

Building future-ready professionals with
expertise in process control technology
and proven industrial practices.

Yokogawa Middle East & Africa

TRAINING CATALOG **2026-2027**

yma.scoe@yokogawa.com



CONTENTS

1. General Introduction	2
a. Yokogawa Electric Corporation	2
b. Yokogawa Middle East & Africa	3
c. Yokogawa Trademark	4
d. Yokogawa Service Center of Excellence (YMA-SCoE)	5
2. (YMA-SCoE) training progressions	8
3. (YMA-SCoE) classroom courses index	11
a. Foundation Courses	15
b. Field Instrumentation Courses	19
c. Functional Safety Courses	29
d. Process Control Courses	33
i. Applied Process Control Courses	40
ii. Operator Training Simulator Courses	42
e. Control System Courses	44
i. Control Systems Networking and Cyber Security	45
ii. Data Acquisition Historian and Plant Information Management System (PIMS)	53
iii. Factory Automation PLC	59
iv. Distributed Control Systems (DCS)	61
v. Fieldbus & Asset Management Systems	73
f. Safety Instrumented Systems (SIS)	77
g. Remote Terminal Units (RTU) and Supervisory Control And Data Acquisition (SCADA)	83
h. Analyzers	88
4. (YMA-SCoE) Educational Tools	95
a. E-Learning Support	96
i. CENTUM VP Virtual Operator Trainer	100
b. Educational kits and skids	102
c. Training Simulators	108

Co-innovating tomorrow™

Since its foundation in 1915, Yokogawa has contributed to society by providing leading-edge products and solutions centering on its measurement, control, and information technologies. To ensure that it continues to meet changing needs and stays on track for another century of steady growth, Yokogawa has instituted reforms and is now working to transform itself in a number of other ways.

Under the corporate brand slogan of “Co-innovating tomorrow,” Yokogawa seeks to establish ever greater levels of trust with its customers and to work with them to create new value for a brighter future, both for its customers and society.



THE YOKOGAWA PHILOSOPHY

As a company, our goal is to contribute to society through broad-ranging activities in the areas of measurement, control and information.

Individually, we aim to combine good citizenship with the courage to innovate.



GLOBAL LEADERSHIP

Corporate Data*

Corporate Name: Yokogawa Electric Corporation
Director, President & CEO, Representative Executive Officer:
Kunimasa Shigeno
Headquarters: Tokyo, Japan

Founded
1915

September 1,
Incorporated
December 1, 1920

Paid-in Capital
43.4

billion Yen

Number of employees
17,670

Subsidiaries and Affiliates
13 subsidiaries in Japan
115 outside Japan

**As of March 31, 2025*



YOKOGAWA MIDDLE EAST & AFRICA

Local partnership, Global capabilities

Yokogawa Middle East & Africa B.S.C. (c)



Regional Headquarters

PO Box 10070, Manama, Kingdom of Bahrain



Founded

15 May, 1990



Who We Are

Process Control and Automation Solutions provider. Activities include Sales, Project Execution, Engineering, Sub-assembly, Manufacturing, Integration, Startup & Commissioning, Electrical and Instrumentation, After-sales service support (Lifecycle Agreement, Spare parts warranty management and Training), R&D, and participation in Human Capital Development Initiatives for Local Nationals



Middle East & Africa Network:

Affiliate Companies; Engineering Centres, Sales/Service offices and Training Centres.

Yokogawa Middle East and Africa is a wholly owned subsidiary of Yokogawa Electric Corporation, Japan. The company serves as Yokogawa's regional HQ Bahrain, supporting users through a team of highly skilled professionals operating from our network of local offices spread across the Middle-East and Africa.

Yokogawa executes Process Automation projects locally providing engineering, commissioning, training and Lifecycle Maintenance Services.



EMPOWERING PEOPLE. ENABLING PERFORMANCE.

Yokogawa Service Center of Excellence

We help organizations maximize the return on their most significant investment: Human Resources. Our training solutions build skilled, proactive professionals who deliver greater value to your operations.

TRAINING THAT CREATES IMPACT



Improve
Operational
Efficiency



Strengthen
Workforce
Competency



Enhance
Safety &
Reliability



Support
Digital
Transformation



Develop
Proactive
Plant Personnel



BUILT ON YOKOGAWA EXPERTISE

Our training solutions have been developed and validated by our customers over a century of experience

- ✓ Globally proven training programs
- ✓ Validated by real customer experience
- ✓ Guided by the Global Training Committee (GTC)
- ✓ Continuous improvement and change management
- ✓ Aligned with industry standards and best practices



Delivering Excellence
Across
Middle East & Africa



OUR TRAINING APPROACH LEARN • PRACTICE • APPLY



Expert-led technical sessions
by Yokogawa specialists



Hands-on labs & simulations
on real systems and applications



Structured learning paths
for every role and experience level



Real-world operational scenarios
to apply learning with confidence



Continuous skill development
to stay future-ready



INSTRUCTOR-LED
TRAINING



SIMULATION &
HANDS-ON LABS



OPERATIONAL
EXCELLENCE

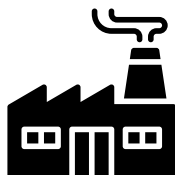
DEVELOPING PEOPLE. ENHANCING PERFORMANCE. DELIVERING EXCELLENCE.
Yokogawa Service Center of Excellence

INDUSTRIES WE SERVE

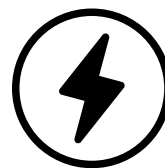
Training solutions designed
for critical industrial
operations.



OIL & GAS



PETROCHEMICAL



POWER &
UTILITIES



WATER &
WASTEWATER



MINING &
METALS



PHARMACEUTICAL



FOOD &
BEVERAGE



PULP &
PAPER



Industry-focused learning solutions designed
for real operational environments.

EXPERT TRAINING. REAL OPERATIONAL IMPACT.

Delivering competent professionals
across Middle East & Africa.

WHY TRAIN WITH YMA-SCoE?



Expert-Led Training
200+ Yokogawa specialists
& Instructors



Regional Training Network
12 Training centers
across Middle East & Africa



Hands-On Learning
Advanced simulators
labs & real systems



Customized Programs
Aligned to your project
lifecycle & business needs



Advanced Learning Tools
OTS, Virtual Labs
3D Simulators



Industry Partnerships
Collaborations with leading
universities & institutes

OUR PRESENCE ACROSS MIDDLE EAST & AFRICA



12+
TRAINING
CENTERS



2000+
PARTICIPANTS
ANNUALLY



200+
TECHNICAL
SPECIALISTS



INSTRUCTOR-LED TRAINING



OTS & PRACTICAL LABS



REAL PLANT APPLICATION

TRAINING PROGRESSION PATHS.

Structured Learning for Every Role.



MAINTENANCE ENGINEER

Foundation

Field Instrumentation

DCS Maintenance

Advanced Diagnostics

Cybersecurity / Networking



CONTROL ROOM OPERATOR

Foundation

Process Control

DCS Operations

Alarm Management

OTS Simulator Training



PROCESS ENGINEER

Foundation

Process Control Principles

Advanced Process Control

Real-Time Optimization

Process Performance Management



SAFETY ENGINEER

Functional Safety

LOPA

TUV Certification

ProSafe-RS Engineering

SIS Lifecycle Management



Foundation

Build basic knowledge



Intermediate

Strengthen skills



Advanced

Deepen expertise



Specialist

Master & lead



Building skills. Advancing knowledge. Delivering operational excellence.



Role-Based Learning Paths



Certifications & Qualifications



Hands-On Experience



Performance Improvement

(YMA-SCoE) Training progressions						
Course Reference	Course title	Plant / Process Engineers	Operators	Maintenance Personnel	IT /Control System Administration	Management
Foundation courses						
EEE	Electrical & Electronics essentials for Instrumentation	F		F		
PMENG	Specialized Physics, measurement & engineering Units for Instrumentation	F		F		
EPMC	Essentials of Process Measurement and Control	F	F	F	F	F
PDD	Process Documents & Drawings in Oil & Gas Instrumentation	F	F	F		F
Field Instrumentation Courses						
PCIF	Field Instruments Measurement Principles	F	F	F		F
FMOR	Fieldmate Orientation			P		
Functional Safety Courses						
LOPA	Layers of Protection Analysis on Safety Systems			P		
TUVFST	TUV Certification for Operations (SIS)	P		P/T		P
TUVFSE	TUV Certification for Engineers (SIS)	P/E		P/E		
RSEM	Safety Instrumented Systems: ProSafe-RS Engineering and Maintenance	P		P/E		
Process Control Courses						
POP	Process Control Principles	F	P			F
VPOF	DCS operation		P		F	
CAMS	Consolidated Alarms Management	P	P			A
PIDBL	PID characteristics and Controllers	F	F	P/E		F
APC	Introduction to Advanced Process Control	P	A			A
RPO	Real Time Process Optimization	A	A			A
Data Historian and Plant Information Management						
EQAD+EQDA	Data Historian Management and Administration	P	A		A	A
ARAP	Alarm Reporting and Analysis	P	A			A

Distributed Control System						
VPGR	DCS Graphics	P		A	A	
VPMT	DCS Maintenance			P/E	P	
VPEG	DCS Engineering			P/E	A	
Fieldbus and Asset Management						
PRM	Plant resources Manager (PRM)			P		A
FBEG	Fieldbus Engineering			P	A	
Control System Courses - Administration						
VNIP	Control System Networking	A			P	
SSI	Control System Substation Integration (Modbus & OPC)	A			P	
PCNS	Process Control Network Cyber Security	A			P	A
Real Time Units (RTU) and Signal Conditioning And Data Acquisition (SCADA)						
STEG+STMT	Real Time Unit (RTU) Engineering & Maintenance	A	P		A	
CIEG	SCADA Operation, Engineering & Maintenance	A	P	P	A	A

Legend			
F	Foundation Information	T	Technician
P	Professional Training	E	Engineer
A	Additional Competency / Training	O	Optional

Available E-Learning Supports associated to the training programs

Course Reference	Course title	Plant / Process Engineers	Operators	Maintenance Personnel	IT /Control System Administration	Management
	Operator Responsibilities: Basic Operator Responsibilities	O		O		O
	Instrumentation and Control: Introduction to Process Control	O	O	O	O	O
	Instrumentation and Control: All Measurements: Pressure / temperature / Level / Flow / liquids – At least one module per unit	O	O	O		O
	Distributed Control System (3 Modules)	O	O	O	O	O
	Automated Process Control (2 parts)	O	O			O
	Introduction to Safety Systems (2 parts)	O	O	O	O	O
	Process Control & fault diagnosis	O	O	O	O	O
	PLC Programming (2 modules)	O		O	O	
	CENTUM VP Virtual Operator Trainer		O			
	CENTUM VP Virtual Engineering Machine	O		O		
	ProSafe-RS Virtual Engineering Machine	O		O		

COURSE INDEX

Foundation Courses

Course Name	Course Code	Page	Course Duration
Essentials of Process Measurement & Control	EPMC	16	5
Process Control System Overview	PCS	16	5
Specialized Physics, Measurement & Engineering Units for Instrumentation	PMENG	17	2
Electrical & Electronics Essentials for Instrumentation	EEE	17	4
Process Documents & Drawings – Instrumentation in Oil & Gas	PPD	18	3

Functional Safety Courses

Course Name	Course Code	Page	Course Duration
Introduction to Safety Systems Training	ISST	26	1
Functional Safety for End-Users	FSEU	26	2
Layer of Protection Analysis (LOPA) on Safety Systems	LOPA	27	2
TÜV SIS Functional Safety Certification for Operation	TUVFST	27	3
TÜV SIS Functional Safety Certification for Engineers	TUVFSE	28	4
Functional Safety of Machinery Certification	TUVFSM	28	5

Field Instrumentation Courses

Course Name	Course Code	Page	Course Duration
Field Instruments Measuring Principles	PCIF	20	5
Instrumentation, Calibration and Maintenance	ICM	21	2
Flowmeters	FLOW	21	3
SMARTDAC+	SDAC	22	3
Fieldmate Orientation	FMOR	22	2
Single Loop Programmable Controller	SLPC	23	2
Yokogawa Smart Transmitters Course	YSTX	23	2
Wireless Communication Technology: Basic	WFIB	24	1
Wireless Communication Technology: Advanced	WFIA	24	2

Process Control Courses

Course Name	Course Code	Page	Course Duration
Process Control Principles	PCP	30	5
Distributed Control System (DCS) and Programmable Logic Controllers (PLC) Operations	DPO	31	1
Introduction to Advanced Process Control Techniques	APC	32	3
Real Time Process Optimization	RPO	32	3
Introduction to Procedures Automation Using Exapilot	PAGE	33	3
PID Characteristics of Controllers and Control Optimization	PIDBL	33	3
Tuning Concepts and “Tune VP” Application	TVP	34	2
Tune VP: PID Control, Tuning and Optimization	TVPA	35	2

Operator Training Simulator (OTS) Courses

Course Name	Course Code	Page	Course Duration
OTS Training for Operators	OTSOP	37	10
Operator Training Simulator (OTS) Engineering Training	OTS	38	4
Operator Training Simulator (OTS) Instructor Training	OTSI	38	4
Operator Training Simulator (OTS) System Management Training	OTSM	39	3

Data Acquisition, Historian, and Plant Information Management Systems

Course Name	Course Code	Page	Course Duration
Exaquantum System Administrator	EQAD	48	4
Exaquantum Data Access from Third-Party Package	EQDA	48	1
Exaquantum User Level	EQUS	49	2
ExaOPC / Exaquantum Engineering & Maintenance	Exa-OPC / ExaQ	50	5
Exaquantum Alarms Reporting and Analysis Package	ARAP	50	5
Sequence of Events Recorder For Users	SER	51	1
Alarms Reporting and Analysis For Users	ARA	51	1
Alarm Master Database For Users	AMD	52	1
Safety Function Monitoring For Users	SFM	52	1
Overview Of Exaquantum Applications	EOVR	53	5

Networking And CyberSecurity

Course Name	Course Code	Page	Course Duration
Networking Essentials	NWES	41	1
Plant Control Network Security	PCNS	42	5
CENTUM VP Networking	VNIP	43	3
OPC Communication Essentials	OPC	43	2
OT Cybersecurity Essentials	CSE	44	
OT Cybersecurity Intermediate	CSI	45	5
OT CyberSecurity Advanced	CSA	46	
Active Directory (AD) & Backup Procedures	ADBK	46	2

Factory Automation PLC

Course Name	Course Code	Page	Course Duration
FA-M3V Engineering & Maintenance	FAM3	55	5

Distributed Control Systems (DCS)

Course Name	Course Code	Page	Course Duration
Introduction to Distributed Control Systems (DCS)	DCSI	57	2
CENTUM VP Operation & Monitoring	VPOF	57	5
CENTUM VP Fundamentals of Operation & Maintenance	VPFM	58	5
CENTUM VP Fundamentals for Engineering	VPEF	58	3
CENTUM VP Engineering	VPEG	59	5
CENTUM VP AD Suite Engineering	VPAD	59	5
CENTUM VP Advanced Engineering I	VPAE1	60	5
CENTUM VP Advanced Engineering II	VPAE2	61	5
CENTUM VP Graphics	VPGR	61	3
CENTUM VP Essentials with Batch Process	VPBA	62	3
Batch Programming	BATCH	62	5
CENTUM VP Modbus Communication	VPMB	63	2
CENTUM VP Engineering & Maintenance	VPEM	63	5
CENTUM VP Maintenance	VPMT	64	3
CENTUM VP Maintenance – Advanced	VPMTA	64	3
Consolidated Alarm Management System (CAMS) Overview	CAMS	65	2
Consolidated Alarm Management System (CAMS) Engineering	CAMSE	65	3
CENTUM VP & ProSafe-RS Maintenance	VPRSMT	66	5
Unified Gateway Station (UGS2)	UGS2	67	3
CENTUM VP Virtualization	VPVR	67	3

Fieldbus & Asset Management Systems

Course Name	Course Code	Page	Course Duration
Fieldbus Orientation	FBOR	69	2
Fieldbus Engineering	FBEG	69	5
Fieldbus Engineering & PRM	FPRM	70	5
Plant Resource Manager - Fundamentals	PRMF	70	2
Plant Resource Manager – Advanced	PRMA	71	3

Safety Instrumented Systems (SIS) – ProSafe-RS

Course Name	Course Code	Page	Course Duration
Fundamentals of ESD Systems	ESD	73	2
ProSafe-RS Operations Fundamentals	RSOF	73	3
ProSafe-RS Modbus Communication	RSMB	74	2
ProSafe-RS Engineering	RSEG	74	5
ProSafe-RS Engineering with AD Suite	RSAD	75	5
ProSafe-RS Maintenance	RSMT	75	3
ProSafe-RS Engineering & Maintenance	RSEM	76	5
ProSafe-RS Advanced Engineering	RSAE	77	5

Supervisory Control and Data Acquisition (SCADA)

Course Name	Course Code	Page	Course Duration
STARDOM Modbus Communication	STMB	79	2
STARDOM Engineering	STEG	79	5
STARDOM Maintenance	STMT	80	1
STARDOM Engineering & Maintenance	STEM	80	5
CI Server Engineering	CIEG	81	5
CI Server Operations	CIOP	81	5
STARDOM And CI Server Engineering	STCI	82	5

Analyzers and Detectors

Course Name	Course Code	Page	Course Duration
Introduction to Process Analyzer & Sample Handling Systems	PASHS	84	2
Essentials of Analyzers and Gas Chromatographs	ANZGC	84	2
GC8000 Operation and Maintenance	GCOM	85	3
GC8000 Operation and Maintenance with Network Management	GCOMN	85	4
GC8000 Advanced Operation and Maintenance with Network and SCS	GCAOM	86	5
Liquid Analyzer Operation and Maintenance	LAOM	86	2
TDLS 8000 Operation and Maintenance	TDOM	87	2
IR400 Operation and Maintenance	IROM	87	3
Liquid Analyzers	LQA	88	2
IR400 / CEMS Analyzer	IR400 CEMS	88	3
Zirconia Oxygen Analyzer	IR400 CEMS	89	3

Soft Skills Training

Course Name	Course Code	Page	Course Duration
Budgeting & Forecasting	BF	91	2
Business English & Technical Report Writing	BETRW	91	2
Coaching & Mentoring	CMT	92	2
Communication & Presentation Skills	CPS	92	2
Creative Problem Solving	CPST	93	1
Document Controlling & Archiving	DCA	93	1
Effective Customer Relationship	ECR	94	2
Enhancing Leadership Capabilities	ELC	94	2
Manager Leaders Development Program	MLDP	95	2
Negotiation Skills	NS	95	2
Office Etiquette & Management	OEM	96	1
Planning, Organizing & Time Management	POT	96	1
Stress Management	SM	97	1
Team Building & Management	TBM	98	1
Train The Trainer	TTT	98	2 to 5
Project Management (Includes MS Word, MS PowerPoint and MS Excel – Advanced)	PM	99	5



FOUNDATION COURSES



Essentials of Process Measurement & Control

Training Module Code: EPMC

Duration: 5 Days

Objectives

The workshop will enable participants to:

- Comprehend the concepts of Process Measurement & Control Technology
- Know the role of major components of a process control system ranging from sensors, transmitters, controllers and final control elements
- Envisage the application of the technology in the industry
- Appreciate the potential of the technology and consider ways on optimum utilization

Target Beneficiaries

Personnel from Instrumentation, Electrical, Electronics, Chemical, Process Engineering & Plant Operations departments

Prerequisites

- Awareness of process industry and/or instrumentation
- Basic math and science background

Day 1 - Essentials of Process Control

- Instrumentation & Control Concepts
- Typical parameters used in process control
- Sensors & Transducers
- Transmitters
- Final Control Elements

Day 2 - Control Philosophy

- Controller definition
- Types of Control – Cascade, Ratio, Split & Feed forward
- Controller Modes
- PID Algorithm
- Direct & Reverse Control

Day 3 – Overview of Process Control Systems

- Distributed Control System (DCS)
- Safety Instrumented System (SIS)
- Programmable Logic Controller (PLC)
- Supervisory Control & Data Acquisition (SCADA)
- Sub-System Communication Protocol

Day 4 – Role of Process Control in safety, quality, production, shipping, custody transfer

- Safety
- Alarms rationalization
- Trending (Real time / Historical)
- Reporting
- Quality
- Productivity
- Custody Transfer & Flow metering

Day 5 – Applications in Process Industry (Examples & Case Studies)

- Material & Heat Balance
- Flow Transfer
- Heat Transfer
- Distillation Process
- Centrifugal Compressor

