



Blaze Avenue

Empowering Business Ideas

**SCADA Systems - Transitioning
from Beginner to Advanced**

4 DAYS WORKSHOP
25th -28th September 2017
Golden Tulip Hotel Tanzania

DR. RODNEY JACOBS

COURSE INSTRUCTOR



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Course Overview

Supervisory, Control and Data Acquisition System (SCADA) is, without a doubt, one of the most important aspects of most industries. It does not matter whether you focus on oil or gas, are electricity or another commodity provider, or manufacture products driven by consumer demand in a factory. The reality is that you need a specialised device, which “puts extra eyes” in your plant, and this is where the unique features of a well-designed SCADA system come to the fore. Such a system should be designed to allow for a seamless transfer of plant knowledge, and access to vital information (especially in situations where decision-making is critical).

Sadly, many organisations install a SCADA system, with the best intentions. But, as soon as the system has been implemented, it tends to be allowed to stagnate, never keeping up with plant changes, and being used to its full potential. This is not intentional, but often just due to staff not wanting to mess with something that is already working well, or perhaps feeling a bit apprehensive about their own skills and abilities. The aim of this workshop is to encourage SCADA staff to keep pushing the boundaries, and to consider implementing additional SCADA features, so that they continuously take their SCADA system up to the next level.

Delegates are often caught in a quandary. They are immersed in the “deep end”, and need to sink or swim. Or else, it has been a few years since they have done the basics, and an intense refresher may be required. There is also the problem that an introductory course may be too basic, and an advanced course just kicks off too rapidly. This workshop has been designed to try and deal with these issues as effectively as possible. It starts off as a basic workshop, and builds the delegates up. (This is useful for those individuals who are already familiar with SCADA, but require a good, solid refresher, just to get them up to speed, once again.) Then, the workshop steps up to the next level, and shares a lot of advanced features. This is really what separates the mediocre SCADA applications from the really efficient ones.

The workshop has been designed to focus on applications and practical examples that would be deemed relevant, and the working environment of the delegates will be very carefully enquired about, so that all exercises remain work-related, for the delegates. This course intentionally has a 50-50 split between theoretical and practical work, in order to keep attention spans at optimum levels, as much as possible



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Course Objectives

Delegates will gain an appreciation of the following:

- What SCADA is all about
- Basics about standard instrumentation signals
 - Accuracy
 - Resolution
- Alternate options available to you (other than SCADA)
- Modern versus old SCADA systems
- SCADA architecture
- SCADA topologies
- IEC 60870
- IEC 61850
- SCADA components
- SCADA hardware
- SCADA software
- SINKING vs SOURCING
- SCADA redundancy
- The human machine interfaces
- Graphics
- Different types of signals that can be utilised
- Security
 - SCADA Security Strategy
- Troubleshooting and maintenance
- Best practice
- Using a PLC, with a SCADA system
- Understanding basic PLC terminology and controls, as related to SCADA
- Project planning
 - SCADA Master Plan
- Basic and Advanced SCADA implementation, including (but not limited to):
 - Alarms
 - Trends
 - Scripting
 - Statistical analysis
 - Recipe creation and utilisation
 - Data logging
 - Data retrieval and exportation
 - Alarm priorities
 - Notifying agents
 - Multimedia
- Networks
 - Medium for data transmission
 - Standard defining electrical communication characteristics
- Communication protocols
 - HART
 - Foundation Fieldbus
 - Profibus
 - E1
 - Modbus
 - DNP-3
- System specification
 - Functional Design Specification
- Software management
- System engineering
- Clustering
- Scheduling agents

Who should attend?

This workshop would primarily be aimed at people within the instrumentation / electrical / process discipline, who are actively involved in the utilization of SCADA systems in their plant (whether they are the people doing the actual graphical design / screen creation / specification, etc., or just those who do the system maintenance and instrumentation interfacing) It would also be of great value to those individuals who have a keen interest in the field, such as Process Control Engineers, Electrical Engineers, Mechanical Engineers, Industrial Engineers, Designers and the like, who just want to have a hands-on experience of what SCADA is all about.

The workshop starts off from basics, and builds up to an advanced level. None-the-less, it is presented in such a way, that even total novices will feel comfortable from the very beginning. No-one is left behind, and the instructor takes pride in guiding all delegates along the way, with personal assistance, where required.

Delegates are encouraged to keep an open mind, and to ask as many questions as necessary, to ensure that maximum learning takes place. Preference will always be given to applications and examples that tie up with the SCADA processes encountered by the delegates.

