

DESIGN OF FUNCTIONAL SPECIFICATIONS FOR INDUSTRIAL AUTOMATION SYSTEMS (SCADA, PLC AND DCS)



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.

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.

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“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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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 (RTU)

- 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



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