Process Control Systems Overview

Training Module Code: PCS

Duration: 5 Days

Objectives

The workshop will enable participants to:

- Understand the system architecture and basic engineering concepts of various control systems like PLC, DCS, SCADA & SIS
- Understand control strategies and concepts related to Pressure, Temperature, Level and Flow

Target Beneficiaries

Personnel from Instrumentation, Electrical, Electronics, Chemical, Process Engineering & Plant Operations departments

Prerequisites

- Basic understanding of a Process is preferred

Day 1 – Distributed Control System (DCS) – Architecture & Engineering

- Introduction to DCS
- DCS System Architecture
- Basic Engineering in a DCS Environment
 1. Monitoring Loop
 2. Single Loop using PID Control
 3. Building a Cascade Loop
 4. Building a Split Control Strategy
 5. Building a Ratio Control Strategy

Day 2 – Supervisory Control & Data Acquisition System (SCADA)

- Introduction to SCADA
- Understanding the SCADA Architecture
- SCADA Functions
 1. I/O Processing
 2. I/O Update
 3. Alarming
 4. History
 5. Reporting

Day 3 – Programmable Logic Controller (PLC)

- Introduction to PLC
- Understanding the Architecture of PLC
- Ladder Logic Programming
- Solving real life examples using Ladder Logic

Day 4 – Safety Instrumented System (SIS)

- Introduction to SIS
- Understanding the Architecture of SIS
- Programming a SIS

Day 5 – Pressure Control Simulation

- Understanding a Pressure Process
- Evaluating Controllability through tutorial
- Understanding the effect of disturbance on Pressure Control
- Appropriate Control Parameters to be set when controlled by outlet gas flow rate
- Summary of important points related to pressure control

Specialized Physics, Measurement & Engineering Units for Instrumentation

Training Module Code: PMENG

Duration: 2 Days

Objective

The participants will receive:

- An overview of the concepts of physics, measurement techniques & Engineering Units applied in the process control instrumentation
- Refresh their knowledge on physics & measurement techniques and relate the application in process instrumentation.
- This will enable them to comprehend the science behind instrumentation, products & systems & utilize the features to the maximum benefit

Target Beneficiaries

Personnel from Instrumentation, Electrical, Electronics, Chemical, Process Engineering & Plant Operations departments

Prerequisite

- Awareness of process industry and/or instrumentation
- Basic math and science background

Day 1 – Important applications of Physics

- Common Physics Units in Instrumentation – Density, Viscosity, Specific Gravity, Mass, Force, Energy, Volume, Area, Circumference, Distance, Power & Torque.
- Conservation Laws
- Role of Classic Mechanics in Instrumentation
- Fluid Mechanics- significance in process measurement & control
- Digital Electronics – Gates, Sequential & Combinational Logics as applied in continuous process industry

Day 2 – Measurement Principles & Essentials of Engineering Units

- Basic Measurement Concepts
- Definition of Terminology
- Measurement principles of Level, Pressure, Temperature & Flow
- International System of Units & Conversion factors
- Engineering Units – Comparison of Imperial & Metric Standards

Electrical & Electronics Essentials for Instrumentation

Training Module Code: EEE

Duration: 4 Days

Objectives

The workshop will enable participants to:

- Understand the Generation, Transmission & Distribution principles & Equipment involved
- Overview of the characteristics of direct current (DC) & Alternating Current (AC) parameters
- Comprehend the properties of resistors, inductors and capacitors
- Learn the importance & practice of earthing & grounding
- Understand the functions & applications of various electronic components

Target Beneficiaries

Personnel from Instrumentation, Electrical, Electronics, Chemical, Process Engineering & Plant Operations departments

Prerequisites

- Awareness of process industry and/or instrumentation
- Basic math and science background

Day 1 – Applied Electricity

- Overview of electrical devices – Transformers, Voltage Regulators, Inverters
- Power Supplies: Types, Operation Principle, UPS & Backup Generators

- Earthing & Grounding concepts & practices
- Protective Devices – Switchgear, Relays, Circuit Breakers & Fuses
- Power Distribution
- Control Circuits: Study of Interlock logics
- PLC Vs. Hard Wired Relay Logic

Day 2 – Applied Electronics Part 1 of 3

- Solid State Principles
- Electronic Devices – Zener Diodes, SCRs, Triacs, Op Amps & ICs
- Basic Electronic Circuits – Power Supplies, Amplifiers, Attenuators, Filters & Bridges etc.

Day 3 – Applied Electronics Part 2 of 3

- Essentials of Digital electronics
- Number Systems
- Signal Transmission – 2 Wire & 4 Wire Transmitters, Wireless Transmitters
- Radio Frequency Interference(RFI), Electromagnetic Interference (EMI), S/N Ratio, Shielding Techniques

Day 4 – Applied Electronics Part 3 of 3

- Network Fundamentals – Communication Systems, Telemetry,
- Protocols
- Computing (Analog Vs. Digital)
- Electronics in Measurement & Instrumentation



Process documents & drawings – Instrumentation in Oil & Gas

Training Module Code: PDD

Duration: 3 Days

Objectives

This course provides a deep understanding of plant documentation and diagrams that will enhance the understanding of the process, & improve the operation & maintenance performance. The module delivers the utility of each diagram type detailing where & when the document should be used, enabling the trainee to respond & resolve situations promptly & efficiently

Upon completion of this course participants will be able to:

Work with process flow diagrams, P&IDs, instrument lists, specification forms, logic diagrams, location plans, installation details, instrument loop diagrams, instrument hook ups and other vital documentation

Target Beneficiaries

Personnel from Instrumentation, Electrical, Electronics, Chemical, Process Engineering & Plant Operations departments

Day 1 – Design Diagrams

- Essentials of Process flow diagrams (PFD)
- Overview of ISA Symbol System
- Essentials of Piping & Instrumentation Diagrams (P&ID)
- Control loops on the P&ID

Day 2 – Instruments Drawing

- Instrument lists
- Specification Plan
- Logic Diagrams
- Location Maps
- Installation Details

Day 3 – Engineering Drawing

- Block Diagrams
- Loop Diagrams
- Wiring diagrams
- Control System Schematics
- Representation of Process Control Devices
- Commonly used terms
- Updating changes on documentation

FIELD INSTRUMENTATION COURSES



Field Instruments Measuring Principles

Training Module Code: PCIF

Duration: 5 Days

Objectives

The training course is designed to provide the delegates with necessary skills to understand and improve measurements solutions facilitated in the Industrial Automation Industry. Enable delegates to understand the fundamental and terminology of Field Instrumentation plus Process control technology and strategies.

The training / facilitation will include history and overview of terminology, principle of operation, standard applications and solutions for different industries, installation requirements, electrical connections, verification of the products, maintenance of the products and safety instruction. The Field Instrumentation Product Training includes the following main methods of measurement: Pressure, Temperature, Flow, Level and Liquid / Gas Analysis. Other topics covered are communications protocols and process control technology and strategy.

Target Beneficiaries

The course is suitable for Supervisors, Project Engineers, Engineers, Technologists, Technicians, Artisans, Apprentices, and Operators who required a practical knowledge for selection and implementation of Industrial Automation measurement systems

Prerequisites

Minimum requirement is a grade 12 with related Engineering subjects. Delegates with minimum of five years industrial orientated plant knowledge can participate in the course.

Day 1 – Pressure

- Atmospheric pressure measurement
- Gauge pressure measurement
- Absolute pressure measurement
- Differential pressure measurement
- Hydrostatic pressure measurement
- Dynamic pressure measurement
- Static pressure measurement
- Pressure in flow measurement
- Pressure in level measurement

Day 2 – Temperature

- Thermocouple temperature measurement
- Resistance Temperature Detector RTD Pt100/500/1000 temperature measurement
- Pyrometer temperature measurement

Day 3 – Flow

- Electromagnetic flow
- Coriolis Mass flow
- Vortex flow
- Ultrasonic flow
- Differential Pressure flow
- Variable Area flow
- Thermal flow
- Positive Displacement flow
- Turbine flow

Day 4 – Level

- Bubbler pipe method
- Hydrostatic method
- Vibration method (Tuning fork)
- Conductive level switching
- Capacitance level
- Ultrasonic Time of Flight method
- Microwave Time of Flight (RADAR)
- Gamma Radiation method

Day 5 – Liquid (Wet) & Gas (Dry) Analysis

- pH measurement
- Conductivity measurement
- Zirconia Oxygen Analyzer

Flow Meter-Field Instruments Training

Course Code: FLOW

Duration: 3 Days

Objective

The training course is designed to provide the delegates with necessary skills to understand and improve measurements solutions facilitated in the Industrial Automation Industry. Enable delegates to understand the fundamental and terminology of Field Instrumentation plus Process control technology and strategies

The Field Instrumentation Product Training includes the following main methods of measurement , Installation ,Configuration & troubleshooting of : Flow Meter.

Participants

Instrumentation and process control personnel involved in Engineering & Maintenance of Field Instruments

Prerequisites

Participants should preferably have some basic knowledge on process measurement and control.

Learning Outcome

Participants will be able to understand Flow meter Principles, configuration & troubleshooting.

Course Outline :

Day1:

Magnetic Flow Meter:

- Flow meter Introduction
- Basic working Principle
- Installation Guidelines
- Configuration Procedure
- Troubleshooting

Day 2:

Vortex Flow Meter:

- Flow meter Introduction
- Basic working Principle
- Installation Guidelines
- Configuration Procedure
- Troubleshooting

Day 3:

Rota Mass Flow Meter:

- Flow meter Introduction
- Basic working Principle
- Installation Guidelines
- Configuration Procedure
- Troubleshooting



FIELD INSTRUMENTATION COURSES

SMARTDAC+ Training (Paperless Recorder / Data Logging Software)

Course Code: SDAC

Duration: 3 Days

Objective

The training course is designed to provide the delegates with necessary skills to understand and improve measurements solutions facilitated in the Industrial Automation Industry. Enable delegates to understand the fundamental and terminology of DAQ System Operation Process control technology and strategies. The DAQ System Training includes the following System Configuration, menu operation and trouble shooting.

Participants

Instrumentation and process control personnel involved in Engineering & Maintenance of Field Instruments, Field Operation.

Prerequisites

Participants should preferably have some basic knowledge on process measurement and control.

Learning Outcome

Participants will be able to understand Daq System configuration, Menu operation, trouble shooting.

Course Outline :

Day 1: GX/GP Series Training

- Products Overview
- Components Explanations
- Input Module detailed Wiring

- Recorder basic configurations
- Input Module Configurations
- Parameters Save / Reload configuration
- Web Application
- Recorder Hands on

Day 2: Data Logging Software GA10

- Software Installation
- Input Device Communication
- Tag / Math & Group Settings configurations
- Data Monitoring
- Accessing the Recorded Data
- User creations
- Modbus output

Day 3: Universal Viewer & Custom Display function

- Introduction
- Viewing Data File / Linking Data File
- Waveform Display
- Data File Conversion
- Printing Data File
- Display Template creation
- Custom Display configuration
- Recorder Hands on

FieldMate Orientation

Training Module Code: FMOR

Duration: 2 Days

Objective

This course is designed to provide participants with overall knowledge that allow him to understand and operate the Fieldmate and use it in maintenance activities.

Participants

For process instrumentation & control engineers, supervisors and technicians.

Prerequisite

Participants should preferably be experienced in process industry with basic knowledge of process measurement and control.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

FieldMate Overview & Features
FieldMate Registration
FieldMate PC Configuration
FOUNDATION fieldbus H1 Device Interface
HART Device Interface
Installation of DD files
User Management Function
Laboratory Work:
FieldMate Installation
Device Configuration/Connection Exercises

Day 2

Device Maintenance Information Management
Segment Viewer and settings
Function Blocks settings for FOUNDATION fieldbus
Device Adjustment/Setting Functions
Device Viewer & Operation Log

Laboratory Work:

Online adjustment & diagnosis

Single Loop / Programmable Controller Training

Course Code: SLPC

Duration: 2 Days

Objective

The training course is designed to provide the delegates with necessary skills to understand and improve measurements solutions facilitated in the Industrial Automation Industry.

Enable delegates to understand the fundamental and terminology of Single Loop /Programmable Controller Process control technology and strategies

The Controller Training includes the following Configuration , Wiring, menu operation, Programming and trouble shooting.

Participants

Instrumentation and process control personnel involved in Engineering & Maintenance of Field Instruments , Field Operation.

Prerequisites

Participants should preferably have some basic knowledge on process measurement and control.

Learning Outcome

Participants will be able to understand Single Loop Controller / Programmable Controller configuration , Menu operation , Wiring , programming and trouble shooting.

Course Outline :

Day1 : Single Loop Controller (UT Series)

- Basics & Specifications of UT Series Controller
- Wiring Details of UT Controller
- Communication Method
- Programming methods
- Parameter setting configurations
- Backup & restore UT Series Controller

Day2 : Programmable Controller (YS1700 Controller)

- Basics & Specifications of YS1700 Controller
- Wiring Details of YS1700 Controller
- Communication Method
- Programming methods
- YSS1000 features (Parameter setting, Program Editor)
- Backup & restore YS1700 Controller

Yokogawa Smart Transmitters Course

Training Module Code: YSTX

Duration: 2 Days

Objective

This course is designed to provide participants with advance smart transmitter industrial measurement technology used in process instrumentation and control.

Participants

For process instrumentation & control engineers, supervisors and technicians.

Prerequisite

Participants should preferably be experienced in process industry with basic knowledge of process measurement and control.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

Introduction to Process Control
Instrumentation communications & networks types.
Yokogawa field products overview.
Typical measurement loops.
EJA* Differential Pressure Transmitter.

Laboratory Work:

Loop connection of smart transmitters to DCS.

Day 2

YTA* Temperature Transmitter.
Other selected transmitter.
Transmitter adjustment, calibration & troubleshooting.

Laboratory Work:

Online adjustment & diagnosis using available tools.
- PRM.
- HART475 Communicator.
- Fieldmate.
- Brain Terminal BT200.



Wireless Communication Technology - Basic

Training Module Code: WFIB

Duration: 1 Days

Objective

To understand basic knowledge of wireless technology and to be able to setup minimum wireless system smoothly.

Participants

Instrumentation and process control personnel involved in Engineering & Maintenance of Field Instruments

Prerequisite

Participants should preferably have some basic knowledge on process measurement.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Training Agenda

1. ISA100.11a Wireless Standard

ISA100 wireless committee

Comparison with wireless HART

Key Feature of ISA100

- Channel hopping schemes

- IPv6, 6LowPAN
 - Security Features
 - Variety of ISA100 wireless vendors and etc."
2. Yokogawa wireless system features
- Device Portfolio
 - Long Communication Distance and multi-hop system
 - Remote antenna cable
 - Scalability
 - Full Redundant System
 - Security Measures
 - Sky mesh concept
 - Battery Life Time & Battery concept
3. Basic Setup of Yokogawa Wireless System (Hands-on training)
- ISA100 wireless device roles
 - Preparation of software & hardware
 - Device Provisioning
 - Access Point Setup
 - Wireless System Configuration
 - Wireless Network Confirmation

Wireless Communication Technology - Advanced

Training Module Code: WFIA

Duration: 2 Days

Objective

To understand advanced knowledge of wireless technology and to be able to operate large scale wireless system.

Participants

Instrumentation and process control personnel involved in Engineering & Maintenance of Field Instruments and already awarded basic wireless course certification.

Prerequisite

Participants should preferably have some basic knowledge on process measurement and wireless system.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Training Agenda

1. Application references in Middle East

Application introduction

2. Advanced system setting for Large Scale Wireless System (Hands-on training)

Graphic Editor

Modbus Setting - Diagnostic, Device Status -

Multiple Subnet setting

Channel Blacklisting and noise interference

Full Redundant System

- Latency minimization - Duocast -
 - Security Setting
 - OTA provisioning
 - System Design Sample for Large Scale Project
3. Maintenance procedure
- Battery Maintenance
 - System Backup, Maintenance information & Firmware upgrade
4. Installation design guide line
- Basic knowledge of radio communication
 - Wireless Device Layout and Topology (Sky Mesh Concept)
 - Consideration of Communication Distance
 - Fresnel zone
 - Height pattern effect
 - Weather condition effect
 - Examples of Installation Design without Site Survey
5. Advanced product setup (Optional) Multi-Protocol Adapter setup (HART protocol)
6. Advanced product setup (Optional) Multi-Functional Adapter (AI, DI, DO, Pulse)
7. Advanced product setup (Optional)
- Vibration transmitter setup



FUNCTIONAL SAFETY COURSES



FUNCTIONAL SAFETY COURSES

Introduction to Safety Systems training

Training Module Code: ISST

Duration: 1 Day

Objectives

To give the participants an understanding of the role played by Safety Systems for industrial production processes in preventing personal injury, environmental damage, damage to equipment and loss of production.

This course will cover the terminology used for Safety Systems, the international standards IEC 61508 and IEC 61511 which cover all safety life-cycle activities and also the safety solutions offered by the Yokogawa ProSafe Systems family.

Target Beneficiaries

Operators, Engineers, etc., interested in the various aspects of safety systems for industrial production processes

Prerequisites

None

Day 1

- Welcome and course introduction
- Usage of safety systems
- Safety systems terminology
- International standards IEC 61508 and IEC 61511
- Introduction to Yokogawa ProSafe systems family
- Evaluation

Functional Safety for End-users

Training Module Code: FSEU

Duration: 2 Days

Objectives

The objective is to provide participants with elementary and necessary knowledge about functional safety based on international standards IEC 61508 and IEC 61511.

Target Beneficiaries

Architectural and/or basic designers, lead engineers, project engineers, system engineers, application engineers, site engineers and project managers involved in safety projects

Prerequisites

Participants should have an affinity with industrial safety

Examination

An open book assessment will be given at the end of the 2 days.

Certificate

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Participant who attains at least 80% at the final exam will be awarded a Yokogawa Competence Certificate, valid for 3 years.

Day 1

- General introduction
- Module 1: Introduction to Functional Safety
- Module 2: International safety standards IEC61508 and IEC 61511
- Module 3: HAZOP-SIF-SIL
- Module 4: Safety Engineering

Day 2

- Module 5: Functional Safety Management
- Module6: Failures and hardware fault tolerance
- Module 7: Common causes influences ad other failure types
- Module 8 Safety calculations

Layer of Protection Analysis (LOPA) on Safety Systems

Training Module Code: LOPA

Duration: 2 Days

Objectives

This course enables participant to learn to perform Layer of Protection Analysis (LOPA) & Safety Instrumented Systems (SIS). Layer of Protection Analysis (LOPA) is a methodology for hazard evaluation and risk assessment. It helps the analyst make consistent decisions on the adequacy of the existing or proposed layers of protection against an accident scenario. This decision-making process is ideally suited for coupling with a company's risk-decision criteria, such as those displayed in a risk matrix. LOPA is a recognized technique for selecting the appropriate safety integrity level (SIL) of your safety instrumented system (SIS) per the requirements of standards such as ANSI/ISA-84.00.01, IEC 61508 and IEC 61511

Target Beneficiaries

- Process Safety personnel
- Process and Process Control engineers
- Operations and Maintenance personnel
- Personnel who may participate in LOPA reviews or Who may be affected by LOPA recommendations
- Participant should have basic understanding of Process Safety, Process Hazard Analysis techniques, and with strong engineering skills

Prerequisites

Participants should preferably have some basic knowledge on process control.

Day 1

- Overview of LOPA and SIL Assessment
- Process Hazard Analysis and Tolerable Risk Target
- Consequence Evaluation
- Developing Scenarios
- Exercise
- Identifying Initiating Causes and Likelihood
- Identifying Independent Protection Layers
- Failure Rates and Reliability Data
- Risk Tolerance Criteria and Risk Reduction Measures

Day 2

- Introduction to Safety Instrumented Systems (SIS)
- Achieving Safety Integrity Level (SIL) Targets - Design Phase, Operations & Maintenance
- Exercise
- Case Study from a major site (refinery) for Operations & Maintenance
- Quiz

Functional Safety Certification for Operations

Training Module Code: TUVFST

Duration: 2.5 Days

Objectives

The objective is to provide operators, maintenance technicians all those who are involved in the maintenance and operation of safety instrumented systems with elementary and necessary knowledge about functional safety, based on the international standards IEC 61508 edition 2010 and / IEC 61511 edition 2016

Target Beneficiaries

This course is ideally suited for maintenance and instrument engineers or operators whom will be involved in testing, maintaining and decommission of Safety Instrumented Systems (cradle to grave).

Prerequisites

In accordance with TUV Rheinland Functional Safety Program: a minimum of 2 years experience in the field of functional Safety - A technical diploma or certificate or equivalent engineer level responsibilities status certified by the employer.

