because the functional technology is evolving at such a rapid pace, the resulting complex suite of integrated analysis and automation applications is not well understood by its users. This course will address the unique challenges that distribution network operation faces and the developments at this stage in distribution automation evolution. Where is it going? What are the benefits? Who are the users? These questions will be addressed in this course.

LEARNING OUTCOMES

- Discuss the history and evolution of realtime feeder network automation
- Review self-healing considerations
- Examine Smart Grid Automation Functions
- Identify current ADMS challenges
- Discuss visualization challenges
- Review renewable integration and control
- Identify types of architectures
- Discuss power quality considerations

INSTRUCTOR

Gary L. Ockwell
Chief Technology Officer, Advanced Control Systems

Gary Ockwell is the Chief Technology Officer for Advanced Control Systems (ACS). He joined ACS in 1995, bringing 22 years of expertise in the global electric utility market.

Gary began his career with ACS as the Energy Management System Business Unit Manager and has been the Chief Technology Officer since 2004. He has worked to transition ACS to integrated Transmission Management, Distribution Management and Outage Management Systems. As CTO, Gary is responsible for the Smart Grid product direction and roadmap. This includes defining the functionality and evolution of the core technologies and the integration of those technologies with those relevant in the industry.

From 1985 to 1995, Gary was the XA/21 SCADA/EMS Product Manager for Harris Controls Division. His responsibilities positioned him to make technology presentations for utilities in the domestic US, southeast Asia, Middle East and European markets. Gary was responsible for defining product requirements, strategic planning, and direction for Harris™ Distribution Management and Distribution Automation Systems. He was also responsible for research/evaluation of strategic alliances with key utilities and vendors, product coordination of substation computer systems, substation automation and distribution automation; technical proposal documentation, setting price strategy, in-house engineering direction, and major contract negotiations.

Prior to that, Gary was the Project Manager for SaskPower Corporation in Canada. While with SaskPower, he served as the overall project manager for the $21,000,000 system control project for the Gas and Electric System Control. His responsibilities included directly supervising the engineering design, system evaluation, procurement, control center construction and facilities installation for the GESC project.

Gary holds a B.S., EE Degree from the University of Saskatchewan, Canada. He has authored and co-authored more than two dozen papers and articles for industry conferences and publications over the last twelve years. He is also an IEEE/PES member.
AGENDA

WEDNESDAY, DECEMBER 12, 2018

8:00 – 8:30 am  Registration and Continental Breakfast

8:30 am – 5:00 pm  Course Timing

12:00 – 1:00 pm  Group Luncheon

• History of Electrical Network Automation System Evolution to Today
• Smart Grid Functions
  o Automation functions / applications
  o Analysis functions / applications
  o Optimization functions / applications
  o Simulation
  o Benefits
  o Challenges
• ADMS Challenges
  o Definition of ADMS
  o Benefits
  o Challenges
• Self-Healing Automation Considerations
  o Benefits
  o Challenges
• Power Quality Considerations
  o Benefits
  o Challenges
• Visualization Challenges
  o Who are the users?
  o What operators get
  o What operators want
  o Challenges and considerations
• Renewable Integration and Control
  o Grid connected
  o Microgrid
  o Renewable operational objective and considerations
    - Applications and components
    - Integration with other smart grid functions
    - Supporting applications
  o Benefits (review real world use case field results)
• Network Modeling
  o Usage
  o Objective
  o Scope of the problem
    - Maintenance source model
    - Operational source model
    - Integration with IT and OT
    - Architectures
  o Centralized
  o Peer-to-peer
  o Device controller
  o Distributed
• Summary and Closing
  o What’s next?
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EUCI is authorized by IACET to offer 0.8 CEUs for the course.

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BUNDLE PRICE: SCADA 101: FUNDAMENTALS WITH A FOCUS ON ENERGY MANAGEMENT SYSTEM (EMS) AND EVOLUTION OF DISTRIBUTION FEEDER NETWORK ANALYSIS AND AUTOMATION COURSES
DECEMBER 10-12, 2018: US $2195
EARLY BIRD on or before NOVEMBER 23, 2018: US $1995

EVOLUTION OF DISTRIBUTION FEEDER NETWORK ANALYSIS AND AUTOMATION COURSE ONLY
DECEMBER 12, 2018: US $995
EARLY BIRD on or before NOVEMBER 23, 2018: US $895

How did you hear about this event? (direct e-mail, colleague, speaker(s), etc.)

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OR Enclosed is a check for $ to cover registrations.

Substitutions & Cancellations
Your registration may be transferred to a member of your organization up to 24 hours in advance of the event. Cancellations must be received on or before November 9, 2018 in order to be refunded and will be subject to a US $195.00 processing fee per registrant. No refunds will be made after this date. Cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI event. This credit will be good for six months from the cancellation date. In the event of non-attendance, all registration fees will be forfeited. In case of course cancellation, EUCI’s liability is limited to refund of the event registration fee only. For more information regarding administrative policies, such as complaints and refunds, please contact our offices at (201) 871-0474.