**YOU WILL LEARN HOW TO:**

- Detail the key requirements for a Functional Design Specifications (FDS)
- Define the key components for a FDS for an industrial automation system (SCADA/PLC/PAC and DCS*)
- Define the data communications and networking requirements
- Detail the Graphical User Interface (GUI) requirements
- Define the requirements for system reliability and availability
- Describe the other issues (such as security and operator involvement) to be covered in the FDS

*These widely used acronyms are: SCADA – Supervisory Control and Data Acquisition System; PLC – Programmable Logic Controller; PAC – Programmable Automation Controller; DCS – Distributed Control System.

**WHO SHOULD ATTEND:**

- Consulting engineers
- Design engineers
- Electrical engineers and technicians
- Industrial automation engineers and technicians
- Instrumentation and control engineers, technologists and technicians
- Maintenance engineers, technicians and staff
- Mechanical engineers and technicians
- Operation, inspection and repair managers, supervisors and engineers
- Plant engineers
- System specifiers
The Workshop

The workshop will be useful to both specifiers and implementers and will provide a theoretical grounding as well as a practical guide for preparing a control system functional specification for implementation on Industrial control systems consisting of PLC (Programmable Logic Controllers), HMI (Human Machine Interfaces/SCADA devices) or DCS (Distributed Control Systems).

Pre-requisites
You do not need to be able to program a PLC or configure a SCADA system however a basic understanding of these systems will be beneficial. Workshop participants are encouraged to bring along their laptop computers since the workshop will include several exercises which can be done electronically. A basic word processor such as MS Word or Open Office will help with the completion of the exercises.

The Program

DAY ONE
FUNCTIONAL SPECIFICATION INTRODUCTION
- Overview of a Functional Design Specifications (FDS)
- The terms and abbreviations
- Naming conventions and standards
- Control philosophy needed in guiding the FDS
Practical session: Control philosophy outline

STANDARDS AND CONVENTIONS
- Discussion of relevant standards
- Definitions, tagging and naming conventions
Practical session: Tagging and naming

SCADA/PLC/DCS
- Process control approaches and their philosophies
- Discussion of SCADA/PLC/DCS systems
- PLC coding concepts - IEC 61131-3
Practical session: PLC coding

REMOTE TERMINAL UNIT (RTUS)
- Introduction to RTU
- Standards involved for an RTU design
- Defining devices for data acquisition
Practical session: RTU specification

DATA COMMUNICATION REQUIREMENTS
- Options for different communication media
- Suitability of protocols and relevant standards
- RS-485/Ethernet/DNP3/IEC 61850
Practical session: Specification of data communications systems

GRAPHICAL USER INTERFACE (GUI) REQUIREMENTS
- Process diagrams, modern trends and alarm systems
- Alarms including colour coding, audio indicators and others
- Different kinds of reporting
Practical session: Definition of a GUI

SECURITY ASPECTS
- Relevance of security for SCADA systems
- Philosophy and different approaches for security
Practical session: Security specifications

WRAPPING UP
- Review of a complete FDS
- Pitfalls, tips and tricks
Practical session: Building a complete FDS – from earlier sessions

SUMMARY, OPEN FORUM AND CLOSING

Practical Sessions
This is a practical, hands on workshop enabling you to work through practical exercises which reinforce the concepts discussed.
Throughout this hard hitting one day course; you will undertake 8 projects/practical exercises. These are listed in the program and will be done in groups. Each group will give a short presentation at the end of the day.

To gain full value from this workshop, please bring your laptop/notebook computer.

“"This is the best technical briefing/training course I have ever attended. Instructor and attendees are fully involved throughout.”
Colin Jenkins
TAS Engineering Consultants

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