Methods of delivery

Interactive lecture. Exercises (both groups and individual exercises)

Trainer:

Safety Assurance and consultancy group of Yokogawa Europe.

Trainer(s): 6 to 12

Day 1

- Module 1: General Introduction
- Module 2: Standard IEC 61508 and 61511
- Module 3 Installation and commissioning
- Module 4: general aspects for all phases

Day 2

- Module 5: overall safety validation
- Module 6: Operational phase
- Module 7: Maintenance and repair
- Module 8: Proof Testing
- Module 9: Modifications
- Module 10: decommissioning and Disposal

Day 3 – Examination

EXAMINATION

At the end of the course, participants have to take an exam. The examinations contains two parts. Part. Part1 Consists of 40 Multiple Choice questions and part 2 consists of 10 open questions.

Certification:

The certification delivered upon succeeding in passing the examination is a Functional Safety Technician Certification officially delivered by TUV Rheinland - Germany.



TÜV SIS Functional Safety Certification for Engineers

Training Module Code: TUVFSE

Duration: 4 Days

Objectives

The workshop will enable participants to:
Understand and master the application, principles and requirements of IEC 61508 / IEC 61511

Target Beneficiaries

Instrument Engineers, Process Engineers & Supervisors, Maintenance & Operating Personnel, Safety System engineers.

Prerequisites

A minimum of 3 years experience in the field of functional Safety: Registration is subject to acceptance by TÜV Rheinland.

Day 1 – Introduction to Safety Engineering

- Introduction to safety engineering
- Application of the international standard IEC 61511 part 1: General requirement and management of Functional Safety
- Examples concerning management of Functional Safety

Day 2 – Application of IEC 61511 standards

- Application of the international standard IEC 61511 part 2: Requirements E/E/PES
- Determination and evaluation of safety related parameter (practical examples)
- Application of international standard IEC 61511 part 3: software requirements
- Practical example concerning part3

Day 3 – Application of IEC 61511 standard

- Requirements of tools for configuration and parameterization of Safety Systems
- Requirement of safety related bus system according to IEC 61511
- Summary of training – questions and answers.

Day 4 – Examination

Certification:

The certification delivered upon succeeding in passing the examination is a Functional Safety Engineer Certification officially delivered by TÜV Rheinland - Germany.

Functional Safety of Machinery Certification

Training Module Code: TUVFSM

Duration: 5 Days

Objective

The new standards regarding Functional Safety as well as the new European Machinery Directive demand that persons and organizations performing responsible (accountable) tasks during the life cycle phase of a machine have to acquire and prove their competencies in Machine Safety.

Within this training the requirements for the design as well as the proof of Functional Safety for Machinery applications are described and discussed in detail based on the relevant current standards.

The selection of protective devices for Machinery in order to achieve the required risk reduction is shown. Examples of safety functions are explained. The main requirements of ISO 13849 and IEC 62061 for the design of safety related parts of machine control systems are presented and application examples illustrating the quantitative assessment of safety functions are discussed.

Participants

Application engineers and system integrators with some experience in Functional Safety; also designers and safety specialists working in Machinery applications.

Prerequisite and Certification

The following requirements must be fulfilled in order to get the FS Engineer (TÜV Rheinland) certificate in Machinery:

1. copy of degree (Bachelor's, Master's or other) in engineering or other technical area,
2. participation in the complete training,
3. passing of exam

Working Material

The standards ISO 13849 part 1 and part 2 and IEC 62061 are required working material for this training and need to be brought along by the participants.

Day 1

Introduction - TÜV Rheinland Functional Safety Training Program.

- Guidelines and Standards
- Risk Analysis
- Introduction to ISO 13849
- Safety Devices
- Guards, interlocking devices:
- Other safety devices:

Day 2

- Safety functions of machines
- Circuits, schematics, examples

PROCESS CONTROL
COURSES



Process Control Principles

Training Module Code: PCP

Duration: 5 Days

Objectives

The workshop will enable participants to:

- Gain Analytical Knowledge & handling abilities of different units & processes through a dynamic process simulator
- Confirm the knowledge gained through Textbooks, Lectures & exercises by practically operating the various modules in the dynamic simulator
- Refresh control theory and practice standard methods to set control parameters & improve the controllability of various process controls i.e. Flow, Level, Pressure & Temperature
- Learn the principles behind Heat & Mass Balance & Heat Transfer
- Understand the basics of behavior of fluids i.e. Volumetric Flow Rate, Reynolds Number, Pressure Drop etc. using a Fluid Simulator
- Experience the unit operation of a Distillation Column & a Centrifugal Compressor which leads to the understanding of the concepts of Gas Compression, managing the critical characteristics such as surge control & operation of a water methanol distillation tower

Target Beneficiaries

Personnel from Instrumentation, Electrical, Electronics, Chemical, Process Engineering & Plant Operations departments

Prerequisites

- Background knowledge of Windows Operating System
- Knowledge of Basic Chemical Engineering

Day 1 - Process Control Simulation

- Flow Control
- Liquid Level Control
- Pressure Control
- Temperature Control
- Feed forward Control

Day 2 – Equipment Control – Centrifugal Compressor

- Learn the basic operating method of Centrifugal Compressor by practical operation of the process simulator
- Reading the Performance Curve
- Understand the mechanisms behind surging and its avoidance

Day 3 – Distillation Column

- Learn the operation of a distillation tower by practical simulation
- Understand the type of control strategy behind the Distillation Tower
- Understand the influence of Reflux ratio on the Temperature & Heat Balance of the Tower

Day 4 – Heat Transfer, Material & Heat Balance

- Understanding the various parameters of a Heat Exchanger from the operating data
- Understand the relationship between the water amount & the overall Heat Transfer Coefficient
- Obtaining theoretical values of Material & Heat Balance from basic equations and testing verifying them
- Understanding the significance of Air Ratio Control
- Confirming the material balance of water around the steam generator

Day 5 – Dynamics of Fluid Flow

- Study of the important parameters related to fluid flow viz. Volumetric Flow rate, Mean Flow rate, Reynolds Number, Pressure Drop etc.
- Practically determine the properties of water that will be affected by temperature
- Verify pressure drops due to friction & potential difference

Distributed Control System (DCS) and Programmable Logic Controllers (PLC) Operations

Training Module Code: DPO

Duration: 1 Day

Objectives

The workshop will enable participants to:

- Familiarize with operational procedures of DCS & PLC.
- Appreciate the difference between DCS & PLC.
- Understand typical applications of both systems in the industry.
- Know the basic configuration & engineering procedures.

Target Beneficiaries

Personnel from Instrumentation, Electrical, Electronics, Chemical, Process Engineering & Plant Operations departments

Prerequisites

None

Day 1 – Operation of DCS & PLC

- Introduction to Control Systems
- DCS & PLC Definitions & Differences
- Basic Components of DCS
- Human Interface Station (HIS)
- Field Control Station (FCS)
- Communication Protocols
- PLC System Configuration
- PLC operation principles
- PLC programming concepts



PROCESS CONTROL COURSES

Introduction to Advanced Process Control Techniques

Training Module Code: APC

Duration: 3 Days

Objectives

The workshop will enable participants to:

- Understand the basic concepts of Advanced Process Control (APC) techniques
- Apply the theory to practice
- Identify the APC areas and quantify the deliverable benefits upon implementation
- Work in a Project involving all facets of APC

Target Beneficiaries

Process, Operations, Instrument, Control Engineers and Console Operators who are:

- Responsible for efficiently running the process units
- Responsible for maintaining process controls and ensure a stable control performance
- Responsible for translating the intended objectives in to performance

Prerequisites

Participants should preferably have some basic knowledge on process control.

Day 1 - Introduction to APC Technology & Benefit estimation

Introduction to APC Terminology
Process Dynamics
PID Control
Control Algorithms and Tuning
Level Controls
Cascade and Computer Controls

Introduction to Benefit Estimation
Statistical Primer
How benefits are achieved
How to process data for benefit estimation
Calculation approaches
Real life examples
Introduction to MPC

Day 2 – Working Principle

How it works in simple terms
Where should MVPC be used
Independent and Dependent Variables
Step test methods & Model identification
Project Implementation
Role of the consultant Vs. Client APC
APC Maintenance issues and QA

Day 3 – Quality estimators & optimization

- Introduction to Optimization within MVPC
Introduction to Economics Variables (EV)
Importance to EV in achieving APC benefits
- Introduction to Quality Estimators
Why use estimators?
Keeping Estimators Healthy

Real Time Process Optimization (RPO)

Training Module Code: RPO

Duration: 3 Days

Max 12 Participants

Objectives

This course is designed for allowing personnel operating and/or maintaining the Real Time Process Organizer to get started with this new system.

At the end of the sessions, the participants will:

- Understand the architecture of the platform
- Navigate within the different applications.
- Be capable of connecting a Plant Information System
- Be capable of performing basic maintenance and troubleshooting.

Day 1

- Introduction to RPO
- Architecture of I-Field System
- RPO Launcher
- Common Users
- Common Users roles and permissions
- RPO Common

- Plant Hierarchy
- Equipment Hierarchy
- Organization Hierarchy
- Shift Settings

Day 2

- Introduction to Production Instructor
- Operation Log
- Work Instructions
- Shift Handover
- Reports

Day 3

- Introduction to Production Supervisor
- Configure Data Server
- Configure KPI's
- LPI Alarms
- KPI Hierarchy
- KPI Dashboard
- Overview of WFC Builder
- Process Monitoring Operations
- Connection to PI Server
- Troubleshooting

Introduction to Procedures Automation Using Exapilot

Training Module Code: PAGE

Duration: 3 Days

Objective

This course is designed to provide a thorough introduction to the Yokogawa Exapilot Asset Guard package. It provides focus on how Exapilot can help automate plant operation efficiency in steady, unsteady, abnormal states, enhance DCS function, and guard plant operation assets & resources.

Participants

Process, Operations, Maintenance, Control Engineers and Console Operators, from chemical, petrochemical, and other Process-related industries who are:

- Responsible for plant operation efficiency and safety improvement;
- Responsible for plant operational procedure optimization;
- Responsible for operational cost reduction;
- Responsible for plant operation quality control;
- Responsible for optimized plant maintenance.

Prerequisite

Participants should preferably have plant experience and knowledge in operation and control.

Day 1 – Introduction to EXAPILOT software

Introduction to Terminology

- Overview of ExaPilot
- Features of ExaPilot
- Functions of ExaPilot
- Suitable Operation's
- System Architecture
- Application Structure
- Q & A

Day 2 and 3: Practice

Builder function of ExaPilot

- View Of Programming tool
- Builder Function
- Operation Function
- Case Studies
- Q & A

PID Characteristics of Controllers and Control Optimization

Training Module Code: PIDBL

Duration: 3 Days

Objectives

The workshop will enable participants to:

- Comprehend the theoretical & practical aspects of PID Control & base layer control strategies
- Implement tuning on various processes like Level, Temperature etc. as well as gain knowledge on complex tuning

Target Beneficiaries

Process Control and Instrument Engineers, Operations Personnel, Process Engineers who are:

Responsible for tuning the control loops and ensure performance
Responsible for achieving higher levels of Process Performance

Prerequisites

- Participants should be aware of Process Control Fundamentals
- Basic knowledge of DCS engineering

Day 1 – Introduction to P,I & D action

- Introduction to Proportional, Integral and Derivative Action
- Practical implementation of PID Control Action
- Open loop response of PID controller

Day 2 – PID Tuning rules & practice on simulated process

- PID Tuning rules
- PID Tuning practice using simulated processes
- Temperature Loop
- Cascade Loop
- Level Loop
- Pressure Loop
- Monitoring and Diagnostic of PID Controller
- Different form of PID Controller in DCS
- Non-Linear PID Control

Day 3 – Advanced DCS configuration & complex tuning

- Cascade Control
- Ratio Control
- Pressure Compensated Temperature
- Signal Processing
- Feed forward Control



Tuning concepts and “Tune VP” application

Training Module Code: TVP

Duration: 2 Days

Objectives

The workshop will enable participants to:

- Understand the basic concepts of control loops, and tuning techniques.
- Apply the theory to practice
- Identify the areas and quantify the deliverable benefits upon implementation Work in a Project involving facets of APC.

Target Beneficiaries

Process, Operation, Maintenance, Control Engineers and Console Operators involved in:

- Plant operation efficiency and safety improvement
- Plant operational procedure optimization
- Operational cost reduction
- Plant operation quality control
- Plant maintenance optimization

Prerequisites

Participants should preferably have some basic knowledge on process control

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1:

- INTRODUCTION TO PID
- Feedback Control
- Definitions in Process Control
- Proportional Action (P)
- Proportional Band (PB)
- Integral Action (I)
- Proportional Integral Action (PI)
- Derivative Action (D)
- Proportional Derivative Action (PD)
- Proportional Integral Derivative Action (PID)
- PRACTICAL IMPLEMENTATION OF PID CONTROL

ACTION

- Basic Type PID Control Algorithm (PID)
- Proportional and Derivative Kick
- PV Proportional Derivative Type PID (I-PD)
- PV Derivative Type PID Control Algorithm (PI-D)
- Automatic Determination Type
- Automatic Determination Type 2
- Anti-Reset windup
- Direct Action and Reverse Action
- PRACTICAL EXERCISES
- CENTUM VP Engineering Configuration
- PID Loops Configurations
- Tuning and Trend Windows

Day 2:

- PID CONTROLLER TUNING RULES
- Speed and Stability
- Rules of Thumb for PID Tuning
- Closed Loop Tuning Method
- Open Loop Tuning Method
- Ziegler Nichols Loop Methods
- Process Models for Tuning
- Cohen-Coon Tuning Method
- Different form of PID controller in Centum
- PID TUNING PRACTICE USING SIMULATED PROCESSES
- Determine the PID Values Based Trial and Error Method
- Determine the PID Values Based on Ziegler-Nichols Method
- Determination of the Ultimate Gain and the Period of the Oscillations
- Determine Kp and Ti
- Fine Tune the PID Parameters Until the Responses are good.
- Determination of the Process Model
- Practice on Different form of PID controller in CentumTune VP

Tune VP: PID control, tuning and optimization

Training Module Code: TVPA

Duration: 5 Days

Objectives

This course will be conducted for Five-days. The focus will be both on the theoretical and practical aspect of PID control and based layer control strategies, reinforced by exercises and hands on tuning practice on simulated process using CENTUM DCS.

At the end of the course, the participant will:

- Understand the theory behind the PID controllers
- Familiarize with the PID Tuning Rules to be adopted to characterize the various types of Process Responses
- Tuning of Flow, Temperature, Pressure and Level Loops
- To analyze Process interactions and identify ways and means of overcoming them to provide improved base Layer Control.

Target Beneficiaries

Control, Process and Instrument Engineers who are:
Responsible for tuning the control loops and ensure performance
Responsible for achieving higher levels of Process Performance

Prerequisites

Participants should be familiar with:

- Process Control and Monitoring
- Instruments and their functions within a typical feedback/control loop

- Basic math and sciences

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1:

Introduction to Proportional, Integral and Derivative action.
Practical implementation of PID control action.
Open loop response of PID controller.

Day 2:

PID tuning rules.
PID tuning practice using simulated processes,
- Temperature loop,
- Cascade loop,
- Level loop and
- Pressure loop.

Day 3:

Monitoring and Diagnostic of PID controller.
Different form of PID controller in CENTUM DCS.
Non-linear PID Control.

Day 4:

Advanced DCS configuration, and complex loop tuning.
- Cascade Control
- Ratio Control,
- Pressure compensated temperature,
- Signal processing.

Day 5:

Advanced DCS configuration and complex loop tuning.
Feed forward control.
Constraint control.
Temperature pass balancing.



OPERATOR TRAINING SIMULATOR

OTS Training for Operators – Customized Course

Training Module Code: OTSOP

Duration: 10 Days

Objectives

At the end of the training program operators shall be fully aware of

Process Startup and Shutdown in the OTS system for the plant model process.

Awareness and analysis of Cause and Effect.

Process Upset and Scenario Handling using the Model in the OTS setup.

Important notes:

- The process training shall follow the Process Operating Manual (POM) and reference of Design and commissioning manual ,vendor manual as provided by the Company
- Training material from Yokogawa shall cover the functional aspects in line with the operational Aspects of the complete plant available in the OTS model.
- Process theory / process specific details of the model shall be referred from the POM.
- The training manual will use simple steps prepared from the referred design documents for the understanding of the operators

Target Beneficiaries

Panel Operator and Field Operator involved in the plant operations

Prerequisites

Participants should have attended HMI Operation and Graphics Training

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

- Introduction.
- Overview of OmegaLand Direct DCS connection.

- OmegaLand DCS emulation.
- Loading OmegaLand.
- Stopping OmegaLand

Day 2

- Introduction to Omega Land's model and functionalities.
- The FAT Completed (application and Graphics) will be used to load the training setup.
- Run simulation model and visualize the complete operation.
- Hands-on Exercise

Day 3 and 4

- Aspects of process startup.
- Load some Initial Conditions of startup and cold IC.
- Hands-on Exercise.

Day 5

- Overview of Field operator Interface and sequences.
- Introduction to Omega Land's Field Operation (FO).
- Operation sequences for startup.
- Hands-on Exercise.
- Q & A.

Day 6 and 7

- Overview of cause and effect.
- Use of Cause and Effect in the process and regular operations.
- Q & A

Day 8

- Malfunctions and Process Upset for resorting steady state operation.
- Scenario Handling.

Day 9

- Process interlocks and Operations.

Day 10

- Process And Operational Key points coverage.
- Q & A.



Operator Training Simulator (OTS) Engineering Training

Training Module Code: OTS

Duration: 4 Days

Max 5 Participants

Objectives

This training course is designed to train engineers to configure and to make changes in the “VMmaster Training Simulator” effectively in a training environment. At the end of this course, the trainees will be able to:

- Understand basics Omegaland Dynamic Simulation
- Configure units available in the VMmaster library
- Operate each station such as MDL-PC and VIEW-PC
- Operate all features of the “VMmaster” model station.

Day 1

- Introduction & definition of OTS
- Overview of Virtual Machine (VM)
- Definition of Material property
- Operation in Edit-mode
- Operation in Execute-mode
- Calculations in streams and Units
- Calculation of Pressure-Flow balance
- Model Integration
- Hands on exercises

Day 2

- Model building (selected process)
- Executing specific process
- Omegaland outline description
- Basic/option functional modules
- VM Space functions and mechanisms
- Creation of simulators

Day 3

- Process component system
- Omegaland/DB configuration
- Registrations in Omegaland/EXEC
- Reading stream and unit variables in Excel
- Writing in unit variables from Excel
- Customized physical property
- Calculation and data library

Day 4

- Getting started with APLIB
- Using Field Operation Library (FOD LIB)
- Using Interlock Block Diagram Library (IBD LIB)
- Using DCS LIB (Yokogawa CENTUM VP Emulation library)
- Using Malfunction Generator

Operator Training Simulator (OTS) System Management Training

Training Module Code: OTSM

Duration: 3 Days

Max 5 Participants

Objectives

This course can help PLANT's engineers to maintain the proper configuration of operator training system and trouble shooting. The programme is specially designed for the maintenance members of the company to have hands on exercise to maintain the OTS (hardware and components) and be confident on handling the system for maintenance and backups.

Day 1

- Overview of OmegaLand
- OmegaLand System configuration
- Q&A

Day 2

- Hands on exercises
- Backup and Restore data
- Hands on exercises
- Q&A

Day 3

- System maintenance
- Hands on exercises
- System configuration
- Trouble shooting
- Hands on exercises
- Q&A

Operator Training Simulator (OTS) Instructor Training

Training Module Code: OTSI

Duration: 4 Days

Max 5 Participants

Objectives

The course is designed to train Instructors to use and maintain the “VMmaster” Training Simulator” effectively in a training environment. At the end of this course, the trainees will be able to:

- Start-up and Shut-down the simulator
- Operate each station such as ITK-PC, MDL-PC and VIEW-PC
- Operate all features of the “VMmaster” Instructor Station
- This course will help PLANT’s Instructors to maintain an overall operator training program for the simulator, which covers a set of typical training exercises for modifications (process model, database, malfunction and graphics).

