

TRI-SEN
TURBOMACHINERY CONTROLS

TRI-SEN ASIA

Turbine Functional Safety Competency (TFSC) Training Program



TRISEN ASIA CONTROL PTE LTD

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What is TFSC ?

Turbine Functional Safety Competency (TFSC) Management enables owners of rotating machinery, to ensure that protective functions are maintained at the levels of effectiveness assumed in the original design.

TFSC Management applies to analog, relay, mechanical, hydraulic, pneumatic and Safety Integrity Level (SIL) rated Programmable Electronic (Safety) Systems (PES).

Turbine Functional Safety and Control consultants provide training and design services for the protection and control of steam turbines, gas turbines, blowers, compressors, expanders, generators, heat recovery steam generators (HRSG), boilers and pressure regulating systems.

3-Day Training Program With Certification

A 3-day Turbine Functional Safety Certification Training Program is now available.

This course is designed to provide an understanding of the framework of the relevant standards (AS61511 and for Gas-powered Turbines, AS3814, plus in some cases other eg API and ISO standards) and to provide a recognized competency assessment for operator/maintainers and designers of turbines and turbine controls.

The course syllabus and instructor have been assessed by statutory regulators including Energy Safe, Victoria. As a result it has been endorsed as prudent practice for the Operators and Maintainers that they should seek Turbine Functional Safety Competency accreditation, and that this course is suitable.



Who Should Attend

Operators and Maintainers of Turbines, Superintendents and Plant Support Engineers, Regulators.

Successful completion of the examinations is evidence of competency in Safety System Management, including the modification, design and proof testing of safety critical functions including: overspeed protection, vibration and lubrication, flameout and other combustion anomalies in gas turbines and waste heat steam generation.

Course Director

Paul Van Dyk specializes in turbomachinery applications and is a TMC Consultant for Invensys Triconex with over 20 years of Functional Safety experience. Paul maintains both EnergySafe Type B Advanced Gas Safety and TUV Functional Safety Engineer accreditation. Paul also holds a US Patent for Continuous On-Line Safety Integrity Level calculation methods.

Training Investment


The course investment provides for an inclusive industry related training package with comprehensive course notes, lunches, morning and afternoon breaks.

Course Fee : US\$2,500 per participant

The course is designed to raise awareness, develop and assess competency of personnel involved in turbine functional safety management for both new and retrofitted gas / steam turbine critical control systems.

Course Schedule

Courses will be conducted in Singapore, or different locations for better coverage of customers' requirements.



Course Outline The program is conducted over a two and half day period.	Sessions Day 1 & 2 8.30am - 4.30pm Day 3 : Examination 10.00am - 12.00pm	Accommodation Arrangements for accommodation are the responsibility of participants and costs are not included in the course fee. A list of hotels in the area will be sent to participants upon registration.	Venue Singapore Tri-Sen's office or customers' premise
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Course Outline

Understanding of Applicable Standards

- Australian, American and International Standards
- Best practice
- Certification & Licensing

Understanding of Risk Assessment Techniques

- Safety Instrument Function – Identification

Understanding of Risk Level Assignment

- Safety Instrument Function – SIL Assignment

Understanding of Safety validation techniques

- Safety Instrument Function – SIL Validation

Understanding of Designing for Safety

- Fault Tolerance
- Fail Safe
- Independence
- Common Cause

Understanding of Proof testing

- Benefits of Proof Testing
- Self-checking, pre-post start
- Voting and trend comparison
- Calibration versus proof testing

Understanding of typical Safety Instrumented Function

- Speed, Flame detection
- Pressure – Oil, Fuel, Air, Exhaust, Vacuum
- Temperature – Oil, Bearings, Engine, Rotor
- Level – Steam drum, Condenser
- Flow – Surge
- Position – Valves

Understanding of purge requirements

- Isolation – Gas, Liquid, Gas Starters
- Venting
- Leak testing

- Critical time calculation
- Purge flow requirements

Understanding of Programmable Electronic System (PES) program requirements

- Forcing points
- Modifying program elements
- Version control & Security

Understanding of PES project and SIS life cycle requirements

- Risk Assessment, SIL Assignment
- SRS & Nat. Gas submission
- FAT, SAT, Operate & Maintain
- Design Review



30 March 2009

Mr. Paul Van Dyk
Premier Consulting Services
738 Blackburn Road
Clayton
Vic 3168

Dear Paul

Re: Turbine Functional Safety Certificate Course

Thank you for the presentation that outlines the Turbine Functional Safety Certificate course material. Based on the information provided, ESV accepts that the TFSC course will make a significant contribution towards compliance of AS 3814 and AS 61511 for PES based safety and control systems.

