



Technical support for getting started with functional safety (SIL) product



Introduction:

Many product manufacturers are being asked for a 'SIL capability' (or performance level, 'PL') but are new to complying with functional safety standards like IEC 61508 or ISO 13849. This information sheet describes CML's technical support intended for those who have little or no prior knowledge of functional safety.

Related information:

For CML's overall approach, refer to the information sheet '**The CML approach to functional safety certification**'.

Description of technical support:

At CML we try to provide as much help as possible for our clients, whether certification is a final objective or not. With the right help at the right time, the learning curve is reduced and work is more productive. One benefit of our approach is that manufacturers learn the essentials of functional safety *specifically as it applies to them*, while working on the job with our technical support.

Some examples of how we can assist are shown overleaf. All these areas are targeted at demonstrating functional safety compliance to an optimum level of rigour for the SIL involved. This ensures the right balance is struck and under or over-doing things (a common mistake) is avoided.

We can either provide technical support in a specific area as requirements unfold, or as a package of discrete steps. Either way, the support is tailored to the specific needs of each customer and varies according to the type of hardware or software technology used, the amount of reliability information available for analysis, experience of the personnel, etc.

This guided step by step approach means the manufacturer knows exactly what information is required, when it is needed, and what the deliverables from CML will be at each stage (e.g., document outlines, review comments, training, etc). If following an agreed plan for delivering a support package, the client can monitor progress and ask for help at any stage along the way.

The overall objective is to support the manufacturer through the various aspects of conformity or certification in the most straightforward way at a pace and depth that suits the specific requirements.

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TYPICAL AREAS WHERE TECHNICAL SUPPORT IS REQUIRED

The following areas are intended to correlate with some of the stages in a typical product certification project, but they are also available independent of any certification project

Initial company briefing

CML can provide a briefing at the start of a project for all levels of staff that need to know what functional safety is all about and how it applies to the project, the quality process and the implications on all job functions. Jargon is avoided and no prior knowledge is assumed.

Briefings typically range from two hours to one day and are tailored for specific needs. For example, it can address topics like what does a manufacturer need to do/provide at each step in a product certification program, which company products are suitable/feasible to comply with SIL requirements, is a 'proven-in-use' route suitable, etc.

Hardware failure analysis

Specialist know-how is required to create the hardware failure data in support of SIL applications, e.g., by failure modes and effects analysis (FMEA) or other suitable failure modeling technique. An interactive FMEA workshop can be run, focused on the manufacturer's product where CML assist in the FMEA technique while the manufacturer provides knowledge of the functional design and possibly any known failure modes.

FMEA is also a useful way to identify further design requirements (e.g., software based diagnostics) and information for the safety manual (e.g., conditions or restrictions in use).

Defining the realization lifecycle

Functional safety standards such as IEC 61508 require a well defined approach ('lifecycle') that shows discrete stages for hardware and software development, together with the associated planning, verification and validation. The use of specified 'techniques and measures' need to be demonstrated that are suitable for the technologies and target SIL involved. CML can advise on how all this is done in the most efficient manner, together with meeting the functional safety management and competence requirements.

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User documentation

CML can advise on the creation of a functional safety product specification, the safety manual and, if necessary, technical applications literature (e.g., considerations for redundant configurations to meet a higher 'SIL capability').

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