Day 1

- Introduction and overview
- Loading OmegaLand
- Executing OmegaLand
- Stopping OmegaLand
- Hands-on Exercises
- Introduction to OmegaLand’s snapshot function
- Save snap shot
- Load snap shot
- Snap shot step back
- Q & A

Day 2

- Introduction to OmegaLand’s Initial Condition Loading function
- Save Initial Condition
- Load Initial Condition
- Hands-on Exercises
- Introduction to OmegaLand’s Freeze/Run function

- Freeze simulation
- Run simulation
- Hands-on Exercises
- Introduction to OmegaLand’s Replay Evaluation Module
- Replaying
- Outputting logs
- Training record sheets
- Q & A

Day 3

- Hands-on Exercise
- Introduction to OmegaLand’s Malfunction
- Malfunction panel
- Executing Malfunction
- Stopping Malfunction
- Hands-on Exercises
- Introduction to OmegaLand’s Instructor Variables
- Modifying Instructor Variables
- Execution
- Hands-on Exercises
- Q & A

Day 4

- Introduction to OmegaLand’s Field Operation (FO)
- Executing FO
- Stopping FO
- Hands-on Exercises
- Introduction to OmegaLand’s Abnormal Scenario Handling
- Hands-on Exercises
- Introduction to OmegaLand’s Abnormal Scenario Handling
- Executing Abnormal Scenario
- Stopping Abnormal Scenario
- Hands-on Exercise
- Q & A



NETWORKING AND CYBER SECURITY

Networking Essentials

Training Module Code: NWES

Duration: 3 Days

Objectives

The workshop will enable participants:

To gain necessary knowledge of Networks & technologies to get a foundational base for Cybersecurity domain

To identify & gain understanding of Architecture & Protocols at Different levels

This course will act as a pre-requisite of Cybersecurity & digitalization domains

Target Beneficiaries

Technicians, Operators & Maintenance, Entry level Network Engineers

Prerequisites

Basic computer skills

Day 1

Module 0: Introduction

Module 1: LAN & it's components

- LAN & It's Components
- Data Transmission Modes & Types

Module 2: Network Components

- Working principle of multiple Network Equipment

Module 3: MAC & IP Addresses

- MAC Address Explained & Application
- IP Address: Types, Classes & Applications

Day 2

Module 4: OSI & TCP/IP Model Explained

- OSI Model Explained: Brief discussion on Each Layers

Module 5: Layer2 & Layer3 Protocol

Data Flow between L2 & L3 Switches

Day 3

Module 6: Switch Operations & VLANs

- Commonly Used Protocol
- Discussion on Secure Architecture

Module 7: Brief Introduction to Virtualization

- What is Virtualization
- Benefits Virtualizations
- Components of Virtualizations



Plant Control Network Security

Training Module Code: PCNS

Duration: 5 Days

Objectives

The workshop will enable to:

Qualify participants with the necessary skills to prevent unauthorized access to information related to their work and to protect computer systems from being attacked by harmful software, besides that it will provide them with the techniques in avoiding data loss.

Target Beneficiaries

Technicians, Operators & Maintenance, Entry level Network Engineers

Prerequisites

Knowledge on network management

Day 1

Module 0: Introduction

Module 1: ICSS Cybersecurity Overview

ICSS & Why its need's to be protected

Major Attacks & It's Effect

IT Vs OT: Key Differences

How an Attack Happens

Networking Recap

Module 2: Real Time Attacks & Vulnerabilities

Live Threat Maps

Social Engineering

Brief Overview of SHODAN

Day 2

Module 3: Threats Against ICSS Environments

Unaware employees

Ransomware

Nation wise attack

Module 4: Security Controls

Preventive Controls

Detective Controls

Day 3

Module 5: Purdue Model

Discussion on Purdue model

Attacks & Equipment at each level

Key concepts of Purdue model

Module 6: IEC 62443 Standard Overview

Risk assessment: IEC-62443

Network segmentation: IEC-62443

Security levels : IEC-62443

Key Principles of IEC-62443

Day 4

MODULE 7: Yokogawa Secure Architecture

Security measures in L2 & L3 switch

Vnet/IP protocol

Security measures in Vnet/IP

Security measures in Yokogawa stations

Day 5

Brief Knowledge on Yokogawa Technical Countermeasures

WSUS solution

Vulnerability management

Whitelisting & antivirus solution

Active directory/ domain controller

Backup & recovery

Endpoint security

Firewall

Network management system (NMS)

CENTUM VP Networking

Training Module Code: VNIP

Duration: 3 Days

Objectives

This course empowers participants to understand the concept of control network incorporating the general communication function to keep highly reliable stable real time communication.

The participants will practice on configuring, setting up, maintaining and trouble shooting the network and the hardware involved :

- Acquire and apply the fundamentals on Control System Network Management
- Manage simple and multiple domains network
- Master Vnet/IP addressing
- Maintain and troubleshoot Control System Networks

Target Beneficiaries

Engineers and Technicians involved in Process Control Network Management

Prerequisites

Participants should preferably be familiar with Process Control Systems and have basic knowledge on network management.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

- Introduction
- Vnet/IP overview
- System architecture
- System specification
- Vnet/IP hardware
- Network Configuration
- Vnet/IP redundancy
- Vnet/IP Addressing
- DIP switches
- Hands on

Day 2

- Vnet/IP Addressing
- Physical IP (PIP)
- Virtual IP (PIP)
- Hands on
- Vnet/IP Troubleshooting
- Hands on

Day 3

- Network Switches
- L2 & L3 Switch Functionalities
- Yokogawa Recommended switches
- Trouble shooting
- Security Hardening
- Hands on
- Q&A and wrap up

OPC Communication Essentials

Training Module Code: OPC

Duration: 2 Days

Objectives

The workshop will enable participants to:

- Understand the concepts of OPC (OLE for Process Control)
- Understand the benefits of this communication method by comparing the Traditional connectivity methods to OPC

Target Beneficiaries

For engineers, developers and integrators who are integrating new systems, expanding current operations, replacing legacy equipment and looking for ways to improve data communication using OPC

Prerequisites

- Microsoft Windows and basic computer use
- An understanding of Process Automation requirements
- No previous OPC experience is expected

Day 1 – Introduction to OPC its underlying technology

- Introduction to OPC and the underlying technology
- Specification Overview
- Configure OPC Server
- Configure OPC Client
- Exercises

Day 2 –OPC Networking Essentials

- Networking essentials and how they apply to OPC communication
- DCOM settings and security
- DCOM Troubleshooting techniques
- Exercises



OT Cybersecurity Essentials

Course Code: CSE

Duration: 3 Days

Objective

Empowering participants with a deep understanding of OT Cybersecurity principles and the ISA-99/Purdue model.

Mastering key OT risks, countermeasures, and global standards like IEC-62443 and NIST.

Designing secure architectures and implementing Yokogawa technical security solutions.

Participants

Technicians, Operators & Maintenance, Entry level Network Engineers

Prerequisites

Necessary to have some prior knowledge about Control Systems and OT

Learning Outcome

Participants will gain a fundamental understanding of OT Cybersecurity principles, the ISA-99/Purdue model, and international standards such as IEC-62443. They will learn to identify key OT risks and understand the countermeasures and secure architecture design required for Yokogawa solutions.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Course Outline :

Day 1

Module 1:

- Introduction

Module 2: ICS Cybersecurity Overview

- ICS & Why its need's to be protected

ICS Cybersecurity Overview

- Major Attacks & It's Effect
- How an Attack Happens

Introduction to OSINT

- Discussion on OSINT

Day 2

- Cyber Attacks & Prevention Techniques

- Top Cyber Attacks

- Cyber Attacks & Prevention Techniques

- General Best Practices in ICS

- General Best Practices in ICS-IIOT

- Security Controls

- Overview of IEC 62443

- Purdue Model: Secure Architecture

Day 3

Top ICS Security Controls

- Network Management / Asset Inventory

- Incident Response

- Active Directory

- Backup & Recovery

- Vulnerability Management / Risk Assessment

- Secure Remote Access

- Yokogawa Products in Cybersecurity Domain

Demonstration Lab

Q&A and Wrap Up

OT Cybersecurity Intermediate

Training Module Code: CSI

Duration: 5 Days

Objectives

The workshop will enable participants:

Understanding of OT Cybersecurity Principles

ISA-99/Purdue model with their Challenges

Key OT Risks and their Countermeasures

IEC-62443, NIST CSF, NIST SP800-82 & 53 Standard understanding with components & Implementations.

Design of Secure Architecture and Solutions

Yokogawa Technical Countermeasures in Security Solutions

Understanding on Risk Assessment : Key Principles & Metrics

Understanding of Incident Response Plan

This course will act as a pre-requisite of OT Cybersecurity – Advanced Course.

Target Beneficiaries

Technicians, Operators & Maintenance, Entry level Network Engineers

Prerequisites

Necessary to have some prior knowledge about OT Cybersecurity Basics (refer course: OTCB-101).

Day 1

Module 0: Introduction

Module 1: ICSS Cybersecurity Overview

Major Attacks & It's Effect

How an Attack Happens

Social Engineering

Brief Overview of SHODAN

Module 2: ISA99/Purdue Model

Attacks & Equipment at each level

Key concepts of ISA99 model

Day 2

Module 3: Cybersecurity Standard Overview

Network segmentation: IEC-62443

FRs & Key Principles of IEC-62443

NIST CSF, NIST 800 SP-82 & 53

Discussion on Company Implemented Specific Architecture & Standards

Exercises Implementation & Compliance of IEC-62443

Module 4: OT Environment Specific: Security Controls

IEC-62443- Top 10 Security Controls

SANS Top-20 Security Controls

Exercises on Implementation of Security

Day 3

Module 5: Purdue Model

Module 5: Yokogawa Secure Architecture

Basic Security measures in L2 & L3 switch

Recommended Hardening in Process Automation Network Switches

Integrating with 3rd Party Systems

Security measures in Vnet/IP

Security measures & Policies in stations

Hands on Lab

Day 4

Module 6: Yokogawa Technical Countermeasures

WSUS solution

Vulnerability management

Whitelisting & antivirus solution

Active directory/ domain controller

Backup & recovery

Firewall

Network management system (NMS)

Hands on LAB/Demo on solutions

Day 5

Module 7: Yokogawa Advanced Technical Countermeasures

Categories of Risk Assessment

Discussion on Risk Evaluation & Results

ICS-specific Incident Response Plan



OT CyberSecurity Advanced

Course Code: CSA

Duration: 3 Days

Objective

This course is designed to provide participants with the essentials of OT Cybersecurity concepts in detail, covering everything from architectural design to endpoint security.

Participants

IT Infrastructure Team, Network Engineers, Security Ops, System Engineers, cybersecurity staff, Industrial control system (ICS) Engineers.

Prerequisites

Basic familiarity of networking and ICSS is preferred.

Learning Outcome

Participants will acquire advanced knowledge of OT Cybersecurity, including Windows Domain management, Active Directory implementation, and antivirus endpoint security. They will also master OS patch management, network management systems (NMS), backup strategies, and the configuration of network switches and firewalls.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Course Outline :

Day 1

- Cybersecurity Introduction
- Objectives and importance of Cybersecurity
- Benefits of Cybersecurity
- Goals of Cybersecurity
- Different types of Cyber-Attacks

Windows Domain and Account Management

- Design & Implementation Architecture
- Active Directory Volumes, Forest & Domain Functional Level, Domain Name System Structure
- GPO Policies and creating Operator Account for Domain User Management

Laboratory Work:

- Hands on Exercises on Above Topics

Day 2

Antivirus Endpoint Security

- Identify the overall layout concept of Antivirus Endpoint Security
- Components of Yokogawa Standard Antivirus Software
- Logical Antivirus Architecture and Yokogawa System Tree Groups Structure
- File types, scan exclusions and Queries and Report

OS Patch Management

- Identify the overall layout concept of OS path Management
- Windows Server Update Services Overview
- OS Patch Management System Logical Architecture Overview
- WSUS Components, Installation Methodology, Computer Groups, Schedule, WSUS reporting and OS Patch Updates Services
- Laboratory Work:
- Hands on Exercises on Above Topics

Day 3

Network Management System

Identify the overall layout concept of Network Management System

Network Management System (NMS) Overview
Network Management System Design Architecture
Network Management System Configuration and Features
Credentials and Credentials Categories

Backup And Recovery System

Backup Management Software
Design Architecture
Backup strategies
System Recovery: Full System Backup
Creation of Data Backup Job
Restore Backup Data (Files/Folders/Volumes)

Network Switches and Firewall

Identify The Overall Layout Concept of Network Switches and Firewall

Understand Layer 2 Switch and Layer 3 Switch
Difference Between Layer 2 and Layer 3 Switches
Need For Firewall

Laboratory Work:

- Hands on Exercises on Above Topics

Active Directory (AD) & Backup Procedures

Training Module Code: ADBKUP

Duration: 2 Days

Objectives

This course is designed to provide participants the essentials of Backup procedures and Active Directory.

Target Beneficiaries

Any plant personnel who job responsibility is to support these solutions

Prerequisites

Basic familiarity of these offered solutions is preferred.

Day 1

Introduction to Backup and Recovery Services
Backup Types
Yokogawa Offered Backup Solution
Installation, Tasks & Operation
Demo: Image Backup
Demo: Image Recovery

Day 2

Introduction to Active Directory
Work Group Vs Domain
AD Structure
Demo – Domain Setup
Domain Objects Management
Group Policy Management
CENTUM VP – IT Security ToolV2.0

**DATA ACQUISITION
HISTORIAN AND PLANT
INFORMATION
MANAGEMENT SYSTEMS**



DATA ACQUISITION HISTORIAN AND PLANT INFORMATION MANAGEMENT SYSTEMS

Exaquantum System Administrator

Training Module Code: EQAD

Duration: 4 Days

Objective

This course covers all the tasks necessary to administer an Exaquantum System. The aim of the course is to demonstrate the post installation configuration of an Exaquantum System, perform all necessary steps to get the system up and running and then monitor it for performance etc.

Participants

This course is essential for those people responsible for the Administration of an Exaquantum System.

Prerequisite

A working knowledge of the Microsoft Windows Desktop environment.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

Introduction to Exaquantum Administration.
System-Wide Configuration.

Laboratory Work:

Template Configuration.

Exercises and Multiple choice questions on the concepts covered.

Day 2

Tag Editor.

Tag Generation.

Laboratory Work:

Exercises and Multiple choice questions on the concepts covered.

Day 3

Role Based Name.

Space Configuration.

Miscellaneous.

Administration Topics.

Laboratory Work:

Exercises and Multiple choice questions on the concepts covered.

Day 4

Database Maintenance.

First Line Troubleshooting.

Laboratory Work:

Exercises and Multiple choice questions on the concepts covered.

Exaquantum Data Access from Third Party package

Training Module Code: EQDA

Duration: 1 Day

Objective

Introduces the user to the Exaquantum tools to access data from third party clients like Microsoft Excel and Internet Explorer 6

Participants

Anyone in an organization who needs access to data stored in Exaquantum would benefit from attending this course.

Prerequisite

A working knowledge of the Microsoft Windows desktop environment.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

Exaquantum Data Handling Overview.

Overview of the Exaquantum / Explorer.

Excel Add-In.

The Exaquantum OLE DB interface.

The Exaquantum Web Frame Work.

Exercises and Multiple choice questions on the concepts covered.

Exaquantum User Level

Training Module Code: EQUS

Duration: 2 Days

Objective

This is an entry-level course designed to improve an overview of the Exaquantum system. In addition, hands-on training will be provided in the client access tools such as the Exaquantum/Explorer Excel Add-In and Exaquantum/Explorer itself..

Participants

Anyone who:

Needs access to data stored in Exaquantum

Needs to understand where the Exaquantum/Explorer product could be used within their organization

Has a knowledge of other User Interface Generation applications and wishes to compare them with Exaquantum/Explorer.

Prerequisite

A user level knowledge of the Windows Desktop Environment.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

Demonstration of the feature of Exaquantum

- Describes the features and benefit of both Exaquantum server and various client interface

Introduction to Exaquantum Data Handling

- How it handles information
- How it represents information
- Introduction to Exaquantum/Explorer Excel Add-in

- Features of Add-In
- Use of the Set Data/Range Update dialogues
- Use of the Set Report Times dialogues

The Exaquantum OLE DB interface

- Discussion of what OLE DB is
- Which Exaquantum data is available to the user
- Sufficient info covered to generate a report

Exaquantum/Explorer Positioning and Benefits

- What is Exaquantum/Explorer
- What Exaquantum/Explorer is not
- Why should I use Exaquantum/Explorer
- What benefit would I gain from using it

Day 2

Exaquantum/Explorer Terminology and User Interface

- What is an Explorer Document
- What is a Control
- What are Explorer Workbooks
- How do they differ from Microsoft Excel Workbook
- How and when would I use Explorer Workbooks
- What is the purpose of the various parts of the user interface
- What do you do in Run Mode and Design Mode
- What is the use of the Secure Workbook Folder
- What is navigation
- Trend Analysis
- Templates

Creating Documents and Configuring Controls

- Develop and configure one-off reports
- Covering textual, pictorial & graphical representation.



DATA ACQUISITION HISTORIAN AND PLANT INFORMATION MANAGEMENT SYSTEMS

ExaOPC / Exaquantum Engineering & Maintenance

Training Module Code: ExaOPC/ExaQ

Duration: 5 Days

Objectives

The workshop will enable participants to acquire:

- Understanding the Exaquantum & OPC
- Enhance to using system support tools
- Increase the knowledge in backup/ restore/troubleshooting & Installation.

Target Beneficiaries

Personnel who want to improve and develop their knowledge in Exaquantum & ExaOPC

Prerequisites

None

Days 1, 2 & 3 –

- Introduction to Exaquantum concepts
- Building the system configuration
- Using System Support tools
- Understanding Multi-Server Exaquantum
- Concept of Items, Tags, Function Blocks
- Backup/ restore/troubleshooting
- Installation
- Using the Exaquantum Transformation Server
- Writing calculation

Days 4 & 5 –

- Introduction to OPC technologies
- Understanding OPC Interfaces
- Understanding Yokogawa ExaOPC Software
- ExaOPC Tools and Troubleshooting
- Monitoring user connections

Exaquantum Alarms Reporting and Analysis Package

Training Module Code: ARAP

Duration: 5 Days

Objective

Exaquantum Advanced Alarm Management System assists users in determining the cause of incidents and trips by automatically collecting and storing all alarm & event messages and data points of interest from plant equipment such as control and safety systems.

The course provides an overview of the product as well as allowing students to configure a system that starts to collect Alarm and Event data and the creation of trip reports.

Participants

This course is designed for those users who wish to get more familiar with the Exaquantum Advanced Alarms Management System.

Prerequisite

It will be assumed that attendees are familiar with Exaquantum Administration to the level which would be obtained by attending the Exaquantum Administrators Course (EQAD).

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1: EXAQUANTUM OVERVIEW

Introduction to Exaquantum.

Features and Benefits.

Features and Benefits continued.

Addressing customer specific Issues.

Day 2: EXAQUANTUM DATA HANDLING SYSTEM

Exaquantum Data Handling Overview.

Overview of the Exaquantum / Explorer.

Excel Add-In.

The Exaquantum OLE DB interface.

The Exaquantum Web Frame Work.

Exercises and Multiple choice questions on the concepts covered.

Day 3 : SEQUENCE OF EVENTS RECORDER

Introduction and Overview

Installation

Trip and Tag Configuration

User Interface

Configuration of MS SQL Report Services

Basic Troubleshooting

Day 4: ALARMS REPORTING AND ANALYSIS

Introduction and Overview

Installation

Configuring ARA using the Configurator Application

CENTUM VP CAMS integration

ARA Security

Reports

Publishing and Emailing Reports Automatically

ARA Data Storage and Update

Creating Custom Reports

Backup and Restore of ARA Data

Day 5: ALARMS MASTER DATABASE

Installation requirements and prerequisites

Installation

Post installation configuration

AMD agents

Security

AMD web User Interface (UI)

Alarms and alarms configuration

Documents and reports

Import an export

Enforcements

Troubleshooting

Sequence of Events Recorder For Users

Training Module Code: SER

Duration: 1 Day

Objective

Exaquantum/SER assists users in determining the cause of incidents and trips by automatically collecting and storing all alarm & event messages and data points of interest from plant equipment such as control and safety systems.

The course provides an overview of the product as well as allowing students to configure a system that starts to collect Alarm and Event data and the creation of trip reports.

Participants

This course is designed for those users who wish to get more familiar with the Exaquantum/SER product.

Prerequisite

It will be assumed that attendees are familiar with

Exaquantum Administration to the level which would be obtained by attending the Exaquantum Administrators Course (EQAD).

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

The course consists of the following sessions:

- Introduction and Overview
- Installation
- Trip and Tag Configuration
- User Interface
- Configuration of MS SQL Report Services
- Basic Troubleshooting

Alarms Reporting and Analysis For Users

Training Module Code: ARA

Duration: 1 Day

Objective

Exaquantum/ARA (based upon EEMUA 191) is a valuable tool which helps managers to assess and monitor process and system alarm behaviour. The information provided helps diagnose many causes of operator overload and provides benchmarks for system improvement.

