

# SPEEDTRONIC MARK VIe **MAINTENANCE** **TRAINING**

SGD 3053 for  
2  
Participants  
or More

12 – 14 NOVEMBER 2018, KUALA LUMPUR, MALAYSIA

## TOPICS COVERED

MARK VIe SYSTEM OVERVIEW &  
ARCHITECTURE

CIMPLICITY STARTUP AND  
NAVIGATION

ToolboxST BASICS

MONITORING I/O

ALARM TRACING using  
WorkstationST

TROUBLESHOOTING CIMPLICITY  
SCREENS

VIEWING TRIP LOG DATA

CONTROLLER CARD  
REPLACEMENT

## Expert Course Faculty Leader

Has over 32 years industrial/training experience in commissioning and project management, instrumentation and control engineering, development and delivery of engineering courses, business development and sales to a variety of customers mainly associated with oil/gas industries and power engineering in the UK and overseas.



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# SPEEDTRONIC MARK VIe MAINTENANCE TRAINING

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## Course Description

This program is intended for all control technicians and engineers of existing, installed turbines (steam or gas) on which a new Mark VIe control system has been installed. It is expected that the technicians will have hands-on experience with their turbine systems. This training will familiarize them with the hardware and software components of the control system, providing detailed knowledge to work with the Mark VIe control system in application with their turbine.

The course is modular and includes custom training material derived from the site specific Mark VIe system. Training is performed with short lectures followed by labs. The hands-on computer based labs teach the student the fundamental skills to navigate and use the GE controls software. The simulation of the Operator's HMI computer gives the trainee the opportunity to fully explore the control's interface while building confidence to diagnose and troubleshoot alarms.

## Course Objectives

The objective of this course is to train the participants to become familiar and comfortable using the GE Mark VIe hardware and software.

### The participants will learn:

- Major components of the Mark VIe system
- How to start the HMI screen viewing software and navigate the screens
- Terminology used within the ToolboxST software
- How to start the software and use the on-line mode to view live values in the hardware
- Software structure, terminology, and view live values in the software
- Finder tool and its uses for troubleshooting
- Familiarization of the Trender Tool
- How to use the Trender Tool to view historical data, and events (trips,alarms,SOEs)
- How to Troubleshoot basic software blocks and adjusting live values
- How Finder, Trender, Watch Windows, and Online Modifications are used together for troubleshooting & maintenance functions.
- How to view alarms using CIMPLICITY
- How to trace an alarm to its origin in the ToolboxST software
- How to use the Trender Tool in conjunction with the Finder Tool and troubleshoot system problems
- Procedures and precautions when placing a Terminal Board and I/O Module
- Procedures and precautions for replacing a Controller
- PDM components and review the procedures and precautions when replacing
- Servo calibration procedure in the software and review documentation GEH-6700 Chapter 13 (p347) & Control Specification (Chapter 5)
- How to move a hardwired point
- How to disable or enable a digital or analog signal
- The software structure (Programs, User Blocks, and Function Blocks)
- How to add software (Programs/User Blocks) To monitor data on-line
- How to make software changes.

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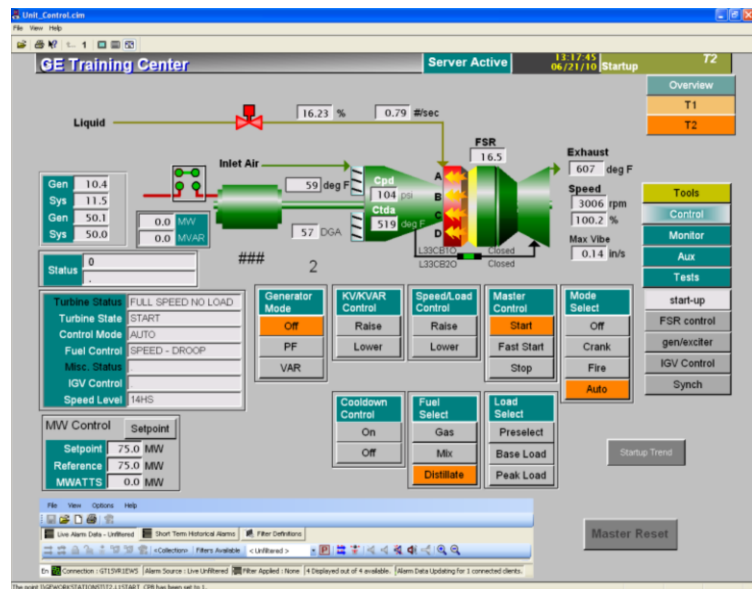
## CAREER HISTORY

