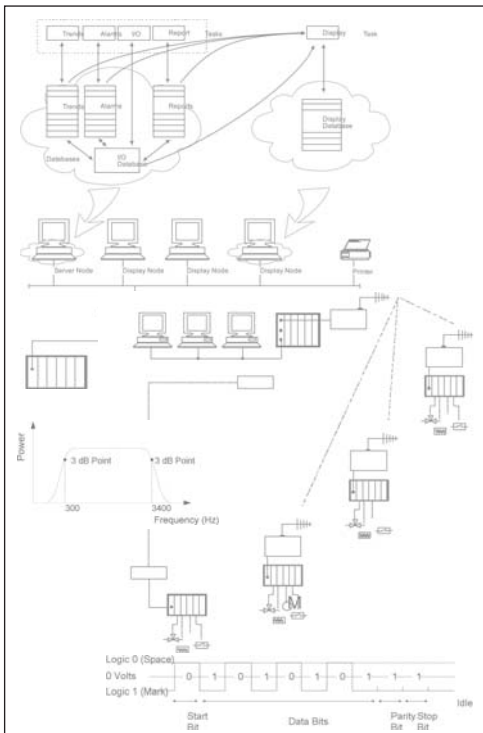


Practical SCADA & TELEMETRY SYSTEMS

for Industry



FOCUSSING ON:

- Fundamentals of SCADA systems
- Communication Protocols & Standards
- Essentials of OPC applied to SCADA
- Wireless and Radio Standards for telemetry
- SCADA System Security

WHAT YOU WILL GAIN:

- A fundamental understanding of SCADA systems
- A knowledge of the key industrial communication protocols
- How to set up industrial data communications networks
- The different industrial communications networks used
- How to troubleshoot typical SCADA and telemetry systems
- The essentials of OPC as applied to SCADA systems
- How to design and install radio & wireless links for SCADA systems
- How to effectively apply SCADA System security

WHO SHOULD ATTEND:

- Instrumentation and Control Engineers
- Process control Engineers
- Electrical Engineers
- Consulting Engineers
- Design Engineers
- Control Systems Sales Engineers
- Maintenance Supervisors
- Control System application engineers
- Project Engineers
- Technicians
- Plant Engineers
- IT Personnel



Technology Training that Works

THE WORKSHOP

SCADA has traditionally meant a window into the process of a plant or gathering of data from devices in the field, but now the focus is on integrating this process data into the actual business and using it in real time. The emphasis today, is on using Open standards such as communication protocols (eg IEC 60870, DNP3 and TCP/IP) and off the shelf hardware and software to keep the costs down. This comprehensive two day workshop covers the essentials of SCADA systems and telemetry and radio/wireless communications.

A selection of real world case studies is used to illustrate the key concepts with examples of real world working SCADA systems in the water, electrical and processing industries and this workshop will be an excellent opportunity to network with your peers as well as gain significant new information and techniques for your next SCADA project.

Although the emphasis of the workshop will be on practical industry topics highlighting recent developments using case studies and the latest application of SCADA technologies the fundamentals of SCADA systems will be covered. The workshop is aimed at those who want to be updated on the latest developments in SCADA systems and want to get a solid appreciation of the fundamentals of SCADA and Telemetry design, installation and troubleshooting.

PRACTICAL SESSIONS

Practical sessions include:

- constructing a simple SCADA system
- operating the SCADA system
- radio telemetry path loss design exercise
- performing an intermodulation products calculation
- Bit Error Rate analysis

THE PROGRAM

DAY ONE

FUNDAMENTALS OF SCADA

- Terminology and overview
- SCADA System hardware
- Communication Architecture

SCADA SOFTWARE

- Industry Standard protocols
- Displays and MMI's
- Configuration of SCADA systems
- Best Practice configuration of Alarms
- Rules for SCADA design

SCADA COMMUNICATION PROTOCOLS AND STANDARDS

- RS-232/RS-485
- Industrial Ethernet
- Industrial Protocols such as Modbus
- TCP/IP
- IEC 60870 and DNP3 SCADA protocols
- Substation Automation protocols

OPC AND SCADA SYSTEMS

- Essentials of OPC
- Implementation of an OPC Server and client
- Practical Demonstration

SECURITY AND RISK MANAGEMENT

- Introduction and terminology
- Firewalls
- Authentication, Authorisations and anonymity
- Remote access to SCADA Systems
- Security precautions

DAY TWO

RADIO AND WIRELESS BASICS

- Fundamentals of propagation
- Selection of frequency bands
- Equipment - transmitters
- Cabling - coaxial/audio/signal
- Implementation and Design
- Spread Spectrum
- Duplication and Diversity
- Path loss calculations and multipathing

REVIEW OF WIRELESS LAN SYSTEMS: IEEE 802.11

- Specifications
- System components
- Antennas
- Topologies
- Modes: infrastructure, ad hoc
- IP roaming
- Security issues

SATELLITE SYSTEMS

- Basic Technology
- Analog and digital types
- Operation/downlinks and uplinks
- Practical Implementation

LINE OF SITE MICROWAVE

- Point to point and multipoint
- Equipment/dishes and antennas

PERFORMANCE ANALYSIS

- Availability and reliability/BER testing
- Complete Systems testing

SCADA AND TELEMETRY INFRASTRUCTURE

- Base Stations and repeaters
- Location and mast selection
- Cabling/power distribution
- IP and temperature rating of equipment
- Lightning and surge protection

FUTURE TRENDS

“

Excellent.

Andre van Zyl

”

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