This course covers the installation, configuration, administration and use of the Exaquantum Alarm Reporting and Analysis package..

Participants

This course is designed for those users who wish to get more familiar with the Exaquantum/ARA product.

Prerequisite

This course assumes that the user is familiar with Microsoft Windows and the basic Microsoft Windows terminology. It also assumes that the student is familiar with all the major

features of Exaquantum.

Knowledge of SQL Server Management Studio would also be useful but is not essential..

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

The course consists of the following sessions:

- Introduction and Overview
- Installation
- Configuring ARA using the Configurator Application
- CENTUM VP CAMS integration
- ARA Security
- Reports
- Publishing and Emailing Reports Automatically
- ARA Data Storage and Update
- Creating Custom Reports
- Backup and Restore of ARA Data



DATA ACQUISITION HISTORIAN AND PLANT INFORMATION MANAGEMENT SYSTEMS

Alarm Master Database For Users

Training Module Code: AMD

Duration: 1 Day

Objective

Exaquantum/AMD provides a centralized Alarm Master Database, holding the alarm configuration of connected process plants. It provides the ability to configure and maintain the alarm configuration details for multiple DCS and CAMS systems. Exaquantum/AMD strives to adhere to the principles as laid out in the EEMUA 191 and ISA 18.2 guidelines.

Participants

This course is designed for those who wish to get more familiar with the Exaquantum/AMD product.

Prerequisite

It will be assumed that attendees are familiar with Microsoft windows and the basic Microsoft windows terminology. It also assumes that the student is familiar with major features of Exaquantum with knowledge of SQL Server management essentials.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

- Installation requirements and prerequisites
- Installation
- Post installation configuration
- AMD agents
- Security
- AMD web User Interface (UI)
- Alarms and alarms configuration
- Documents and reports
- Import an export
- Enforcements
- Troubleshooting

Safety Function Monitoring For Users

Course Code: SFM

Duration: 1 Day

Objective

Exaquantum/SFM is Yokogawa's Safety Function Monitoring solution. SFM is a management tool developed to monitor safety performance in response to the growing pressure from regulations and legislation regarding safety reporting and assessments. SFM collects, processes and presents safety data to enable monitoring and analysis of key safety KPIs.

Participants

This course is designed for those users who wish to get more familiar with the Exaquantum/SFM product.

Prerequisites

This course assumes that the user is familiar with Microsoft Windows and the basic Microsoft Windows terminology. It also assumes that the student is familiar with all the major features of Exaquantum. Knowledge of SQL Server Management Studio would also be useful but is not essential.

Learning Outcome

Participants will be able to understand the various SFM reports used to improve the safety solutions design and maintain the validity of the safety system.

Course Outline :

Day 1:

The course consists of the following sessions:

- Introduction and Overview
- Installation
- Configuring SER.
- SIF KPI Reports
- Safety Reports
- Value output reports
- Publishing and Emailing Reports Automatically.

Overview Of Exaquantum Applications

Course Code: EOVR

Duration: 5 Days

Objective

This course is designed to provide participants with the basic understanding of Exaopc, Exaquantum and its products

Participants

This course is designed for those users who wish to get more familiar with all Exaquantum products.

Prerequisites

This course assumes that the user is familiar with Microsoft Windows and the basic Microsoft Windows terminology. It also assumes that the student is familiar with all the major features of Exaquantum. Knowledge of SQL Server Management Studio would also be useful but is not essential..

Learning Outcome

Participants will be able to understand the communication between Exaopc and Exaquantum. Understand the Exaquantum/PIMS Administration and its reports. Also the Exaquantum additional products benefits and its reports usage.

Course Outline :

Day 1:

- Understand the OPC Concept
- Communication between Exaopc and Exaquantum
- Introduction to Exaquantum Administration.
- Concept of Items, Tags, Function Blocks
- Backup/ restore/troubleshooting
- Installation
- Exaquantum Explorer reports
- Exaquantum Web reports.

Day 2:

- Introduction and Overview of Sequence of Events
- Installation
- Trip and Tag Configuration
- User Interface
- Configuration of MS SQL Report Services
- Basic Troubleshooting

Day 3:

- Introduction and Overview of ARA
- CENTUM VP CAMS integration
- ARA Security
- Reports
- Publishing and Emailing Reports
- ARA Data Storage and Update
- Backup and Restore of ARA Data

Day 4:

- Introduction and Overview of AMD
- Security
- AMD web User Interface(UI)
- Alarms and configuration
- Documents and reports
- Import an export
- Enforcements
- Troubleshooting

Day 5:

- Introduction and Overview of SFM
- SER Integration
- SIF KPI Reports
- Safety Reports
- Value output reports

FACTORY AUTOMATION PLC



FA-M3 Engineering & Maintenance

Training Module Code: FAM3

Duration: 5 Days

Objective

This course is designed to enable participants to understand PLC, its hardware structure, software programming and applications.

Participants

For engineers involved in software generation, modification and maintenance of PLC system

Prerequisite

Participants should have a fundamental knowledge of computers and Process Automation.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

Understand PLC Hardware Structure
Understand PLC Operation and internal processing
Understand Ladder Logic Programming
Understand Industrial Automation (Factory Automation & Process Automation)
Introduction to FAM3
FAM3 System Configuration

Day 2

FAM3 Programming Tool Software Widefield 3
How to Create New Project, New Ladder Block

Editing Ladder logic
Defining Block Component, Configuration files
Practical session on FAM3 programming software

Day 3

Sequence Control Implementation. Discrete Control and Continuous Loop Control
Motor Controls and Interlocks
DI/DO Modules
Programming of Analog Input/Output Module
Virtual simulation software
Practical session on FAM3 programming software

Day 4

About FAM3 Communication
FA-M3R Interface with Touch Screen, PC
Setting of Ethernet Module, PC Link Module
Usage of PC Link Command
Programming of Ladder Communication Module
Modbus Communication Function in FAM3.
Practical session on FAM3 programming software

Day 5

How to monitor/edit FAM3 Online
How to use Sampling Trace, debug/troubleshoot
How to Force Set/Reset Devices
Communication error check
Practical session on FAM3 download, troubleshooting and maintenance functions



DISTRIBUTED CONTROL SYSTEMS (DCS)

Introduction to Distributed Control Systems (DCS)

Training Module Code: DCSI

Duration: 2 Days

Objective

This course is designed to give participants the fundamental knowledge of Distributed Control System (DCS).

Participants

For process instrumentation & control engineers, supervisors and technicians.

Prerequisite

Participants should preferably have some basic knowledge on process measurements and control

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

Morning session:

Introduction to Control system concepts.
History and evolution of DCS.
Features & Advantages of DCS.
DCS architecture and configuration.
Introduction to DCS Communication.

Afternoon session:

Overview of Yokogawa CENTUM VP DCS.
CENTUM VP software and operation workshop.

Day 2

Morning session:

CENTUM VP Hardware overview.
Control loop design.
Control loop engineering.

Afternoon session:

Loop connection design workshop in CENTUM VP system.

CENTUM VP Operation & Monitoring

Training Module Code: VPOF

Duration: 5 Days

Objective

This course is designed to give participants the fundamental knowledge of operation and functions of the CENTUM VP system.

Participants

Mainly CENTUM VP operators and plant operation personnel who are required to operate the CENTUM VP system.

Prerequisite

Participants should preferably have some basic knowledge on process measurement and control.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

LESSON 1 System Architecture

LESSON 2 Display Layout of HIS and Navigation Activities

Laboratory Work for lesson 1 & 2.

Day 2

LESSON 3 3 CENTUM VP - Operational Windows

Laboratory Work for lesson 3.

Day 3

LESSON 4 Operation Keyboard

LESSON 5 System Monitoring Window Displays and Reports

Laboratory Work for lesson 4 & 5.

Day 4

LESSON 6 Sequence Control Displays

LESSON 7 Alarm and Message Windows

Laboratory Work for lesson 6 & 7.

Day 5

LESSON 8 HIS Setup

Appendixes Virtual Test Function and Supplemental Topics.

Laboratory Work for all lessons.



DISTRIBUTED CONTROL SYSTEMS (DCS)

CENTUM VP Fundamentals of Operation & Maintenance

Training Module Code: VPFM

Duration: 5 Days

Objective

This course is designed to provide participants with an overall understanding of CENTUM VP Function, hardware, maintenance procedure, software installation, backup procedures and maintenance tools.

Participants

Engineers and Technicians who are responsible for daily maintenance of CENTUM VP system.

Prerequisite

Participants should preferably have some basic knowledge on process measurement and control

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

CENTUM VP system overview and configuration. Description of hardware.

Laboratory Work:

Familiarization on CENTUM VP different components.

Day 2

Window Panel Operation

- User security.

- Basic tag features & security.

- Standard operation panel.

Laboratory Work:

Operation exercise on operation panels part 1.

Regulatory Control Functions.

Sequence Control Function.

Laboratory Work:

Operation exercise on feedback and sequence. control operations

Day 3

CENTUM VP system configuration.

HIS hardware & software.

Daily checking of HIS hardware & software.

System maintenance function.

Laboratory Work:

HIS Components check-up.

Replacement of HIS components.

Day 4

Installation fo CENTUM VP

Laboratory Work:

FCS Component Check-up.

Replacement of FCS Components.

Day 5

Laboratory Work for Operators.

CENTUM VP Fundamentals For Engineering

Training Module Code: VPEF

Duration: 3 Days

Objective

This course is designed to give participants the fundamental knowledge of operation and functions of the CENTUM VP system in preparation of engineering works.

Participants

Plant operation specialists, Engineers and Maintenance personnel who are required to operate the CENTUM VP system.

Prerequisite

Engineers and Technicians involved in software generation or modification on CENTUM VP system.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

LESSON 1 System Architecture

LESSON 2 Display Layout of HIS and Navigation Activities

LESSON 3 CENTUM VP – Operational Windows

Day 2

LESSON 4 Operation Keyboard

LESSON 5 System Monitoring Window Displays and Reports

LESSON 6 Sequence Control Displays .

Day 3

LESSON 7 Alarm and Message Windows

LESSON 8 HIS Setup

Appendixes Virtual Test Function and Supplemental Topics

CENTUM VP Engineering

Training Module Code: VPEG

Duration: 5 Days

Objective

This course empowers participants to perform generation of CENTUM VP regulatory control functions, sequence control function, and Human Interface Station.

Participants

Engineers and Technicians involved in software generation or modification on CENTUM VP system.

Prerequisite

Participants should have attended the CENTUM VP Fundamentals for Engineering course.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

LESSON 1 System Architecture

LESSON 2 System Configuration

Laboratory Work:

Day 2

FLESSON 3 HIS Builders

LESSON 4 FCS Configuration Builders

Laboratory Work:

Day 3

LESSON 4 FCS Configuration Builders **LESSON 5** Regulatory and Calculation Functions

Laboratory Work:

Day 4

LESSON 6 Sequence Control Programs

Laboratory Work

Day 5

LESSON 7 Graphics

LESSON 8 System Backup

Laboratory Work.

CENTUM VP AD Suite Engineering

Training Module Code: VPAD

Duration: 5 Days

Objective

This course empowers participants to perform generation of CENTUM VP regulatory control functions, sequence control function using AD SUITE and Human Interface Station

Participants

Engineers and Technicians involved in software generation or modification on CENTUM VP system.

Prerequisite

Participants should have attended the CENTUM VP Engineering.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

LESSON 1 System Configuration

LESSON 2 IO List and IOM

Laboratory Work:

Hands on Lesson 1 and 2.

Day 2

LESSON 3 Module Configuration

LESSON 4 Switches and Message of FCS

Laboratory Work:

Hands on Lesson 3 and 4.

Day 3

LESSON 5 History and Change Management

LESSON 6 Document Generation

Laboratory Work:

Hands on Lesson 5 and 6.

Day 4

LESSON 7 Downloading

LESSON 8 Backup of ADMDB

Laboratory Work:

Hands on Lesson 7 and 8.

Day 5

LESSON 9 Course Project

Laboratory Work:

Hands on Lesson 9.



CENTUM VP Advanced Engineering I

Training Module Code: VPAE1

Duration: 5 Days Objective

This course is designed to provide participants with an advanced understanding of CENTUM VP engineering concepts as course level 1.

Participants

Engineers and technicians who are responsible for engineering and maintenance of CENTUM VP system.

Prerequisite

Participants should preferably be familiar with the CENTUM VP Fundamentals.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

CENTUM VP System Architecture

Field Control Station and Human Interface Station hardware

Vnet / IP network and system setup

Standard engineering of CENTUM

Laboratory Work:

Practical Exercises

Day 2

Common Folder Configuration

-Plant Hierarchy

-User Security and Groups

-Engineering Units

-Customization of Alarm Table

- Operation Marks

-FCS Configuration Folder

Laboratory Work:

Practical session on above mentioned topics

Day 3

Advanced Function Blocks

-PID Edit Details in FB Builder

-Pump/Motor Control with LC64

-Sequence Table Details Configuration

-Step Sequence with ST16/ST16E

Laboratory Work:

Practical session on above mentioned topics

Day 4

Advanced Function Blocks Contd.

-BDSET Function Blocks

-FUNC-VAR Block

-ASL-H/M/L Blocks

-SW91 Block

-RL Block

Laboratory Work:

Practical session on above mentioned topics

Day 5

Inter FCS Communication

-Area in / Area Out

-Global Switches

-HIS detailed Configuration

FCS Messages

Course Project

Laboratory Work:

Practical session on above mentioned topics.

CENTUM VP Advanced Engineering II

Training Module Code: VPAE2

Duration: 5 Days

Objective

This course is designed to provide participants with an advanced understanding of CENTUM VP engineering concepts as course level 2.

Participants

Engineers and technicians who are responsible for engineering and maintenance of CENTUM VP system.

Prerequisite

Participants should preferably be familiar with the CENTUM VP Fundamentals and Engineering.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

System Architecture and Components

Standard engineering builders

Calculation Block configuration

Laboratory Work:

Practical Exercises

Day 2

SFC (Sequential Function Chart)

-Sequence and Batch oriented Language (SEBOL) Overview

-Creation of a Program using SFC and SEBOL

-Testing the SFC Program

Laboratory Work:

Practical session on above mentioned topics

Day 3

-Modbus Introduction in Detail

-System Connection

-Modbus Engineering

-Testing of Communication

Laboratory Work:

Practical session on above mentioned topics

Day 4

Report Configuration

Advanced Graphics Engineering

Terminologies of Graphics Builder

Navigation of Graphic Builder

Building a Graphic in Details

Laboratory Work:

Practical session on above mentioned topics

Day 5

Building a Graphic (continue)

Custom Faceplate

Link Part/Generic Name Set

Complex Level Course Project

Laboratory Work:

Practical session on above mentioned topics

CENTUM VP Graphis

Training Module Code: VPGR

Duration: 3 Days

Objective

This course empowers participants to perform graphic generation of CENTUM VP system and edit existing graphics.

Participants

Engineers involved in software generation or modification on CENTUM VP system.

Prerequisite

Participants should preferably have some basic knowledge on process measurement and control.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

LESSON 1 Terminology

LESSON 2 Navigation

Laboratory Work: CENTUM VP Navigation

Day 2

LESSON 3 Graphic Builder

LESSON 4 Building a Graphic

Laboratory Work:

Graphic generation hands-on

Day 3

LESSON 5 Building a Graphic (continue) **LESSON 6** Custom Faceplate Laboratory Work:

Graphic generation hands-on



CENTUM VP Essentials with Batch Process

Training Module Code: VPBA

Duration: 3 Days

Objectives

After completion of this course, participants will have acquired fundamental knowledge about the operation and functions of the CENTUM VP system working with Batch process.

Target Beneficiaries

CENTUM VP Operators, Plant Operation Specialists and Engineers.

Prerequisites

Participants should have basic knowledge on process measurement and control.

Day 1

System status overview
HIS Startup & Security
HIS tool bar and operator Keyboard
Window Hierarchy and navigator
Windows: Calling, size zoom, dynamics an sets

Context menu, soft keys, function keys
Instrument faceplates regulatory

Day 2

Tuning panel, Trending
Logic charts, sequence tables & control drawings
Messages, SFC operation
Alarm filters
Process report
Historical report
Help messages

Day 3

Operator guide messages
Output screen images
Plant hierarchy
Example of batch automation concepts
The recipe overview screen
Familiarization with automated recipe
Loading and operation of a control recipe
Assigning units
Monitoring active recipe operation steps
Batch trending

Batch Programming

Training Module Code: BATCH

Duration: 5 Days

Objectives

After completion of this course, participants will be able to perform generation of a CENTUM VP Batch Project using the workstation.

Target Beneficiaries

Engineers involved in software generation and/or modifications of the CENTUM VP Batch Systems.

Prerequisites

Participants should have previously attended the CENTUM VP Essentials of Operation (VPEF) and CENTUM VP Engineering (VPEG)

Day 1

Batch Automation overview
Introduction of Batch Concepts ISA S88.01 Batch Control Standards
Familiarization with example Batch Processes
Overview of CENTUM VP Batch Packages

Day 2

Unit Supervision
Batch Engineering activities, defining a plant hierarchy
Management of shared resources, common blocks

Day 3

Batch Control Operations
Derivation of Batch operations from a recipe
SFC sequences, operations and flashes
Basics of SEBOL batch control language, operation SFC function blocks

Day 4

Process Management and recipe management
Process management, batch trains and paths, master recipes
Batch operation and monitoring screens

Day 5

Exception handling and batch report
Exception handling logic
Custom state transition matrix
Batch report concepts and builder
Access control concepts and builder
Batch trend

CENTUM VP Modbus Communication

Training Module Code: VPMB

Duration: 2 Days

Objective

This course is designed to provide participants with an overall understanding of CENTUM VP Modbus communication functions and concepts.

Participants

Engineers and Technicians who are responsible of CENTUM VP system.

Prerequisite

Participants should preferably be familiar with the CENTUM VP Fundamentals or Engineering.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

LESSON 1 MODBUS INTRODUCTION
LESSON 2 SYSTEM CONNECTION LESSON 3
COMMUNICATION SPECIFICATIONS
LESSON 4 MODBUS ALARMS

Laboratory Work:

Hands on Lesson 1,2,3 and 4.

Day 2

LESSON 5 CABLE CONNETIONS
LESSON 6 MODBUS ENGINEERING AND TESTING

Laboratory Work:

Hands on Lesson 5,6 and 7.

CENTUM VP Engineering & Maintenance

Training Module Code: VPEM

Duration: 5 Days

Objective

This course is designed to provide participants with an overall understanding of CENTUM VP hardware, maintenance procedure, backup procedures and maintenance tools. Course will empowers participants to perform generation of CENTUM VP regulatory control functions, sequence control function, and Human Interface Station.

Participants

Engineers and Technicians involved in software generation or modification on CENTUM VP system.

Prerequisite

Participants should have attended the CENTUM VP Fundamentals for engineering course.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

LESSON 1 System Architecture

LESSON 2 System Configuration

LESSON 3 HIS Builders

Laboratory Work:

Hands on Lesson 1,2,and 3.

Day 2

LESSON 4 FCS Configuration Builders

LESSON 5 Regulatory and Calculation Functions

Laboratory Work:

Hands on Lesson 4 and 5.

Day 3

LESSON 6 Sequence Control Programs

Laboratory Work:

Hands on Lesson 6.

Day 4

LESSON 7 Graphics

LESSON 6 System Backup

Laboratory Work:

Hands on Lesson 7 and 8.

Day 5

LESSON 9 Maintenance Related HIS Buttons

LESSON 10 Replacement of Common Modules

Laboratory Work:

Hands on Lesson 9 and 10.



DISTRIBUTED CONTROL SYSTEMS (DCS)

CENTUM VP Maintenance

Training Module Code: VPMT

Duration: 3 Days

Objective

This course is designed to provide participants with an overall understanding of CENTUM VP hardware, maintenance procedure, software installation, backup procedures and maintenance tools.

Participants

Engineers and Technicians who are responsible for daily maintenance of CENTUM VP system.

Prerequisite

Participants should preferably be familiar with the CENTUM VP Fundamentals or Engineering.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

LESSON 1 System Architecture

LESSON 2 CENTUM VP System Setup

LESSON 3 Downloading

Laboratory Work:

Hands on Lesson 1,2 and 3.

Day 2

LESSON 4 Maintenance Related HIS Buttons

LESSON 5 Replacement of Common Modules

LESSON 6 System Backup

Laboratory Work:

Hands on Lesson 4,5 and 6.

