The Global Provider of Functional Safety Management Services and Technical Consultancy

ESC is a global engineering, Quantitative Risk Assessment (QRA) and IEC 61508 Functional Safety Management consultancy company whose primary function is supporting clients in the functional safety aspects of the processes, systems and equipment deployed in the oil and gas, petrochemical, utilities (including green technologies), military and manufacturing industries.

ESC provides functional safety management services and advanced technological solutions that enable owners, designers and operators in the above industries to plan and manage their assets and projects more safely and successfully.

The company’s directors have held senior management positions in organisations in which the design of high integrity automation systems was of paramount importance.

Kenneth G Simpson, MPhil, FIET, MIGEM – Managing Director

Kenneth Simpson has been associated with safety related systems design and their assessment for 35 years. He is a member of the IEC 61508 drafting committee, the IGIEM SR/15 panel, which writes the gas industry guidance, and contributes to the IEC 61511 committee. Following a career in aerospace, Ken has spent over 30 years in the control and safety systems industry, has written a number of papers on the topic and gives frequent lectures.

Professor Ron Bell, OBE, BSc, CEng, FIEE – Executive Director

From 1992 until 2006, Ron Bell was head of the Electrical and Control Systems Group in the Health and Safety Executive. He was also a member of the binational Channel Tunnel Safety Authority for 13 years. Ron chaired one of the two IEC working groups responsible for Editions 1 and 2 of IEC 61508. In 2006 he received the IEC 1906 Award for his work on functional safety. He received the OBE in the Queen’s 2006 New Year Honours. He is a Royal Academy of Engineering Visiting Professor at Liverpool John Moores University.

Eur Ing Simon J Burwood BEng (Hons.) MIET FSaRS RFSE CEng – Technical Director

Simon Burwood has worked in safety-related applications for 15 years. Having spent his early years working in machinery safety, he moved into the Oil and Gas industry, working as a Functional Safety Consultant, chairing and facilitating HAZOP, HAZID and SIL Determination studies in the EU, the Middle East, Australia, Russia, Americas and Africa. He is also an experienced Safety Engineer and has worked for a major contractor in the offshore power industry, delivering Quantified Risk Assessment and SIL Verification studies for major projects. He is a certified Technis Reliability and Functional Safety Engineer and author of key chapters in The Safety Critical Systems Handbook (2010 Edition – ISBN 978-0809598313).

He is a regular expert speaker on The Institute of Engineering and Technology’s (IET) annual SIL Seminar and is a Fellow of the Safety and Reliability Society (SaRS) as well a Registered Functional Safety Engineer (RFSE) with InstMC. Simon is also a member of the ISI GEl/005/01 Committee and has recently been appointed to the IEC 61511 Maintenance Committee (MT61511) as a UK expert on Functional Safety.

About Us

ESC Ltd’s Quality Management System is certified to ISO 9001 and its HSE Management System is certified to ISO 14001 and OHSAS 18001.

The company also employs industry-renowned consultants who are internationally recognised, with expertise in QRA, safety integrity level (SIL) and IEC 61508 functional safety management. They actively participate in professional institutions and government safety committees relating to programmable electronic safety systems. In addition, they are members of international expert working groups for IEC 61508 (general functional safety standard for electrical/ electronic based safety systems), IEC 61511 (process industry standard specification of IEC 61508) and IEGM-compliant programmable safety systems.

ESC consultants are multi-disciplined professionals who have worldwide experience in these market sectors in over 40 countries. The directors and all of the company’s consultants have expertise in QRA and IEC 61508, SIL functional safety management and are uniquely placed to offer their experience to the market.

Locations

Doncaster Office
Time Business Centre
1 Watercole Way, Balby
Doncaster DN4 1JP

Warrington Office
The Breeze at Tunberry House, Kelvin Close, Birchwood
Warrington WA3 7UD

Middle East Office
PO Box 2946
Abu Dhabi UAE

Head Office
Tuition House
27-37 St George’s Road
London SW19 4EU

E-mail address: info@esc.uk.net

Accreditations

ESC Ltd’s Quality Management System is certified to ISO 9001 and its HSE Management System is certified to ISO 14001 and OHSAS 18001.

Services

Risk Management Services

ESC offers an extended range of Risk Management Services. We have specialists in the BowTie Analysis of Hazards (MAHs) and the Risks that your business may face. ESC has recently been appointed to the IEC 61511 Maintenance Committee (MT61511) as a UK expert on Functional Safety.

ESC’s expert consultants can lead and facilitate Hazard Analysis (HAZAN), workshops, including SIL Determination (Targeting) studies as part of the risk analysis process detailed in IEC 61508 / IEC 61511. The output of HAZOP / PHA / HAZID studies can be quantitatively (or semi-quantitatively) analysed, typically using LOPA (Layers of Protection Analysis), calibrated risk graph and Fault Tree techniques to identify SIL targets.

The ALARP (As Low as Reasonably Practicable) principles can be applied when appropriate. Each method can be used in assignment of SIL targets and can be calibrated to the clients’ specific risk criteria.

Functional Safety Management

In order to conform to international standards, it is necessary to demonstrate that the management of the design activities and the system implementation is appropriate and that there is adequate competence for carrying out each task.

ESC is able to setup Functional Safety Management Systems and undertake third party audits on existing procedures and techniques for compliance to the recognised safety standards including IEC 61508, IEC 61511 and EN 62061. ESC can also provide assistance in achieving CASS accreditation.

Asset Management

Our services are tailored to help customers maximise their asset value and to make sure their assets operate safely throughout their planned lifetimes.