Education, Qualifications and Training:

- 1976-80 University of Teesside, UK:  
B.Sc. (Hons) in Instrumentation & Systems Eng.
- 1986-87 University of Malmo, Sweden: M.Sc. in Marine Engineering.

## Professional Training:

- Moor Products, U.K. (PSC-352 SLDC and 320 Interface)
- Allen Bradley (PLC 25), U.K.
- General Electric, USA: (Mark V ,Mark VI & Mark VIe)
- DCS (WDPF), USA. : (Oper.& Maintenance), Foxboro
- MACutils software.
- DCS (VALMET), U.K.: (Oper. / Maint.)
- DCS (BAILEY- INFI 90), U.K.: Oper. /Maint.
- SENTINEL / LA-RR1 G.T. Control System, U.K.
- PC S/W Packages: Excel, Access, Project, Ppoint, etc.



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## 3 Day Course Outline

### DAY 1

#### MARK VIe SYSTEM OVERVIEW & ARCHITECTURE

- Identify major hardware components in the Mark VIe
- Understand Basic Mark VIe Functionality
- Identify basic Mark VIe Configurations
- Identify monitoring and troubleshooting packages

Lab: Use GE documentation to answer questions

#### CIMPLICITY STARTUP AND NAVIGATION

- Start CIMPLICITY HMI Interface
- Navigate and use CIMPLICITY screens
- View and acknowledge alarms

Lab: CIMPLICITY Basics

#### ToolboxST BASICS

- Basic .tcw file concepts
- File management of .tcw
- Basic operation of the GE ToolboxST software

##### Hands-on Labs

- Practice application upload/downloads
- Practice use of shortcuts for .tcw startup
- Practice navigating in the outline
- Setting Options
- Managing Windows

#### MONITORING I/O

- Different I/O types
- Locate, identify and monitor any I/O Point
- Force (override) any I/O Point
- Generate and Read I/O reports

##### Hands-on Labs

- Identify and Monitor I/O Points
- Open and Locate hardware section of .tcw
- Locate and open individual I/O points in .tcw
- Monitoring and Forcing I/O Points
- Generate I/O Report

#### MONITORING SOFTWARE

Locate and identify software patterns and areas of control

- Understanding software architecture and control parameters
- Basic block functionality
- Find help for any software block

##### Hands-on Labs

- Identify and Monitor Internal Software
- Identify Programs, Task and User Blocks

#### ToolboxST TRENDER

- Familiarization of the Trender Tool

##### Hands-on Labs

- Create continuous and triggered trends

- Effectively collect and view data
- Save and Export collected data
- Locate and change configurable options

#### CONSTANTS AND VARIABLES

- Identify variables and constants
- Temporarily modify constants
- Force (override) internal signals

##### Hands-on Labs

- Troubleshooting Blocks and Forcing Values
- Practice forcing variables and constants

#### WATCH WINDOWS

- Finder, Trender, Watch Windows, and On-line Modifications used together for troubleshooting and maintenance functions

##### Hands-on Lab

- Valve Gain Tuning

### DAY 2

#### ALARM TRACING using WorkstationST

- View alarms

##### Hands-on Lab

- Trace an alarm from CIMPLICITY through the software to its origin in hardware

#### TROUBLESHOOTING CIMPLICITY SCREENS

- Identifying Mark VIe CIMPLICITY screen signals

##### Hands-on Labs

- Practice finding the signal that drives an animation
- Practice finding the signal that drives a command button
- Practice finding objects embedded in screens
- Practice finding the signal that drives a numeric animation
- Practice finding the signal that drives a color / text animation