Day 3

LESSON 7 Software Re-installation

LESSON 8 Lifecycle Agreement

Laboratory Work.

Hands on Lesson 7 and 8.

CENTUM VP Maintenance Advanced

Course Code: VPMTA

Duration: 3 Days

Objective

This course is designed to provide participants with an overall understanding of CENTUM VP hardware, maintenance procedures, backup procedures, and professional maintenance tools.

Participants

Engineers and technicians who are responsible for daily maintenance of CENTUM VP system.

Prerequisites

Participants should preferably be familiar with the CENTUM VP Fundamentals or Engineering.

Learning Outcome

Participants will be able to manage and maintain CENTUM VP hardware effectively, including system architecture, network setup, and software installation. They will master project creation, replacement procedures for system modules, and advanced troubleshooting using FCS report and data collection tools.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Course Outline :

Day 1

CENTUM VP System Architecture, Integration to Information Platforms, Field Control Station (FIO/NIO), Human Interface Station (HIS) Configuration, and Vnet/IP Network Setup.

Day 2

Software Installation, Project Attribution Utility, Project Creation, IOM and Logic Creation, Configuration of Control Functions, and Downloading Procedures.

Day 3

Replacement Procedures (Power Supply, Processor, I/O Modules), Hardware Maintenance, Network Status Display, Centum Save Generation, and FCS Data Collection/Report Tools.

Consolidated Alarm Management System (CAMS) Overview

Training Module Code: CAMS

Duration: 2 Days

Objective

This course is designed to provide participants with an overall understanding of the package for alarm rationalization CAMS (Consolidated Alarm Management System).

Participants

Mainly CENTUM VP operators and plant operation personnel who are required to operate the CENTUM VP or CS3000 system.

Prerequisite

Participants should preferably be familiar with the CENTUM VP or CS3000 Fundamentals.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

Introduction.
CAMS Main Operation Functions
Alarm Action & Acknowledgment Operation

Laboratory Work:
Familiarization on CAMS operations.

Day 2

CAMS Operation & Features
Relationship between CAMS for HIS and HIS
Displaying Historical Data

Laboratory Work:
Familiarization on CAMS operations and features.

Consolidated Alarm Management System (CAMS) Engineering

Training Module Code: CAMSE

Duration: 3 Days

Objective

This course is designed to provide participants with an overall understanding of the package for alarm rationalization CAMS (Consolidated Alarm Management System) and provide engineering exercises on CAMS builder

Participants

Mainly Process Control Engineers and plant operation personnel who are required to operate the CENTUM VP or CS3000 system.

Prerequisite

Participants should preferably be familiar with the CENTUM VP or CS3000 Fundamentals.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

Introduction.
CAMS Main Operation Functions
Alarm Action & Acknowledgment Operation
Laboratory Work:
Familiarization on CAMS operations.

Day 2

CAMS Operation & Features
Relationship between CAMS for HIS and HIS
Displaying Historical Data
Laboratory Work:
Familiarization on CAMS operations and features.

Day 3

CAMS Engineering
Project Properties CAMS Options
-CAMS for HIS Alarm
-CAMS for HIS Alarm Group
-CAMS for HIS Shelf
-CAMS for HIS Message Monitor Definition
CAMS Master Station Definition
Common Section Download & Equalization
HIS Setup CAMS Tab
Laboratory Work:
Explore CAMS Builders and option items.
Download Common section definition
Apply CAMS Master Database Definition



CENTUM VP & ProSafe RS Maintenance

Training Module Code: VPRSMT

Duration: 5 Days

Objective

This course is designed to provide participants with an overall understanding of CENTUM VP and ProSafe RS hardware, maintenance procedure, backup procedures and maintenance tools.

Participants

Engineers and technicians who are responsible for daily maintenance of CENTUM VP and ProSafe RS system.

Prerequisite

Participants should preferably be familiar with the CENTUM VP Fundamentals and ProSafe RS Fundamentals.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

CENTUM VP System Architecture
Field Control Station and Human Interface Station hardware
Vnet / IP network and system setup

Laboratory Work:

Practical session on FCS and system connectivity

Day 2

Replacement procedure of power supply module, processor module and I/O modules
Download functions – Offline, Online and IOM download
Maintenance related HIS functions

Laboratory Work:

Practical session on above mentioned topics

Day 3

Process Report and Historical Report in CENTUM VP
Project backup and Restore function in CENTUM VP
ProSafe-RS hardware and system architecture
Introduction to Workbench

Laboratory Work:

Practical session on above mentioned topics

Day 4

Security levels of ProSafe RS system
Integrity and Cross Reference Analysers
Online download procedure
IOM download

Laboratory Work:

Download and security functions. I/O module replacement procedure

Day 5

Version Control Tool and backup procedure
Database Validity Check Tool
Sequence of Events Recorder

Laboratory Work:

Forcing and locking functions. SOE functions.

Unified Gateway Station (UGS2)

Training Module Code: UGS2

Duration: 3 Days

Objectives

The COURSE will enable participants:

To Understand the concepts of UGS and it's features.

UGS2 redundancy concepts. Manage sub system communication

using industry standard communication protocols.

The participants will practice on connecting, configuring, setting up and trouble shooting the subsystems.

Target Beneficiaries

Engineers, Technicians, Operators & Maintenance personnel.

Prerequisites

Necessary to have some prior knowledge about control system.

Day 1

Functional architecture

Functional details of UGS function blocks

OPC A&E event notifications

Communication functions

- Modbus

- OPC

Day 2

Unified Gateway Station (UGS) Engineering and Configuration

Using UGS supporting tools

Operation of the UGS Builder

Using the workbench

Using Module windows

Hands-on

Day 3

Import and Export Functions

Station redundancy concepts

Principle of Redundant UGS

Redundant UGS operation

Station switching

Hands-on

CENTUM VP Virtualization

Course Code: VPVR

Duration: 3 Days

Objective

Providing knowledge on concepts of Virtualization implemented in CENTUM VP system, including its operations and maintenance.

Participants

Managers / Engineers / Technicians.

Prerequisites

Participants should preferably have knowledge on Windows Server, Domain Controller, L2/L3 Switch Management and CENTUM VP System

Learning Outcome

Participants will be able to understand in detail the Virtualization Architecture, including its configuration, operation, and maintenance concepts within the CENTUM VP environment.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Course Outline :

Day 1

What is Virtualization, Yokogawa Virtualization Platform Overview, Architecture Planning, and Hardware.

Day 2

Startup and Shutdown of Virtualization Servers, Setup Overview (VR Switches, Failover Cluster), and Live Migration.

Day 3

Backup/Restore of Host Servers & Virtual Machines, Maintenance of Thin clients, and Remote Management.



FIELD BUS & ASSET MANAGEMENT SYSTEMS

Fieldbus Orientation

Training Module Code: FBOR

Duration: 2 Days

Objective

This course is designed to provide participants with an overall understanding of Fieldbus concept, and familiarization of Fieldbus Engineering tools.

Participants

Engineers and Technicians who are responsible for Fieldbus engineering configuration and modification of Fieldbus device parameters.

Prerequisite

Participants should preferably be familiar with the CENTUM VP or CS3000 Fundamentals and Engineering.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

Overview Fieldbus concepts.

Fieldbus system hardware.

Fieldbus communication.

Overview of Fieldbus engineering tools.

Laboratory Work:

Fieldbus configuration for some devices.

Day 2

Overview of device Management tools.

Laboratory Work:

Using device Management tool - Examples.

Fieldbus Engineering

Training Module Code: FBEG

Duration: 5 Day

Objective

This course is designed to provide participants with an overall understanding of Fieldbus concepts, software installation and Fieldbus Engineering Tool.

Participants

Engineers and Technicians who are responsible for Fieldbus Engineering configuration and modification of Fieldbus device parameters.

Prerequisite

Participants should preferably be familiar with the CENTUM VP or CS3000 Fundamentals and Engineering and Field instruments knowledge

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

Overview Fieldbus concepts.

Fieldbus system hardware.

Fieldbus communication.

Fieldbus function blocks.

Device Management.

Fieldbus wiring.

Day 2

Segment design considerations.

Fieldbus devices (example: EJA).

Day 3

Fieldbus Engineering concepts.

CENTUM Fieldbus block engineering.

Laboratory Work:

Fieldbus devices engineering.

Day 4

Fieldbus device management tool.

- NI Tool.

- Yokogawa Device Management Tool.

- Other tools.

Laboratory Work:

Fieldbus tools.

Day 5

Fieldbus Startup procedures.

Fieldbus device replacement procedure.

Laboratory Work:

Fieldbus device replacement procedure.



FIELDBUS & ASSET MANAGEMENT SYSTEMS

Fieldbus Engineering & Plant Resource Manager

Course Code: FPRM

Duration: 5 Days

Objective

This course is designed to provide participants with an overall understanding of Fieldbus & PRM concepts, Fieldbus Engineering Tools, PRM configuration & operation.

Participants

Engineers and technicians who are responsible for field device maintenance and modification of field device parameters.

Prerequisites

Participants should preferably be familiar with either CENTUM VP or CS3000 Fundamentals and field instrument knowledge.

Learning Outcome

Participants will be able to understand the working of FF devices and use Plant Resource Manager and its functionalities.

Certification

Participant who attains at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day 1

- Foundation Fieldbus communication
- Foundation Fieldbus system hardware
- Segment design concepts
- Laboratory Work: Segment design

Day 2

- Foundation Fieldbus devices
- FF function blocks
- Device Panel
- Manual and Automatic registration of FF devices
- FF device management
- Laboratory Work: Foundation Fieldbus registration activities

Day 3

- CENTUM VP FF device engineering
- Foundation Fieldbus Blocks
- FF device replacement procedure
- Laboratory Work: Foundation Fieldbus device engineering

Day 4

- Plant Resource Manager Overview
- PRM System configuration
- PRM connectivity with control system
- PRM operation procedure
- User and Device security
- Plug and Play
- Laboratory Work: Practical session on user log-in, plug and play features and device security settings.

Day 5

- Device Parameter Manager
- DTM Works
- Document linking and plug in functions
- PRM device replacement procedure
- Laboratory Work: PRM Parameter Manager, Plugin applications and document linking functions.

Plant Resource Manager

Training Module Code: PRMF

Duration: 2 Days

Objective

This course is designed to provide participants with an overall understanding of the concepts of Plant Resource Manager.

Participants

Engineers and Technicians who are responsible for field device maintenance and modification of field device parameters.

Prerequisite

Participants should preferably be familiar with any of CENTUM VP, CS3000, STARDOM or ProSafe-RS and Foundation Fieldbus concepts.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

- Plant Resource Manager Overview.
- PRM System configuration.
- PRM Function specification.
- PRM operation procedure.
- PRM Administration part1.
- User and Device security.
- Laboratory Work: Device parameters changes from PRM.

Day 2

- PRM Administration part2.
- Reference code.
- Inspection schedule.
- Inspection memo.
- Parts list.
- Link document.
- Calibration management.
- Self documentation.
- PRM database management.
- PRM Plugin application.
- Laboratory Work:

Plant Resource Manager Advanced

Course Code: PRMF

Duration: 2 Days

Objective

This course is designed to provide participants with an overall understanding of the concepts of Plant Resource Manager.

Participants

Engineers and technicians who are responsible for field device maintenance and modification of field device parameters.

Prerequisites

Participants should preferably be familiar with any of CENTUM VP, CS3000, STARDOM or ProSafe-RS and Foundation Fieldbus concepts.

Learning Outcome

Participants will be able to use Plant Resource Manager and its functionalities.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Course Outline :

Day 1

- Plant Resource Manager Overview
- PRM System configuration
- PRM connectivity with control system
- PRM operation procedure
- User and Device security
- Plug and Play

Laboratory Work:

Practical session on user log-in, plug and play features and device security settings.

Day 2

- Device Parameter Manager
- DTM Works
- Inspection Schedule and Inspection memo
- Document linking and plug in functions
- PRM device replacement procedure

Laboratory Work:

PRM Parameter Manager, Plugin applications and document linking functions.



SAFETY INSTRUMENTED SYSTEMS (SIS) – ProSafe-RS

Fundamentals of ESD Systems

Training Module Code: ESD

Duration: 2 Days

Objectives

Participants will be able to :

Gain fundamental knowledge of Emergency Shutdown Systems

Understand the terms associated with safety systems and the need to comply with regulations

Target Beneficiaries

Engineers, Supervisors & Technician from Process maintenance fields

Prerequisites

Basic understanding of Oil & Gas Industry

Day 1 – Safety System Essentials

- The fundamental concept of safety systems
- Characteristic of critical process systems
- Basic terminology associated with safety systems
- Identify the components of safety systems
- Safety Integrity Levels (SIL)
- Understand safety system architectures
- Safety System positioning

Day 2 – Functional Safety Concepts

- Level of Protection Analysis (LOPA)
- Risk assessment & mitigation
- Types of safety failures
- Calculation of PFD(Probability of Failure on Demand)
- TUV/SIL classification
- Comparing of TMR/QMR and redundancy
- Comparing DCS and Safety System

ProSafe-RS Operations Fundamentals

Training Module Code: RSOF

Duration: 3 Days

Objective

This course is designed to give participants the detailed knowledge of operation and monitoring functions of the ProSafe RS system.

Participants

Mainly ProSafe operators and plant operation personnel who are required to operate Safety system. Engineers involved in daily maintenance of ProSafe-RS.

Prerequisite

Participants should have some basic knowledge on process measurement and control, Safety Instrumented Systems and Functional Safety.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

SIS Overview

SIL Levels

SIS Terminologies

ProSafe System Architecture
Safety System Operation Overview
Laboratory Work
Hands on Exercises

Day 2

Display Layout and Navigation Activities
Safety Graphics
Cause and Effect
Safety Faceplates
Laboratory Work
Hands on Exercises

Day 3

Override (MOS, SOS etc)
ProSafe RS Alarms
Historical Report
Process Report
Hardwired Console
Laboratory Work
Hands on Exercises



ProSafe-RS Modbus Communication

Training Module Code: RSMB

Duration: 2 Days

Objective

This course is designed to provide participants with an overall understanding of ProSafe RS Modbus communication functions and concepts.

Participants

Engineers and Technicians who are responsible of ProSafe RS system.

Prerequisite

Participants should preferably be familiar with the ProSafe RS Fundamentals or Engineering.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

LESSON 1 MODBUS INTRODUCTION
LESSON 2 SYSTEM CONNECTION LESSON 3
COMMUNICATION SPECIFICATIONS
LESSON 4 MODBUS ALARMS

Laboratory Work:

Hands on Lesson 1,2,3 and 4.

Day 2

LESSON 5 CABLE CONNETIONS
LESSON 6 MODBUS ENGINEERING AND TESTING

Laboratory Work:

Hands on Lesson 5,6 and 7.

ProSafe-RS Engineering

Course Code: RSEG

Duration: 5 Days

Objective

This course empowers participants to perform generation of ProSafe-RS programs, hardware and software maintenance and CENTUM VP or CS3000 integration.

Participants

Engineers involved in software generation or modification and daily maintenance of ProSafe-RS.

Prerequisites

Participants should preferably be familiar with MS Windows environment and basic knowledge of logic functions. CENTUM VP or CS3000 Fundamentals or Engineering knowledge is advantage.

Learning Outcome

Participant shall have a thorough understanding of ProSafe RS system and its features.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance

Course Outline :

Day 1

- Introduction To ProSafe-RS Safety System
- Features, Components & Software Structure of ProSafe-RS Safety System
- SCS Manager (Workbench) & It's Components
- Laboratory Work: RS Project And SCS Project Creation.

Day 2

- I/O Variable Creation And I/O Wiring
- Multi-Language Editor
- Instance & Typical
- Laboratory Work: Creation of logic and User-Defined Function Block

Day 3

- Introduction To CENTUM VP Integration
- Engineering On The SENG Side & CENTUM Side
- Testing Functions
- Procedure for Download
- Laboratory Work: Integration of CENTUM-VP

Day 4

- Security of SCS
- Security of SCS Maintenance Support Tool
- Security of Database
- Procedure For Downloading & Online Change Download
- Forcing and Locking Function
- Laboratory Work: Offline & Online Download with Debug Mode

Day 5

- Overview of SOER
- Relationship among the SOER functions
- Event Collection & Storage
- Displaying & Configuration SOE Viewer
- Laboratory Work: Demonstration of SoE Event & Trip Viewer including settings in I/O parameter builder

ProSafe-RS Engineering with AD Suite

Training Module Code: RSAD

Duration: 4 Days

Objective

This course empowers participants to perform generation of ProSafe-RS programs, functional block diagrams, ladder logic and CENTUM VP or CS3000 integration

Participants

Engineers and Maintenance Technician involved in design, software generation or modifications of ProSafe-RS system.

Prerequisite

Participants should preferably be familiar with MS Windows environment and basic knowledge of logic functions. CENTUM VP or CS3000 Fundamentals or Engineering knowledge is advantage

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

Introduction to Safety & Safety Integrity Levels “SIL”.
ProSafe-RS hardware.

Laboratory Work:

SCS Manager (Workbench) software.

Day 2

Project creation

IO List in AD suite

design function blocks. Simulation and debug. Project Downloading.

Laboratory Work:

Creation of application logic Application development.

Day 3

Instances and typical.

User-defined function blocks.

Laboratory Work:

Creation of function blocks.

Day 4

ProSafe-RS and CENTUM VP or CS3000 integration.

Inter-SCS communication.

Laboratory Work:

Exercise ESD and DCS integration.

ProSafe-RS Maintenance

Training Module Code: RSMT

Duration: 3 Days

Objective

This course is designed to provide participants with an overall understanding of ProSafe-RS hardware, maintenance procedures, software installation, backup procedures and Maintenance Support Tools.

Participants

Engineers who are responsible for the daily maintenance of ProSafe-RS system.

Prerequisite

Participants should preferably be familiar with MS Windows environment.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

Introduction to Safety & Safety Integrity Levels “SIL”.

Prosafe-RS hardware.

SCS-FCS integration.

Day 2

SCS Maintenance Support Tools.

Laboratory Work:

CPU module replacement.

I/O module replacement.

Day 3

Version Control Tool procedures.

Database Validity Check Tool.

Sequence Of Events Recorder.

Laboratory Work:

Security and Password Protection.

SCS Reports.



ProSafe-RS Engineering and Maintenance

Training Module Code: RSEM

Duration: 5 Days

Objective

This course empowers participants to perform generation of ProSafe-RS programs, hardware and software maintenance and CENTUM VP or CS3000 integration.

Participants

Engineers involved in software generation or modification and daily maintenance of ProSafe-RS.

Prerequisite

Participants should preferably be familiar with MS Windows environment and basic knowledge of logic functions. CENTUM VP or CS3000 Fundamentals or Engineering knowledge is advantage.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

Introduction to Safety & Safety Integrity Levels "SIL".
ProSafe-RS hardware.
SCS Manager (Workbench).

Day 2

Project creation.
design function blocks.

Simulation and debug.
Project Downloading.

Laboratory Work:
Creation of application logic.
Application development.

Day 3

Instances and typical.
User-defined function blocks.

Laboratory Work:
Creation of function blocks.

Day 4

ProSafe-RS and CENTUM VP or CS3000 integration.
Inter-SCS communication.

Laboratory Work:
CPU module replacement.
I/O module replacement.

Day 5

Version Control Tool procedures.
Database Validity Check Tool.
Sequence of Events Recorder.

Laboratory Work:
Security and Password Protection.
SCS Reports.

ProSafe-RS Advanced Engineering

Course Code: RSAE

Duration: 5 Days

Objective

This course empowers participants to perform generation of ProSafe-RS programs, hardware and software maintenance and CENTUM VP integration.

Participants

Engineers involved in software generation or modification and daily maintenance of ProSafe-RS.

Prerequisites

Participants should preferably be familiar with MS Windows environment and basic knowledge of logic functions. CENTUM VP Engineering knowledge is advantage.

Learning Outcome

Participant shall have a thorough understanding of ProSafe RS system and its features.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Course Outline :

Day 1

- ProSafe-RS hardware –FIO and NIO
- FIO I/O modules
- NIO IOM Types
- SCS Manager (Workbench)
- Project creation
- IOM creation with and without AD Suite
- Laboratory Work

Hands-on on above mentioned topics

Day 2

- Instances and Typicals
 - Integrity and Cross Reference Analyzer
 - Project Downloading and debug function
 - Integration With CENTUM VP
 - Tag Name Builder
 - Laboratory Work
- Creation of application logic and engineering functions

Day 3

- Annunciator First Up Blocks
 - Group Override
 - Gas Detectors Engg Function Blocks
 - Gas Detectors Communication in Safety System
 - Laboratory Work:
- Hands-on on above-mentioned topics.

