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

August 3-4, 2020
Online | Central Time

“This course enabled me to have a high-level understanding of a complete SCADA system. This course really opened my eyes to all aspects of a SCADA system. It was a great course.”

Instructor, Century College

EUCI is pleased to offer this virtual course on its online interactive platform. Enjoy a valuable learning experience with a smaller impact on your time and budget. You will gain new knowledge, skills, and hands-on experience from the convenience of your remote location.
OVERVIEW

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. It will also explain the typical SCADA hardware components through different viewpoints and how they work together:

- Hardware standpoint: administrator, data acquisition servers, and front-end processors redundancies
- Security standpoint: primary and backup systems
- Data maintenance standpoint: quality control system and production system

There will be an explanation of how different telemetry points are processed, as well as the data flow all the way from the field, through RTU, to front end processor, to control room. The course touches on analogs, status points, and accumulators, along with different ways 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 and templates, creating the point list and checkout lists, performing point-to-point testing, and 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. It will go over the 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, students should gain solid understanding of how SCADA systems work, how and why they were developed, how they are structured, its database and data collection techniques, and the 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 increased 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

WHO SHOULD ATTEND

- Engineering staff new to SCADA
- Executives, managers, and other professionals in the energy field
- Consultants, attorneys, and engineering firms that work within the electricity sector
AGENDA

MONDAY, AUGUST 3, 2020 - CENTRAL TIME

8:45 – 9:00 am  Log In
9:00 am – 4:30 pm  Course Timing
12:30 – 1:15 pm  Lunch Break

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

“The speaker was great. Pretty informative and knowledgeable and had great discussion with the class. Approachable.”
Graduate Engineer, T&D Services

“Very knowledgeable and followed the course syllabus.”
Director, Tipmont REMC
AGENDA

TUESDAY, AUGUST 4, 2020 - CENTRAL TIME

8:45 – 9:00 am  Log In

9:00 am – 12:00 pm  Course Timing

• Review of Day 1
• Data Management
• Maintaining the Data and Best Practices
  o Constructions project
  o Engineering points list
  o Data standards
  o Safe job processing (QAS and productions systems)
  o Station one-line drawings and dynamic graphic user interface
  o Point to point testing
  o 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 Excel 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.

“"Ivana has good energy and an engaging speaking style. I appreciate her real-world experience and the stories she shared.”

Managing Director of Power Delivery, Grant PUD

“"Ivana was knowledgeable and able to answer most questions. Enthusiastic and clear speaker. I enjoyed the course and hearing her past EMS experiences.”

Principal Analyst, Reliability First
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.

INSTRUCTIONAL METHODS

PowerPoint presentations and open discussion will be used in this course.

ONLINE COURSE DELIVERY & PARTICIPATION DETAILS

We will be using Microsoft Teams to facilitate your participation in the upcoming event. You do not need to have an existing Teams account in order to participate in the broadcast – the course will play in your browser and you will have the option of using a microphone to speak with the room and ask questions, or type any questions in via the chat window and our on-line administrator will relay your question to the instructor.

- You will need to join the appropriate meeting at the appropriate time.
- You will receive a meeting invitation will include a link to join the meeting.
- Separate meeting invitations will be sent for the morning and afternoon sessions of the course.
  - You will need to join the appropriate meeting at the appropriate time.
- If you are using a microphone, please ensure that it is muted until such time as you need to ask a question.
- The remote meeting connection will be open approximately 30 minutes before the start of the course. We encourage you to connect as early as possible in case you experience any unforeseen problems.

REQUIREMENTS FOR SUCCESSFUL COMPLETION

You must be logged in for the entire presentation and send in the evaluation after the online course is completed.
**REGISTRATION INFORMATION**

Mail Directly To:
EUCI
6400 S Fiddlers Green Cir., Suite 1620
Greenwood Village, CO 80111
OR, scan and email to: conferences@euci.com

WWW.EUCI.COM
p: 303-770-8800
f: 303-741-0849

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**PLEAS SELECT**

- **SCADA 101: FUNDAMENTALS WITH A FOCUS ON ENERGY MANAGEMENT SYSTEM (EMS) ONLINE COURSE**
  AUGUST 3-4, 2020: US $1195 (Single Connection)

- **PACK OF 5 CONNECTIONS:** US $5,375

- **PACK OF 10 CONNECTIONS:** US $8,965

  *For volume discounts call +1.303.770.8800 for quote*

  *all other discounts do not apply to license packs*

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**ENERGY WEEKLY**

Energize Weekly is EUCI's free weekly newsletter, delivered to your inbox every Wednesday. We provide you with the latest industry news as well as in-depth analysis from our own team of experts. Subscribers also receive free downloadable presentations from our past events.

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**Online Course Delivery & Participation Details**

*See page 5 for information*

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

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**Print Name**

**Job Title**

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**Company**

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**Address**

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**City**

**State/Province**

**Zip/Postal Code**

**Country**

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**Phone**

**Email**

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**CREDIT CARD INFORMATION**

**Name on Card**

**Billing Address**

**Account Number**

**Billing City**

**Exp. Date**

**Billing State**

**Security Code (last 3 digits on the back of Visa and MC or 4 digits on front of AmEx)**

**Billing Zip Code/Postal Code**

**OR Enclosed is a check for $**

**to cover**

**registrations.**

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**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 July 3, 2020 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 303-770-8800. EUCI reserves the right to alter this program without prior notice.