In consideration ESV agrees that it would be prudent practice for Operators, Maintainers, Retrofitters and Vendors of turbine PES systems to seek Turbine Functional Safety Certification.

ESV is therefore able to endorse the Turbine Functional Safety Certification if implemented as indicated below.

1. The course instructor shall be suitably qualified to present the material. Instructor competency may be based on the number of years of turbine gas safety experience and an Energy Safe type B Advanced or equivalent certification.
2. Student competency assessment shall be based on a written exam with a minimum pass level of 70%. Records will need to be maintained.
3. Course material shall be amended as required to ensure that all times the certification is based on current Australian and International Standards.
4. ESV logo may not be issued at any time unless specifically agreed to in writing by ESV.

I trust that the foregoing will meet your current requirements to promote the course further. Should you have any queries with the above please contact the undersigned at your earliest convenience.

Your Sincerely,

Frank Larobina

Frank Larobina
Manager Complex Appliances
Energy Safe Victoria



Energy Safe Victoria
ABN 27 482 247 857
15a Ceylon St
Nunawading
Vic 3131

Phone (03) 9875 5400
Fax (03) 9894 8924
Web www.esv.vic.gov.au

VENUE

Singapore Tri-Sen's office
or
customers' premise

Course Fee : US\$2,500 per participant

Multiple Registrations from same company will receive 30% discount if received at the same time.

REGISTER NOW - FOUR EASY WAYS

Email: infoasia@tri-sen.com

Fax: +65 6499 8919

Tel: +65 6499 8918

Mail: Mail this completed form together with the payment to:

Marketing dept
1 Kaki Bukit View, Techview #05-09
Singapore 415941

YES! PLEASE REGISTER ME

Kindly indicate how you heard of this event:

Directly, Received Brochure Recommended by Colleagues Via Internet Others, please specify: _____

REGISTRATION DETAILS

1st Participant Name: (Mr/Mrs/Ms) _____

Company: _____

Job Title: _____

Tel: _____ Fax: _____

Mobile: _____ Email: _____

YES! I would like to receive free email information on relevant events.

NO! I would like to receive free email information on relevant events.

2nd Participant Name: (Mr/Mrs/Ms) _____

Company: _____

Job Title: _____

Tel: _____ Fax: _____

Mobile: _____ Email: _____

YES! I would like to receive free email information on relevant events.

NO! I would like to receive free email information on relevant events.

Approving Manager: (Mr/Mrs/Ms) _____

Company: _____

Job Title: _____

Tel: _____ Fax: _____

Mobile: _____ Email: _____

Booking Contact: (Mr/Mrs/Ms) _____

Company: _____

Job Title: _____

Tel: _____ Fax: _____

Mobile: _____ Email: _____

2 EASY WAYS TO PAY

Once your booking is confirm, a seat will be automatically reserved. Full payment is required before the course.

1. Our bank details:

OCBC Bank
65 Chulia Street OCBC Centre, Singapore 049513
A/C No: 588-013706-001
Swift Code: OCBCSGSG

2. Enclosed cheque made payable to:

Trisen Asia Control Pte Ltd
1 Kaki Bukit View, Techview #05-09, Singapore 415941
* Please ensure TSFC is written at the back of the cheque

A confirmation letter will be sent upon receipt of your course registration. Participants who choose not to take the exam will receive a certificate of attendance.

i Whilst the program strives to reflect the business needs, there is no guarantee that economic participation levels can be achieved. If the course cannot proceed for any reason, Tri-Sen will accept no liability of whatsoever kind for expenses incurred by any person or corporation with the sole exception of the course investment, which will be refunded in full. Every effort would be made to provide 1 week notice of cancellation or rescheduling. This program may be changed at any time due to unforeseen circumstances.