Day 4

- SCS Link Transmission
 - SCS-FCS Communication
 - Producer Consumer Communication
 - Laboratory Work:
- Hands-on on above-mentioned topics.

Day 5

- Safety System Function Blocks
 - Database Validity Check Tool
 - Version Control Tool
 - ProSafe-RS Maintenance Tools
 - Laboratory Work:
- Hands-on on above-mentioned topics.

A full-page background image showing an industrial setting. In the foreground, a man wearing a white hard hat, safety glasses, and a high-visibility yellow jacket with reflective stripes is looking down at a laptop he is holding. In the background, another worker in a white hard hat and an orange safety vest is working on some industrial equipment. The scene is dimly lit with blue and white tones.

SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA)

STARDOM Modbus Communication

Training Module Code: STMB

Duration: 2 Days

Objective

This course is designed to provide participants with an overall understanding of STARDOM Modbus communication functions and concepts.

Participants

Engineers and Technicians who are responsible of STARDOM system.

Prerequisite

Participants should preferably be familiar with the STARDOM Fundamentals or Engineering.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

LESSON 1 MODBUS INTRODUCTION
LESSON 2 SYSTEM CONNECTION LESSON 3
COMMUNICATION SPECIFICATIONS
LESSON 4 MODBUS ALARMS

Laboratory Work:

Hands on Lesson 1,2,3 and 4.

Day 2

LESSON 5 CABLE CONNETIONS
LESSON 6 MODBUS ENGINEERING AND TESTING

Laboratory Work:

Hands on Lesson 5,6 and 7.

STARDOM Engineering

Course Code: STEG

Duration: 5 Days

Objective

Empowering participants to perform system configuration of STARDOM and use of programming tools and function blocks.

Participants

Engineers or Technicians involved in design, software generation or modifications of STARDOM system.

Prerequisites

Participants should preferably be familiar with MS Windows environment and some basic knowledge on process measurements and control.

Learning Outcome

This course empowers participants to perform full system configuration and software generation for STARDOM controllers. Learning focuses on mastering programming tools (IEC 61131) and utilizing Yokogawa-specific function blocks for effective engineering and modification.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Course Outline :

Day 1

Introduction to STARDOM system configuration, Hardware configuration, and Resource Configurator.

Day 2

I/O Configuration, Logic Designer overview, and Generation of control application.

Day 3

Introduction to IEC 61131 programming (FBD, Ladder Diagrams) and NPAS POU function blocks.

Day 4

Function blocks details, Engineering/Access Parameters, and Watch Window.

Day 5

Debug tools, STARDOM maintenance using web browser, and Custom Project.



SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA)

STARDOM Maintenance

Training Module Code: STMT

Duration: 1 Days

Objective

This course enables participants to learn to use the Maintenance browser page, use maintenance tools and perform backup, revision upgrade and step to perform before a battery change operation.

Participants

Engineers or Technicians involved in routine maintenance of the STARDOM system

Prerequisite

Participants must be familiar with the STARDOM system.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

Basic of Maintenance page.
Change System date/ time.
Change communication parameters.
Retain data save.
Maintenance tools.

Laboratory Work:

Backup tools.
Restoration tools.
Firm ware revision upgrade.
Battery change operation.

STARDOM Advanced Engineering & Maintenance

Course Code: STEM

Duration: 5 Days

Objective

This course empowers participants to understand and work on STARDOM controller.

Participants

Engineers and technicians involved in software generation or modification on STARDOM system.

Prerequisites

Participants should have basic knowledge of PLC and data acquisition system.

Learning Outcome

Participants will be able to do engineering modifications and maintenance on STARDOM controller.

Certification

Participants who attain at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day 1:

- Introduction to STARDOM system
- configuration
- Hardware configuration and Licenses
- FCX introduction
- FCX configuration
- Resource Configurator
- Laboratory Work:
- Creating a Project
- Using the Recourse Configurator

Day 2:

- I/O Configuration and Loop Checks
- Logic Designer Overview
- Project creation
- Program organization

- Cyclic Task
- Generation of control application
- Laboratory Work:
- Defining Device Labels
- Creating Project in Logic Designer
- Project Management
- Creating POU's/Variables
- Build/Load/Debug Project

Day 3:

- Data and variables
- Introduction to IEC 61131 programming
- NPAS POU function blocks
- Engineering Access Parameters
- Alarm & Trip Set Points
- Laboratory Work:
- Adding Function Blocks
- NPAS Status Input / Output
- NPAS Analog / Output

Day 4:

- Download and Debug Functions
- Basics of Maintenance Web page
- Laboratory Work:
- Download and Startup procedure
- Maintenance Web Page

Day 5:

- Backup and Restoration Tools
- Battery change operation
- Change System date/ time.
- Maintenance tools.
- Laboratory Work:
- Backup Tools
- Restore Tools
- Maintenance Tools

CI SERVER Engineering

Training Module Code: CIEG

Duration: 5 Days

Objective

This course empowers participants to perform Human Interface Station views and data acquisition.

Participants

Engineers and technicians involved in software generation or modification on CI SERVER system

Prerequisite

Participants should have basic knowledge of data acquisition system..

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

CI Server overview
Functional components
System architecture
Operating environment
Getting started with CI Server

Day 2

I/O-Processing
Section and Item
Equipment (Line, Station, and Point)
Edit Module-Simple Graphics

Operator Interfaces
Laboratory Work:
Practical session on CI SERVER software

Day 3

Classes and Objects
Creating a Class, Object, and Trigger Group
Class Configuration
Traditional Language Notations
Modifying and Resetting Classes
Laboratory Work:
Practical session on CI SERVER software

Day 4

Overview of Alarming Function
Alarm Detection
Alarm Management
Overview of Report
Report Settings
Generating Reports
Laboratory Work:
Practical session on CI SERVER software

Day 5

Overview of Historisation Features
Overview of Historical Database
Configuring Item Storage Groups
Backup and Restoration
Laboratory Work:
Practical session on CI SERVER software

CI SERVER Operations And Basic Engineering

Training Module Code: CIOP

Duration: 5 Days

Objective

This course empowers participants to understand the concepts of SCADA operations, Interface views and data acquisition.

Participants

Operators, Engineers and technicians involved in operating the CI SERVER system

Prerequisite

Participants should have basic knowledge of data acquisition system.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

CI Server overview
Functional components
System architecture
Operating environment
Getting started with CI Server

Day 2

I/O-Processing

Section and Item
Equipment (Line, Station, and Point)
Laboratory Work:
Practical session on CI SERVER software

Day 3

Overview of Alarming Function
Alarm Detection
Alarm Management
Laboratory Work:
Practical session on CI SERVER software

Day 4

Overview of Report
Report Settings
Generating Reports
Laboratory Work:
Practical session on CI SERVER software

Day 5

Overview of Historization Features
Overview of Historical Database
Edit Module-Simple Graphics
Operator Interfaces
Laboratory Work:
Practical session on CI SERVER software



SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA)

STARDOM & CI SERVER

Course Code: STCI

Duration: 5 Days

Objective

This course empowers participants to understand and work on STARDOM controller and CI SERVER SCADA software.

Participants

Engineers and technicians involved in software generation or modification on STARDOM & CI SERVER system.

Prerequisites

Participants should have basic knowledge of PLC and data acquisition system.

Learning Outcome

Participants will be able to do engineering modifications and maintenance on STARDOM controller and generate use interfaces on CI SERVER system.

Certification

Participants who attain at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day 1:

- Introduction to STARDOM System Configuration
- Hardware Configuration and Resource Configurator
- STARDOM Maintenance using Web Browser

Day 2:

- I/O Configuration
- Logic Designer Overview
- Project Creation
- Generation Of POU
- Laboratory Work:
- Practical session on STARDOM controller

Day 3:

- Function Block and Logic Creation
- Download and Debug Functions
- Laboratory Work:
- Practical session on STARDOM controller

Day 4:

- CI Server overview
- Getting started with CI Server
- I/O-Processing
- Section and Item
- Equipment (Line, Station, and Point)
- Laboratory Work:
- Practical session on CI SERVER software

Day 5:

- Overview of Alarming Function
- Alarm Management
- Overview of Historization Features
- Overview of Historical Database
- Configuring Item Storage Groups and Trend
- Laboratory Work:
- Practical session on CI SERVER software



ANALYZERS AND DETECTORS



ANALYZERS AND DETECTORS

Introduction to Process Analyzer & Sample Handling Systems

Training Module Code: PASHS

Duration: 2 Days

Objectives

The workshop will enable participants to:

Gain understanding of process analyzers and sample handling systems

Understand the theory of the various types of analyzers and their measuring principles and operation, Sample Handling System design and the function of components, sample phase consideration and their effects on measurement, and the preventive maintenance program for analyzers

Target Beneficiaries

Plant Operation & Maintenance personnel who are responsible for ensuring the continuous and stable analyzer performance

Prerequisites

Participants should preferably have fundamental knowledge on process measurement and control

Day 1 – Role & Application of Process Analyzers

- Role of Process Analyzers
- Process Control

Process Monitoring
Product Quality Control

- Application of Process Analyzers

Petroleum Refinery
Petrochemical Complex
Natural Gas Plant
Environmental Monitoring

- Sampling System Configuration

Sample Take-Off
Pre-Conditioning System
Sample Transport
Sample Conditioning System

Day 2 – Maintenance & Troubleshooting

- Basic Chemistry
- Elements and Compounds
Sample Media Phase
- Analyzers
- Various Types of Analyzers
Gas or Liquid Measurement
Continuous & Batch Analyses
- Maintenance & Services
- Planned Maintenance Program
Trouble-Shooting Guidelines

Essentials of Analyzers & Gas Chromatographs

Training Module Code: ANZGC

Duration: 2 Days

Objectives

The workshop will enable participants to:

Understand the different types of Analyzers & Gas Chromatographs

Understand their applications & their measuring principles , Operation & Maintenance

Target Beneficiaries

Maintenance, engineers and technicians involved in engineering and maintaining Gas and Liquid analyzers and Gas Chromatographs

Prerequisites

Participants should preferably have fundamental knowledge on process measurement and control

Day 1 – Introduction to Analyzers (Principles & Operations)

- Role of Process Analyzers
- Process Control
- Process Monitoring
- Product Quality Control
- Application of Process Analyzers

Petroleum Refinery
Petrochemical Complex
Natural Gas Plant
Environmental Monitoring

Day 2 – Online Gas Chromatographs (Introduction, Terminology, Components & Functions)

- Gas Chromatograph Appreciation
- Gas Chromatography terminology
- Introduction to different function blocks of Process Gas Chromatography Analyzer.
- Main components and their functions:
- Oven, Column, Detectors, Switching Valves and processor.
- Operation of Gas Chromatograph
- Injection, Separation, Detection and Calculation
- Sample Handling System
- Vaporizer, filter, fast loop, switching valves & vents.
- Start up and Shutdown procedures
- Basic Maintenance practices
- Trouble-shooting techniques
- Demonstration of PGC

GC8000 Operation and Maintenance

Training Module Code: GCOM

Duration: 3 Days

Objective

This course is designed to provide participants with overall understanding of GC 8000 hardware, maintenance procedure, Analyzer Server Engineering Terminal software installation, backup procedure and troubleshooting.

Participants

Plant instrument Engineers and Maintenance Technicians involved in operation and maintenance of gas chromatograph.

Prerequisite

Participants should preferably have some knowledge on process instrumentation. However, prior exposure to GC1000 Mark-II, GC 8000 or any other gas chromatograph/analyzer will be an advantage.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

- Overview & principle of Gas Chromatograph
- Basic Chromatography and Detection Principles
- GC8000 Introduction & specification
- GC8000 Specifications

GC8000 hardware identification & functions

- Protection System
- Electronics System
- Pressure/Flow Control
- Oven System

Day 2

Overview of KGC datasheet

KGC datasheet explanation

- Analyzer specification
- Method setup
- Stream setup
- Peak specification and setup
- Analog/Digital setup
- IP address setup

Ethernet LCD

GC table review

Day 3

GC 8000 operation

- GC startup
- HMI operation
- Flow check
- Hands on calibration
- Hands on validation
- GC Shut down

ASET setup and communication

GC8000 maintenance

GC8000 Operation and Maintenance & Network Management

Training Module Code: GCOMN

Duration: 4 Days

Objective

This course is designed to provide participants with overall understanding of GC 8000 hardware, operation & maintenance procedure, PC Analyzer Server, Analyzer Server Engineering Terminal, GC Virtual Technician software installation & operation, backup procedure and GC network architecture.

Participants

Plant instrument Engineers and Maintenance Technicians involved in operation and maintenance of gas chromatograph.

Prerequisite

Participants should preferably have knowledge on process instrumentation. However, prior exposure to GC1000 Mark-II and GC 8000 or any other gas chromatograph/analyzer will be required.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

- Overview & principle of Gas Chromatograph
- GC8000 Introduction specification & configuration
- GC8000 hardware identification & functions
- Protection & Electronics System
- Pressure/Flow Control
- Oven & column System

Day 2

Overview of KGC datasheet

KGC datasheet explanation

- Analyzer specification
- Method, stream, peak and Analog/Digital setup
- IP address setup

HMI Operation:

Ethernet LCD - KGC datasheet review

Day 3

Take it and fix it - Practical

- Uninstall and install electronic cards
- Replace rotary valve seat
- Check and test the detector

GC operation - Practical

- Startup procedure
- Manual operation and hardware test procedure
- Flow check procedure
- Calibration procedure
- GC shutdown procedure

GC8000 maintenance procedure

Day 4

Introduction of Analyzer Bus System

Analyzer server and Network setup procedure

Software and networking component setup

- Installation and operation
 - PC analyzer server
 - Analyzer server Engineering terminal
 - Ethernet LCD operation
 - Virtual technician
- Analyzer server gateway
- Introduction to Stardom and ASGW
- Hardware setup and configuration
- ASGW mapping



ANALYZERS AND DETECTORS

GC8000 Operation and Maintenance with Network & Sample Conditioning System (SCS)

Training Module Code: GCAON

Duration: 5 Days

Objective

This course is designed to provide participants with overall understanding of GC 8000 hardware, operation & maintenance procedure, PC Analyzer Server, Analyzer Server Engineering Terminal, GC Virtual Technician software installation & operation, backup procedure and GC network architecture.

Participants

Plant instrument Engineers and Maintenance Technicians involved in operation and maintenance of gas chromatograph.

Prerequisite

Participants should preferably have knowledge on process instrumentation. However, prior exposure to GC1000 Mark-II and GC 8000 or any other gas chromatograph/analyzer will be required.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

Overview & principle of Gas Chromatograph

- GC8000 Introduction specification & configuration
- GC8000 hardware identification & functions
- Protection & Electronics System
- Pressure/Flow Control
- Oven & column System

Day 2

Overview of KGC datasheet
KGC datasheet explanation

- Analyzer specification
- Method, stream, peak and Analog/Digital setup
- IP address setup

HMI Operation:

Ethernet LCD - KGC datasheet review

Day 3

Hands on - Practical

- Uninstall and install electronic cards
- Replace rotary valve seat
- Check and test the detector

GC operation - Practical

- Startup procedure
- Manual operation and hardware test procedure
- Flow check procedure
- Calibration procedure
- GC shutdown procedure

GC8000 maintenance procedure

Day 4

Introduction of Analyzer Bus System

Analyzer server and Network setup procedure

Software and networking component setup

- Installation and operation
- Analyzer server gateway

Day 5

Modbus mapping and testing

Sample Conditioning System

- Sample conditioning system configuration
- Block and bleed valve setup
- Atmospheric balancing
- Heat trace setup
- Carrier gas consumption

Troubleshooting

GC8000 troubleshooting

Network troubleshooting

Case study

Liquid Analyzers Operation and Maintenance

Training Module Code: LAOM

Duration: 2 Days

Objective

This course is designed to provide participants with overall understanding of liquid analyzer hardware, Installation, operation & maintenance

Participants

Plant instrument Engineers and Maintenance Technicians involved in operation and maintenance of liquid analyzers.

Prerequisite

Participants should preferably have knowledge on process instrumentation. However, prior exposure to any other liquid analyzers will be advantage.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

PH analyzer

Analyzer overview

PH measurement principle

PH Sensor and holder

Sensor wiring

Analyzer operation

Sensor diagnostics & Liquid earth

PH sensor calibration & maintenance

Specific Conductivity & Inductive Conductivity

SC Measurement principle and cell constant

ISC measurement principle

conductivity sensors and electrode holders

Day 2

SC & ISC (continue)

SC & ISC sensor wiring

SC & ISC analyzer operation & maintenance

Dissolved Oxygen Analyzer:

Dissolved oxygen theory

Analyzer specification

Air and water calibration

DO analyzer sensor and holder

DO analyzer operation & maintenance

TDLS 8000 Operation and Maintenance

Training Module Code: TDOM

Duration: 2 Days

Objective

This course is designed to provide participants with overall understanding of TDLS 8000 hardware, Installation, operation & maintenance

Participants

Plant instrument Engineers and Maintenance Technicians involved in operation and maintenance of TDLS analyzers.

Prerequisite

Participants should preferably have knowledge on process instrumentation. However, prior exposure to TDLS 8000 or any other TDLS analyzers will be advantage.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

TDLS Basic theory

TDLS 8000 specification

TDLS hardware and its function

Overview of the electronics and field connections

Process interface systems

Practical demonstration (Hands on)

- Viewing of zero and target gas spectrum
- Transmission and alignment

Day 2

(Practical)

Analyzer startup, shutdown & alignment procedure

Operation and maintenance procedure

Calibration and Validation

Laser module & detector module replacement

Export Data and file review

Alarms – Warnings and Faults

Spectrum, transmission and data review

IR 400 Operation and Maintenance

Training Module Code: IROM

Duration: 2 Days

Objective

This course is designed to provide participants with overall understanding of IR 400 Analyzer hardware, Installation, operation & maintenance

Participants

Plant instrument Engineers and Maintenance Technicians involved in operation and maintenance of IR 400 analyzers.

Prerequisite

Participants should preferably have knowledge on process instrumentation. However, prior exposure to IR 400 or any other IR analyzers will be advantage.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

Principle of NDIR analyzer

Introduction and overview of IR400 analyzer

Components of IR analyzer and its function

Day 2

Practical demonstration on analyzer operation

Manual calibration

Auto calibration

Hardware check points

Preventive maintenance



ANALYZERS AND DETECTORS

Liquid Analyzers

Training Module Code: LQA

Duration: 3 Days

Objective

At the end of these 3-days Theoretical & Practical training, participants will be able to:

Know Concepts of Liquid Analyzers .
System Operation & working Principle .
System Maintenance & calibration.

Participants

Plant instrument Engineers and Maintenance Technicians involved in operation and maintenance Analyzers.

Prerequisite

Participants should preferably have some knowledge on process instrumentation.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

pH/ORP ANALYZER

THEORY:

Basic measurement & principle of pH / ORP
pH Sensor and holder
Sensor wiring
Analyzer operation
Sensor diagnostics & Liquid earth
Hardware explanation
Maintenance Technique

HANDS-ON :

1-point, 2-point & 3-point Calibration

Day 2

Conductivity Analyzer

THEORY:

Basic measurement & principle of SC
Basic measurement & principle of ISC
Conductivity Sensors & holders
Sensor wiring
Analyzer operation
Sensor diagnostics
Hardware explanation
Maintenance Technique

HANDS-ON :

Open Air calibration

Day 3

DO Analyzer

THEORY:

Basic measurement & principle of DO
Analyzer Specification
Sensor wiring
Sensor & holders
Sensor diagnostics
Hardware explanation
DO analyzer operation & maintenance

HANDS-ON :

Air and water calibration

IR 400 /CEMS Analyzer

Training Module Code: IR400CEMS

Duration: 3 Days

Objective

At the end of these session participants will be able to know Concepts of IR 400 /CEMS Analyzer

Participants

Plant instrument Engineers and Maintenance Technicians involved in operation and maintenance Analyzers.

Prerequisite

Participants should preferably have some knowledge on process instrumentation.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

What is CEMS:

CEMS analyzer importance and application
Sampling system
IR 400 introduction
Measurement principle of NDIR

Day 2

Components of IR analyzer & its functions
Operation & maintenance
Internal components identification
Practical demonstration of analyzer operation
Manual validation and calibration
Hardware check points
Preventive maintenance

Zirconia Oxygen Analyzer

Training Module Code: IR400CEMS

Duration: 3 Days

Objective

At the end of these session participants will be able to know Concepts of IR 400 /CEMS Analyzer

Participants

Plant instrument Engineers and Maintenance Technicians involved in operation and maintenance Analyzers.