Software Simulator

An HMI simulation program will be made available to delegates, for course use, and the aim of the HMI, will be to experiment with practical SCADA concepts, in a safe and controlled environment. This software will come from a major international supplier, and will not have an expiry period. Delegates will appreciate that there are a great number of SCADA systems on the market, and that it is PHYSICALLY IMPOSSIBLE to provide training for each and every SCADA system encountered by various delegates, other than going to the unique suppliers. However, attending a course at the original SCADA suppliers is not always the most cost effective solution. During this workshop, at all times, all of the major features used in the SCADA systems of the delegates, will be well represented in the training HMI simulator, and vice versa. Hence, delegates will be empowered to leave the training venue, and effectively have a plan of action to implement, once they get back to their own SCADA working environment.

Delegates are encouraged to bring their own (non-Apple) laptops (but, please arrange this, in advance with your IT Department, as the software will need to be loaded onto these machines, and Administrator rights may have to be given).



Pre-Requisites

Although it would be beneficial to have an understanding of SCADA, this is not essential. A working knowledge of basic Windows functionality would be an advantage, if only to speed up certain tasks that can be done on the computer.

Course Duration

The duration will be FOUR days.

Our Past Clients

- Kenya Power & Lighting Co. Ltd - Kenya
- PT Bekasi Power - Indonesia
- PT Perusahaan Listrik Negara (PLN) - Indonesia
- Sarawak Energy Berhad - Malaysia
- Hong Kong Electric Company - Hong Kong
- National Electric Power Regulatory Authority (NEPRA) - Pakistan
- Saudi Electricity Company - Saudi Arabia
- National Grid Cooperation Philippines (NGCP) - Phillipines
- Emirates SembCorp Water & Power Company - UAE
- Tenaga Nasional Berhad (TNB) - Malaysia
- DNV GL Private Limited - Singapore
- Ceylon Electricity Board (CEB) - Sri Lanka
- Sabah Electricity - Malaysia
- Lanka Electricity Company (Pvt) Ltd - Sri Lanka
- NamPower Corporation (Proprietary) Ltd - Namibia
- Kenya Generation (Kengen) - Kenya
- Transmission Company of Nigeria (TCN) - Nigeria
- Niger Delta Power Holding Company Limited (NDPHC) - Nigeria



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Our Power Sector Training List (Partial List)

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- Power System Stability & Control
- Renewable Resources : From Planning To Operations
- PLC, SCADA and AC Drives for Industry
- SCADA and the Impact of Smart Grid
- SCADA Systems - Transitioning from Beginner to Advanced
- SCADA, IEC 61850 and Substation Automation workshop
- Uncertainty and Risk Management in Electricity Markets
- Modern Power System Analysis
- Reliability Centered Maintenance
- Demand Side Management
- Energy Markets Strategic Planning
- Economic Dispatch and Power System Planning
- Power Systems Planning and Operations
- Energy Trading and Energy Markets
- Energy Markets, Risk Assessment and Financial Management
- Reliability and Risk Applied to Physical Assets
- Economic Dispatch & Grid stability Constraints in Power Plants
- Power System State Estimation
- Communication Interfaces in Smart Grid
- Distributed Generation
- Distributed Wind Generation and its Impacts on the Network
- Modelling Analysis for Modern Electrical Systems
- Power Systems Economic Operation
- Reactive Power and Voltage Control on Electrical Networks
- Real Power & Control on Power System
- Substation Automation Systems
- Power System Reliability
- Power System Restoration
- Methodologies & Implementation Strategies
- Fundamentals of Power Systems

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Course Instructor

DR. RODNEY JACOBS

Doctor Rodney Jacobs is a Senior International Consulting Engineer, and has 35 years of experience in the field of Instrumentation and Process Control. For the last thirteen years, he has been in private practice, has lectured at University level, has presented hundreds of e-learning courses globally, and presented many in-house and public seminars in countries such as the United States of America, Canada, England, Wales, Scotland, Ireland, the United Arab Emirates, Saudi Arabia, Bahrain, Oman, Qatar, Malaysia, Vietnam, South Korea, Romania, Australia, New Zealand, and most of Africa. Most of his delegates have been from the Petrochemical and Oil and Gas industries, but he has also covered numerous other industries, quite extensively, as the equipment and techniques often have a lot in common. He encourages active class participation, and ensures that the workshops are kept as practical as possible, whilst still covering all the required theoretical material. In addition to engineering qualifications (all in the field of instrumentation as well as electrical engineering), he also has an Honours degree in Psychology, which, he believes, helps him to understand delegates a lot better, and to assist them in maximising their learning experience. He also holds an international certificate (TAE40110 Certificate IV) in training and assessment, which focusses on planning assessment activities and processes, assessment validation, group-based learning, learning in the workplace, using and developing learning programs, using training packages, making a presentation, contributing to assessment and providing work skill instruction.