#### VIEWING TRIP LOG DATA

- Locate and View Trip Log
- Analyzing turbine trips with Trender Tool
- Non-Trip Analysis

#### I/O PACK & TERMINAL BOARD REPLACEMENT

- Replace an I/O Pack or Terminal Board

##### Hands-on Lab

- I/O Pack Firmware Download

#### CONTROLLER CARD REPLACEMENT

- Replace a Mark VIe Controller

- Hands-on Labs

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- Download product code
- Download application
- Replace/load compact flash
- Use serial loader to set IP address

## DAY 3

### PERMANENT SOFTWARE CHANGES

- Code Generation
  - Hands-on Lab - Code generation**
  - Digital I/O Lab
  - Analog I/O Lab
  - Add or Modify alarms or SOE

### EDITING APPLICATION SOFTWARE

- Modify Software Logic
- Add Software Logic
- Comment Software Logic
- Diagnose Software While Monitoring Data On-Line
  - Hands-on Labs**
  - Troubleshoot software errors using Trender Tool
  - Troubleshoot software errors using Finder Tool

### MODULE 20 - CONFIGURING I/O POINTS

- Moving a hardwired point
- Disabling or enabling a digital or analog signal
  - Hands-on Labs**
  - Orientation of Mark VIe digital I/O
  - Orientation of Mark VIe analog I/O

### ADD OR MODIFY ALARMS

- Adding a new alarm
- Modifying an existing alarm (Events and Holds)
- Sequence of Events (SOE)
- Import Alarm or SOE Data to CIMPLICITY
  - Hands-on Labs**
  - Enable a New Alarm
  - Transfer Alarm Information to Workstation ST
  - Enable an I/O Point SOE

### CIMPLICITY COMMUNICATIONS

- Configure Pushbuttons
  - Hands-on Lab**
  - Configure pushbuttons from imported Mark VIe data

### CIMPLICITY SCREEN EDITING

- Creating a CIMPLICITY Screen
- Edit a CIMPLICITY Screen
  - Hands-on Labs**
  - CIMPLICITY Screen Editing
  - Create a CIMPLICITY Screen
  - Configure a CIMPLICITY Screen
  - Add Objects to a Screen

### MODIFYING CIMPLICITY SCREENS AND NAVIGATION

- Modifying a CIMPLICITY Screen
- Add a new Navigation Button
  - Hands-on Lab**
  - Add a new HMI Screen
  - Add Screen to Navigation Template

### HARDWARE MAINTENANCE

- LVDT Calibration Procedure
- PDM - Power Distribution Module
- I/O Packs and Terminal Boards

### CAPTURE BLOCKS AND DDRs

- Using Capture Block with Trender Tool
- Using Dynamic Data Recorder (DDR) with Trender Tool
  - Hands-on Labs**
  - Add a capture block
  - View the data
  - Add a DDR

### TRIP HISTORY

- Modify Existing Trip History (Recorder)
  - Hands-on Lab**
  - Modify, Configuration, and Capture Blocks in ToolboxST
  - Configure Trip History (Recorder) in WorkstationST
  - Test and View Trip History

### Course Evaluation and Closure

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|                 | PER PARTICIPANT           | 2 PARTICIPANTS OR MORE    | IN-HOUSE TRAINING                       |
|-----------------|---------------------------|---------------------------|---|
| 3 Day Programme | SGD 3,369 Per Participant | SGD 3,053 Per Participant | Guaranteed Minimum 40% Off Normal Price |

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### COMPANY DETAILS

Organisation name ..... Industry.....  
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 ☎ (65) 6741 9927  
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### ON SITE TRAINING

Can't make it for the Course? We'll make the course come to you!!

Simply let us know your preferred time and dates and we will meet you at your schedule and venue.

With a host of highly trained experts, we will be happy to customize your programme with your needs 100% fulfilled.

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