Prerequisite

Participants should preferably have some knowledge on process instrumentation.

Certification

Participant who attains at least 75% attendance will be awarded Certification of Attendance.

Day 1

Morning :

ZR802 /ZR22 Introduction (zirconia analyzer)

Measuring principle & Operation

Components identification

Flow setting unit connections.

Afternoon : hands on

HMI operation

Manual calibration and validation

Hard check points

Maintenance & troubleshooting technique



SOFT SKILLS TRAINING

Budgeting & Forecasting

Course Code: BF

Duration: 2 Days

Objective

This financial budgeting course will teach you about the entire budgeting process from start to finish, including how to create a disciplined culture of budgeting in your departments, techniques to analyze results, and how to increase the chances of department performance improvements.

Participants

Personnel involved in preparing & managing budget

Prerequisites

NA

Certification

Participant who attains at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day 1: Planning a step-by-step guide

- Identify key metrics and goals for the year – revenue, production, service measures, relative contribution of sub-components
- Create a roll-up & roll-down plan and present using spread sheet
- Scenario Analysis
- Risk Analysis & risk management plan
- Practice Planning Exercise & feedback

Day 2: Creating budgets

- Identify increased/decreased targets
- Identify new activities, human requirement
- Buffers and exigencies
- Identify Capex requirement
- Present budget using spreadsheet
- Scenario analysis of budget
- Practice budgeting Exercise

Business English & Technical Report Writing

Course Code: BETRW

Objective

The workshop will help the participants to understand the difference between regularly spoken English and Business English.

Participants

Participants who are involved in preparing reports.

Prerequisites

NA

Certification

Participant who attains at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day 1: Introduction to Report Writing

- Introduction to Business English Communication
- The Building Blocks of Business Communication
- Email Writing
- The Art of Telephonic Discussions and Audio Conferences
- The Art of Group Communication
- Report Writing
- Starting with the End in Mind

Day 2: Report Preparation & Practice

- Step-by-Step Guide for Writing Reports
- Executive Summary
- Table of Contents
- Introduction
- Report Main Body
- Conclusions & Recommendations
- Conducting Checks
- Practicing Writing Reports



Coaching & Mentoring

Course Code: CMT

Objective

At the end of this training, the participants will be able to:

- Understand the importance of Coaching
- Identify the characteristics of an effective coach
- Implement OSKAR Model of coaching
- Describe the characteristics of an effective Mentoring process
- Explain the how to Mentor people for growth
- Explain the how to give feedback while Mentoring
- Explain the how to enhance Mentees' performance

Participants

Managers & above

Prerequisites

NA

Certification

Participant who attains at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day 1: OSKAR Model

OSKAR Model

- Outcome – Desired outcome of objective of the coaching
- Scale – Assessment of the gap between present reality and the outcome
- Know-How – Required skills, knowledge, qualifications, attributes etc. required
- Affirm-Action – What is working well already, what is required to close the gap
- Review – Reflection on previous progress

Day 2: STAR Model & Takeaways

STAR Model

- Situation / Task
- Action
- Result
- Alternative Action
- Alternative Result

Takeaways – Concepts/Tools & Techniques

- OSKAR Model of Coaching
- STAR-AR model of feedback while mentoring
- Strategies to move from Telling to Asking

Communication & Presentation Skills

Course Code: CPS

Objective

The workshop will enable participants to:

- Business presentations are not about beautiful slides or eye-catching graphics. Instead,
- powerful business presentations are about stories told with impact and authenticity.
- This workshop will equip participants with proven tools and techniques to tell their story
- in a manner that will engage and influence their listeners

Participants

Personnel who wish to enhance their communication & presentation skills.

Prerequisites

NA

Certification

Participant who attains at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day 1: Understanding Communication

- Understanding communication
- Introduction to stories & story telling
- Planning
- Story Maps
- Structure
- Data story telling
- Refining
- Telling
- Summary & close

Day 2: Effective Presentation

- Overcoming Nervousness
- Creating Fantastic Flip Charts
- Creating Compelling PowerPoint Presentations
- Wow 'Em With The White Board
- Vibrant Videos & Amazing Audio
- Pumping It Up A Notch
- Identifying Your Audience
- Creating A Basic Outline
- Organizing The Program
- Fleshing It Out

Creative Problem-Solving Techniques

Course Code: CPST

Objective

Upon the completion of this course, the participant will be able to:
Increase awareness of problem-solving tools and techniques
Learn importance of root-cause analysis.
Identify various problem-solving styles.
Think Out-Of-The-Box for creative solutions.
that will engage and influence their listeners

Participants

Managers, Supervisors and Professionals who would like to enhance their problem-solving skills through creative-thinking.

Prerequisites

NA

Certification

Participant who attains at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day 1: Problem Solving Techniques

- Getting Stated
- The Problem-Solving Methods
- The Information Gathering
- Problem Definition
- Preparing For Brain-Storming
- Generating Solutions
- Generating Solutions – Alternative
- Analyzing Solutions
- Selecting A Solution
- Planning Your Next Steps
- Recording Lessons Learnt
- Innovation Corner
- Thinking Out-Of-The-Box

Document Controlling & Archiving

Course Code: DCA

Objective

At the end of this session, the participants will be able to: •
Know what is a document management • Understand the process of document management • Know the organization
• Know the documents • Understand how technology support documents management

Participants

Document Controllers

Prerequisites

NA

Certification

Participant who attains at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day 1: Document Controlling & Achieving

- Records & Record Management
- Record & Information Lifecycle
- Hierarchy of Documents
- Records Management, Equipment & Procedures
- Challenges in Record Management
- Quality Document Management System
- Indexing & Retrieval
- Storing & Archiving
- Security



Effective Customer Relationship

Course Code: ECR

Objective

At the end of this session, participants will be able to:

- Discover the three, customer facing values
- Explore the behaviors under each value
- Apply the behaviors in various customer interactions and scenarios
- Create a personal action plan to work with their customers
- Discover the three, customer facing values
- Explore the behaviors under each value
- Apply the behaviors in various customer interactions and scenarios
- Create a personal action plan to work with their customers

Participants

Personnel involved in Customer Relationships

Prerequisites

NA

Certification

Participant who attains at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day 1: Value Creation

- The three customer facing values
- The customer facing value behavior

Day 2: Enhancing Relationship

- The Power/Interest matrix
- The Customer Engagement Continuum
- Strategies for Customer Engagement – Push and Pull

Enhancing Leadership Capabilities

Course Code: ELC

Objective

At the end of this session, participants will be able to:

- Enhancing their understanding of leadership
- Understand different types of leadership
- Understand the key concepts like goal setting, delegation, feedback
- Make effective decisions

Participants

This course is suitable for Team Leaders, Project Managers, Middle Managers, Supervisors, Executives and Team Members and anyone else who is or will be responsible for managing teams or individuals

Prerequisites

NA

Certification

Participant who attains at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day 1: Understanding The Team & Goal Setting

- Trust Fuels Performance
- Cognitive Biases
- Talent Mapping
- Goal Setting
- Delegation

Day 2: Feedback & Decision Making

- Feedforward vs. Feedback
- Carrying Out Structured Feedback Discussions
- Creating An Action Plan
- Critical Thinking
- Decision Making Models
- Conflict Resolution

Manager Leadership Development Program

Course Code: MLDP

Objective

- Lead with clarity of purpose and communicate a compelling vision.
- Engage and inspire their teams to deliver results through Ownership and commitment.
- Collaborate effectively across functions, leveraging diverse Perspectives.
- Build trust and psychological safety to enhance performance and Innovation.
- Develop coaching, delegation, and feedback skills to grow future talent.
- Strengthen personal courage and resilience to lead through change and uncertainty.
- Make effective decisions

Participants

Managers

Prerequisites

NA

Certification

Participant who attains at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day 1 (The Leader Within)

- Emotional Intelligence and Engagement.
- Purpose, Vision & Values Alignment.
- Trust and Courage in Leadership.
- Delegation and Empowerment in Action.

Day 2 (The Leader as a Multiplier)

- Collaboration and Inclusion.
- Coaching for Growth and Accountability.
- Building a Culture of Continuous Learning.
- Action Planning and Commitments.

Negotiation Skills

Course Code: NS

Objective

The workshop will enable participants to:

- Identify the key behaviors and attitudes of a skillful negotiator
- Understand the role that body language, speech, and words play in creating influence
- Differentiate between Interests and Positions
- Understand key concepts like the Negotiation Range and Settlement and Resistance Points
- Discover the power of providing Options – Making offers and counteroffers
- Understand key concepts like BATNA, WATNA, PIOC
- Understand the negotiation process
- Step through the negotiation process to achieve win-win deals
- Generate options to achieve business goals
- Apply behavioral techniques in negotiation
- Reflect on one's own behavioral style during a negotiation
- Identify areas of improvement and create a personal action plan to improve negotiation skills

Participants

Personnel involved in negotiations skills

Prerequisites

NA

Certification

Participant who attains at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day 1 Negotiation Skills

- Discover the process of principled negotiation
- Information gathering
- Identifying the Negotiation range, the resistance and settlement points
- Probing and researching to identify needs and exploring possible areas of resistance
- Reformulation of strategies and generating options
- Hard bargaining and problem solving
- Countering tactics and reaching an agreement
- Pushing for a deal

Follow-up, documenting and transferring knowledge

Be a Bias Detective

- Understanding of cognitive biases
- Understand the impact that cognitive biases have on human decision making
- Explore practical tips, tools and advice to interrupt these biases

Day 2 Influencing Champions

- Influencing Champion
 - Core principles behind Ethos-Pathos-Logos
 - Identify strategies to build credibility
 - Identify strategies to presentation using a mix of logic and emotional appeal
 - Appreciate the importance of trust and relationship building in developing influence
- Process Lab and Flogames



SOFT SKILLS TRAINING

Office Etiquette & Management

Course Code: OEM

Objective

The workshop will enable participants to:

- Display the types of behavior and traits that command the respect of colleagues and customers
- Take work seriously, and being reliable, ethical, competent and mindful of others in the process
- Maintain composure despite challenges
- Build business relationships that can further skills development and support career advancement

Participants

Open to All

Prerequisites

NA

Certification

Participant who attains at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day 1 Office Etiquette & Management

- Work Ethics & Professionalism
- Appreciating the importance and impact of professionalism in the workplace
- Consequences of not demonstrating the same
- Key components of professionalism
- Self-Leadership Behaviors
- Discover the self-leadership behaviors and how to apply them
- Debrief and deep dive into each behavior
- Core Communication Values
- Understanding the 6 core communication values at workplace
- Applying core values in verbal communication and displaying professionalism
- Summary
- Summary and close

Planning, Organizing & Time Management

Course Code: POT

Objective

- Explore the Kanban framework
- Understand the core principles of Kanban – visualizing the flow of work and reducing
- work-in-progress
- Manage and maintain a personal Kanban board
- Use applications and technology to manage personal and team Kanban boards
- Planning and organizing of all tasks

Participants

Open to All

Prerequisites

NA

Certification

Participant who attains at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day 1 Planning, Organizing & Time Management

- Concept introduction
- Simulation briefing
- Facilitated, Virtual, multiplayer game – Round 1
- Deep dive into Kanban guidelines
- Facilitated, Virtual, multiplayer game – Round 2
- Learning summary and reflection
- Personal action plan

Project Management

Course Code: PM

Objective

Upon completion of this course participants will be able to:
Enhancing their knowledge and usage of MS Excel, Wordy and PowerPoint

Participants

All

Prerequisites

NA

Certification

Participant who attains at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day-1, 2 and 3 - Excel

- Getting started with MS Excel
- Formula Referencing
- Working with Formula Error
- Most Powerful Options
- Analyze Data with Lookup Functions
- Analyze Data with Logical Functions
- Analyze Data with Conditional Functions
- Presenting Data using Charts
- Analyzing Data using Pivot Tables
- Conditional Formatting
- Working with Data Lists
- Data Validations
- Using Text Functions
- Working with Date Functions
- Working with Template
- Auditing Worksheets
- Useful Data Cleaning Process
- Sharing & Protecting
- New Formulas (Office 365)
- Data Transformation – Power Query

Day 4 - Word

- Formatting Text
- Paragraph Formatting
- Styles
- Headers & Footers
- Tables
- Table of Contents
- Pages & Page Layout
- Themes
- Multiple Documents
- Inserting Picture & SmartArt
- Page Setup

Day-5 PowerPoint

- Getting to know PowerPoint
- Building a presentation
- Font formatting option for text
- Paragraph formatting features
- Working with illustrations
- Slide show
- Print the presentation
- Working with Table
- Charts
- Templates & Slide Masters
- Organization Charts
- Flow Charts
- Manipulating Illustrations
- Customizing PowerPoint
- Slide manipulation
- Shape formatting
- Picture formatting
- Linking objects
- Slideshow animation effects
- Media clips
- Photo albums
- PowerPoint design issues
- Design considerations



SOFT SKILLS TRAINING

Stress Management

Course Code: SM

Objective

After understanding the meaning, causes and consequences of Stress, the Stress Management workshop will give participants a three-option method for addressing any stressful situation. Besides, a toolbox of personal skills, relaxation techniques and meditation will be shared as means of tackling stress.

Participants

Open to All

Prerequisites

NA

Certification

Participant who attains at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day 1 Meet, Greet & Beat Stress

- Understanding Stress
- Demystify myths and be inspired to manage stress by knowing consequences
- Exploring the root-cause of stress
- Developing stress busting techniques
- Practicing mindfulness, self-awareness and a few physical exercises to beat stress
- Personal action plan

Team Building & Management

Course Code: TBM

Objective

The workshop will enable participants to:

- Understand the 8 trust building behaviors
- Determine ways to apply them in regular workplace scenarios
- Recognize the impact of not applying the same on levels of trust and overall morale

Participants

This course is suitable for Team Leaders, Project Managers, Middle Managers, Supervisors, Executives and Team Members and anyone else who is or will be responsible for managing teams or individuals

Prerequisites

NA

Certification

Participant who attains at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day 1 Team Building & Management

- Introduction to the core concepts using examples
- Game briefing
- Facilitated, virtual, multiplayer game
- Exploration of the core concepts through the game
- Learning summary and reflection
- Personal action plan

Train The Trainer

Course Code: TTT

Objective

Upon completion of this course participants will be able to:

- Identify the training needs of learners.
- Design appropriate training to achieve agreed objectives.
- Plan, prepare and present participative skills and knowledge based training activities for delivery both in the workplace and in a training room.
- Facilitate group-learning activities.
- Construct performance specifications to measure the competence of learners.
- Identify standards of practice for participative and effective training.

Participants

Personnel involved in delivering training.

Prerequisites

NA

Certification

Participant who attains at least 75% attendance will be awarded Certificate of Attendance.

Course Outline :

Day-1

- Getting started and defining objective.
- Training vs. Facilitation.
- Laying a solid foundation for effective training.
- Create a lesson plan.
- Material, Media & Activities to achieve the objectives.
- Prepare to implement.

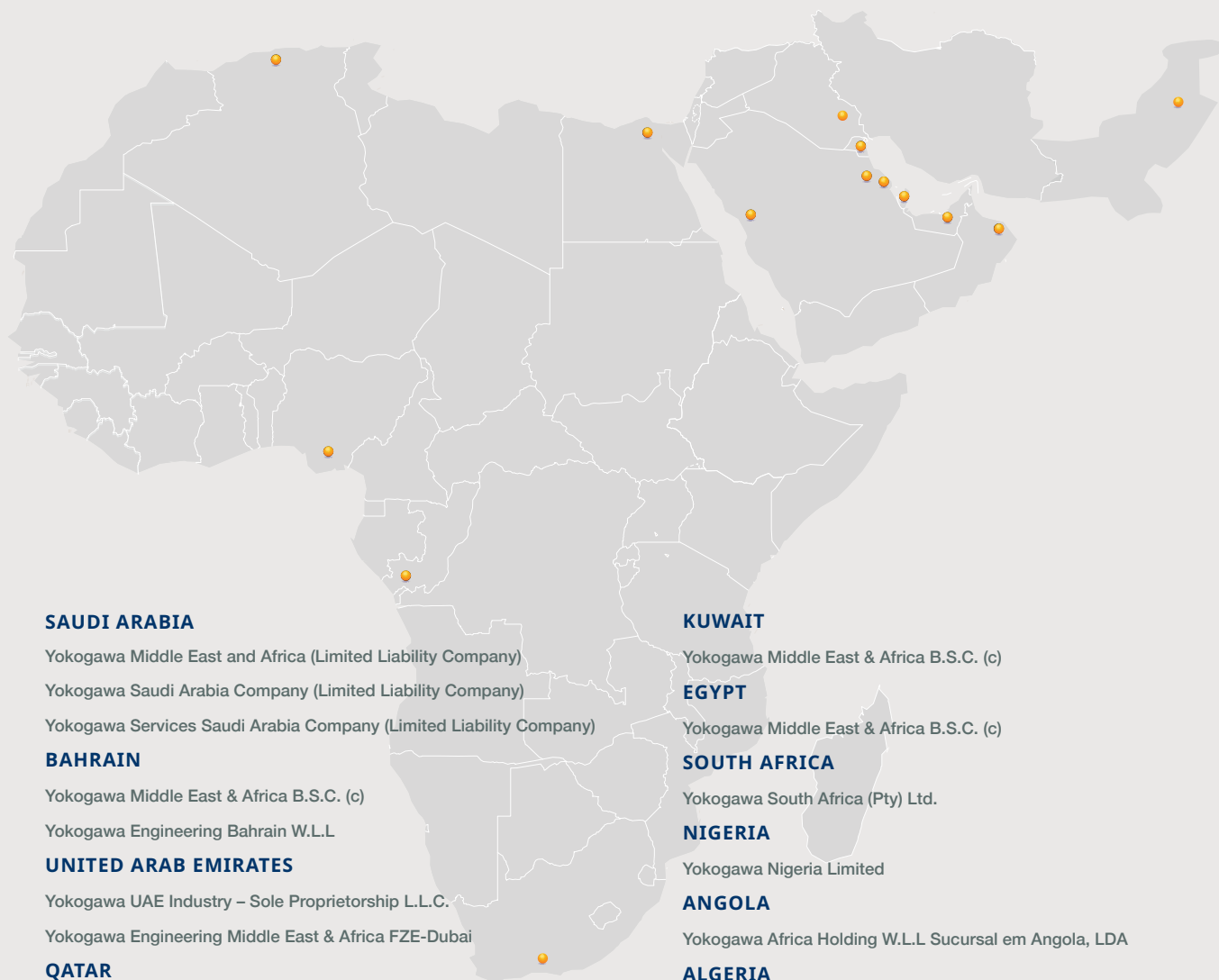
Day 2

- Kick-off start with a bang.
- Delivery – Tools, techniques and best practices.
- Methods to enhance interaction.
- Dealing with difficulties.
- Handling contingencies and awkward Q&A.
- Feedback & Evaluation.





YOKOGAWA MIDDLE EAST AND AFRICA NETWORK



SAUDI ARABIA

Yokogawa Middle East and Africa (Limited Liability Company)
Yokogawa Saudi Arabia Company (Limited Liability Company)
Yokogawa Services Saudi Arabia Company (Limited Liability Company)

BAHRAIN

Yokogawa Middle East & Africa B.S.C. (c)
Yokogawa Engineering Bahrain W.L.L

UNITED ARAB EMIRATES

Yokogawa UAE Industry – Sole Proprietorship L.L.C.
Yokogawa Engineering Middle East & Africa FZE-Dubai

QATAR

Yokogawa Qatar QFZ LLC

OMAN

Yokogawa Oman Limited LLC

KUWAIT

Yokogawa Middle East & Africa B.S.C. (c)

EGYPT

Yokogawa Middle East & Africa B.S.C. (c)

SOUTH AFRICA

Yokogawa South Africa (Pty) Ltd.

NIGERIA

Yokogawa Nigeria Limited

ANGOLA

Yokogawa Africa Holding W.L.L Sucursal em Angola, LDA

ALGERIA

Yokogawa Middle East & Africa B.S.C. (c)

PAKISTAN

Yokogawa Middle East & Africa B.S.C. (c)- Pakistan Branch

*Training Centers at Iraq, Kenya and Morocco under development



www.linkedin.com/company/yokogawa



Info.YMA@yokogawa.com



www.youtube.com/c/YokogawaMiddleEastAfrica



[@Yokogawa_MEA](https://twitter.com/Yokogawa_MEA)

For customer feedback and complaints, please contact: yma.scoe@yokogawa.com