



# Functional Safety, Second Edition: A Straightforward Guide to Applying IEC 61508 and Related Standards

*David J. Smith BSc PhD CEng FIEE FIQA HonFSaRS MIGasE., Kenneth G. L. Simpson MPhil FIEE  
FInstMC MIGasE.*

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Electrical, electronic and programmable electronic systems, such as emergency shut down systems and railway signalling systems, increasingly carry out safety functions to guard workers and the public against injury or death and the environment against pollution. The international standard IEC 61508 has been developed as a generic standard that applies to all these systems irrespective of their application.

IEC 61508 is seen by many professionals as complex. This book overcomes that complexity by introducing the standard in the context of safety in general before moving on to provide practical advice about implementing it and obtaining certification. It also explains how IEC 61508 relates to second tier standards and related guidance, such as IEC 61511, 61513, UKOOA, ISA S84.01 and DIN standards, among others. Throughout the text, the authors illustrate their explanations with examples to which the answers are supplied in the appendix. Four case studies with further exercises set the information in context. Templates and checklists for drawing up your own implementation plan and information on self-certification are also provided.

As Functional Safety, the standard, is applicable to many industries, **Functional Safety**, the book, in its previous edition has proved to be an invaluable reference for professionals from a variety of industries, such as project/instrumentation/design/control engineers as well as safety professionals in oil and gas, chemical, rail, power generation, nuclear, aircraft, and automotive industries.

The new edition includes a new chapter on IEC 61511, the process sector standard, published since the first edition. The text has been updated throughout in light of the authors' recent experience and two case studies have been added.

**Dr. David J Smith**, BSc, PhD, CEng, FIEE, HonFSaRS, FIQA, MIGasE, has been directly concerned with reliability, safety and software quality for 30 years. He has written a number of books on the subject as well as numerous papers. His PhD thesis was on the subject of reliability prediction accuracy and common cause failure. He chairs the IGasE panel which develops its guidelines on safety-related systems (now in its third edition). He has also made contributions to IEC 61508.

**Kenneth G. L. Simpson**, MPhil, FIEE, FInstMC, MIGasE, has been associated with safety-related systems design and also with their assessment for 25 years. He is a member of the IEC 61508 drafting committee and also of the I Gas E panel which writes the gas industry guidance. Following a career in aerospace, Ken has spent 20 years in the control system industry and is a Director of Silvertch International plc, a leading designer of safety and control systems. He has written a number of papers on the topic and gives frequent talks.

\* A practical guide to achieving functional safety standards in safety-critical systems

\* Makes a complex standard easy to follow and sets it in the context of risk and safety

\* Provides support for those undertaking self-assessment, which can save money spent on large consultancy fees

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**Michael Hamrick:**

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**Ruth Santiago:**

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closer in turning into precious person. By looking right up and review this guide you can get many advantages.

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