ESC can assess the reliability of an asset and - using the life cycle approach - provide guidance such as maintenance and testing strategies to improve the integrity and functionality of an asset.

QRA

Quantitative Risk Assessment (QRA) is a formalised tool for assessing the risk exposure to employees, the environment, company assets and its reputation. Using quantified analysis and complex modelling software the QRA can estimate the hazard frequency and analyse the worst-case potential consequences (e.g. toxic effects, pool fires, jet fires, explosions etc.).

These results can then be compared with the acceptance criteria and recommendations made based on Cost Benefit Analysis (CBA) and evaluation of additional risk reduction measures. For consequence Software Tool).

SIL Verification

ESC’s team of reliability engineers can assess the SIL capability of specified Safety Instrumented Functions (SIFs) using Fault Tree Analysis, Reliability Block Diagrams (RBDs) or Failure Mode, Effects and Criticality Analysis (FMEA). Assessments of proposed or existing Safety Instrumented Functions (SIFs) can be conducted using failure rate data from client/vendors, or from ESC’s own database.

This can be used to confirm, or otherwise, hardware reliability and compliance with safety requirements parameters such as Probability of Failure on Demand (PFDoD) and failure rate.

Flow Assurance

An in-depth understanding of flow assurance and risk is an essential part of optimising the performance of operating assets.

ESC’s consultants use a software-based method to conduct Computational Fluid Dynamics on a range of scenarios to provide tailored solutions.

Machinery Safety

ESC utilises a software based semi-quantitative method for hazard identification, risk estimation and risk evaluation as part of achieving compliance with the Provision and Use of Work Equipment Regulations 1998 (PUWER), Compliance assessments to EN 13849-1 (Safety of machinery-Safety related parts of control systems), EN 62061 (Safety of machinery-Functional safety of safety-related electrical, electronic and programmable electronic control systems); IEC Directives / CE Marking.

Technical Studies

- Environmental Studies
- Dropped Object Analysis
- Fire and Gas Mapping
- Evacuation, Escape and Rescue Analysis
- Building Risk Assessment
Products

ProSET® is ESC’s own bespoke software suite to manage your Functional Safety Lifecycle including Process Hazard Analysis, SIL Determination, SIL Verification and Safety Requirements Specification (SRS) generation.

Features

- PHA module:
  - Customizable for CHAZOP, HAZID etc
  - Risk Ranking
  - Configurable Risk Matrix
  - Configurable Deviations (Guidewords/Parameters)

- SIL Determination module:
  - Risk Graphs
  - LORA
  - Cost Benefit Analysis as part of ALARP demonstration

- IEC 61508- certified SIL Verification module:
  - Random Hardware Reliability Assessment (FDO / PFH)
  - Hardware safety integrity architectural constraints
  - Sensitivity Analysis tool
  - Includes FARADIP-THREE Failure Rate database
  - Customisable Failure Rate data

- SRS module

“The Complete Process Safety Evaluation Toolset

“ProSET® is ESC’s own bespoke software suite to manage your Functional Safety Lifecycle including Process Hazard Analysis, SIL Determination, SIL Verification and Safety Requirements Specification (SRS) generation.”

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“SRS module”

Training Information

ESC offers seminars and a series of training programmes that bring valuable knowledge to our customers and provide an up-to-date information on issues relevant to functional safety and associated fields. The training courses are conducted by high calibre consultants with considerable knowledge and experience in their respective fields and are designed to help companies improve safety and security, increase productivity and reliability and enhance overall business performance.

Publications


Reliability, Maintainability and Risk: Practical Methods for Engineers

Our Clients Include

“‘We’ve been using this software in house for over three years; now it’s time for the world’s technical safety teams to benefit from this experience’

Kenneth Simpson MPhil CEng FIET, ESC Managing Director and SIL Comp® product technical auditor.

Ken is also a leading member of the IEC 61508 and IEC 61511 Committees.

‘These tools have been designed with over 40 years’ technical safety know-how’

Eur Eng Simon Burwood BEng (Hons), MsaRS, CEng, MIET, ESC Technical Director and SIL Comp® product designer.

‘ESC is leading the way in pioneering the evolution of the International Electrotechnical Commission (IEC) functional safety standards’

Ron Bell OBE BSc (Hons), CEng, FIET, ESC Director and IEC 61508 Committee Chairman

ESC has extensive experience in providing safety product assessment to the requirements of IEC 61508 (up to and including SIL 3) and IEC 61511. ESC can determine the SIL capability of a product by qualitative and quantitative assessment including: Functional Safety Management (FSM); Random hardware reliability using FMECA techniques; Assessment of design, techniques and procedures against systematic failure requirements; and/or proven-in-use assessment to IEC 61508 / prior-use assessment to IEC 61511.

The product can then be certified by ESC for use in SIL-rated Safety Related Systems (SRS) where appropriate.

Our Clients Include

“We have been confident in choosing ESC for a variety of projects because of their technical expertise in functional safety. Their capability to meet short deadlines and deliveries, while maintaining high quality, is exceptional.”

John Stevens - Project Manager, BPA

“We look forward to the next opportunity to work together.”

Peter Fitzgerald - Manager Sub Contracts, Amec Foster Wheeler

Training delivered by Professor Ron Bell, OBE, BSc (Hons), CEng, FIET, ESC Engineering Manager and IEC 61508 Committee Chairman, and David Green, BEng (Hons), CEng, MIET, and ESC Engineering Manager – Warrington