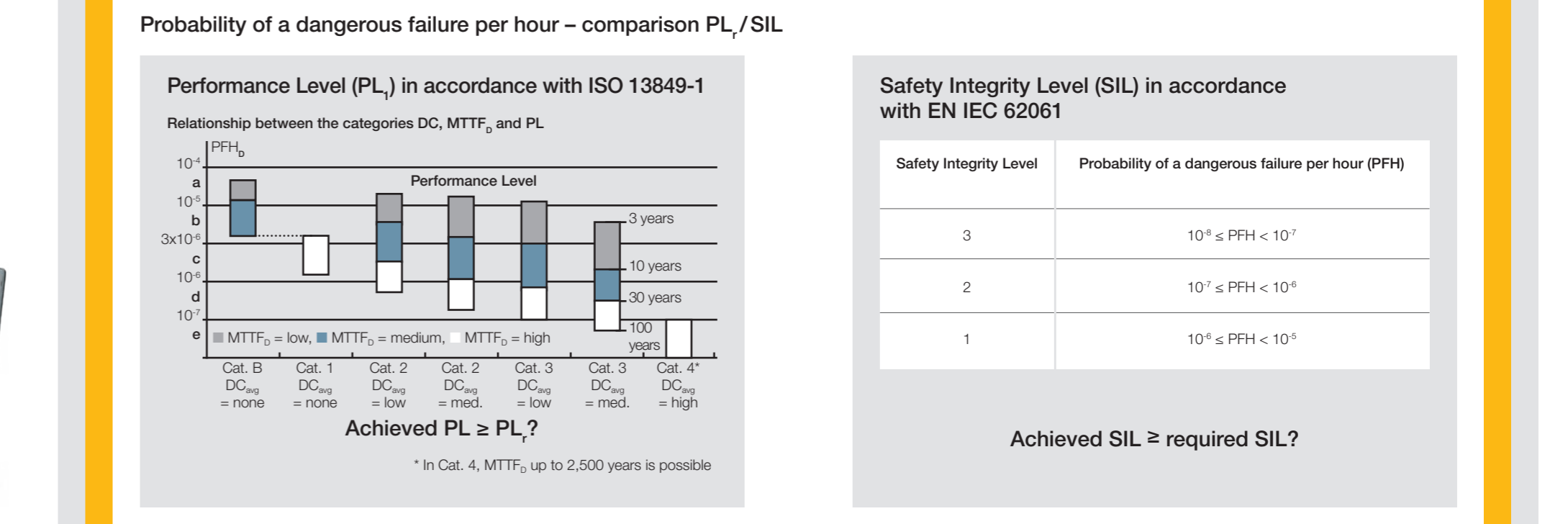
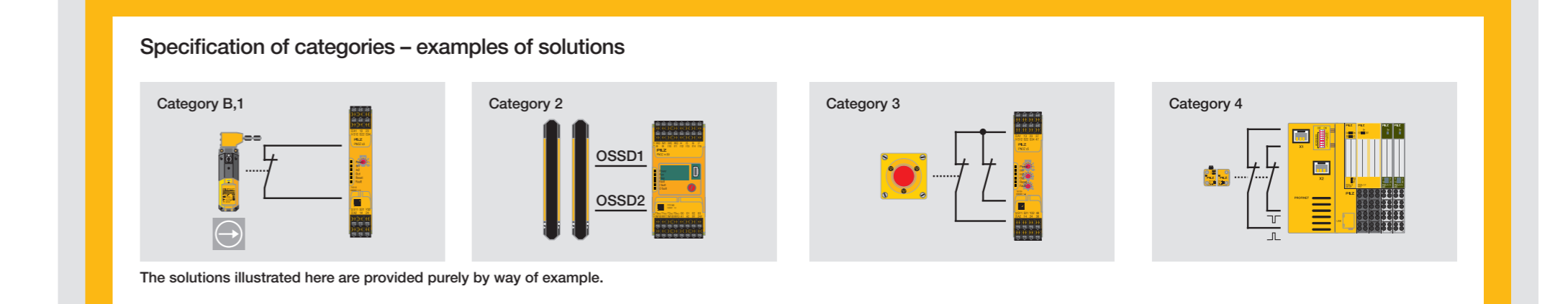
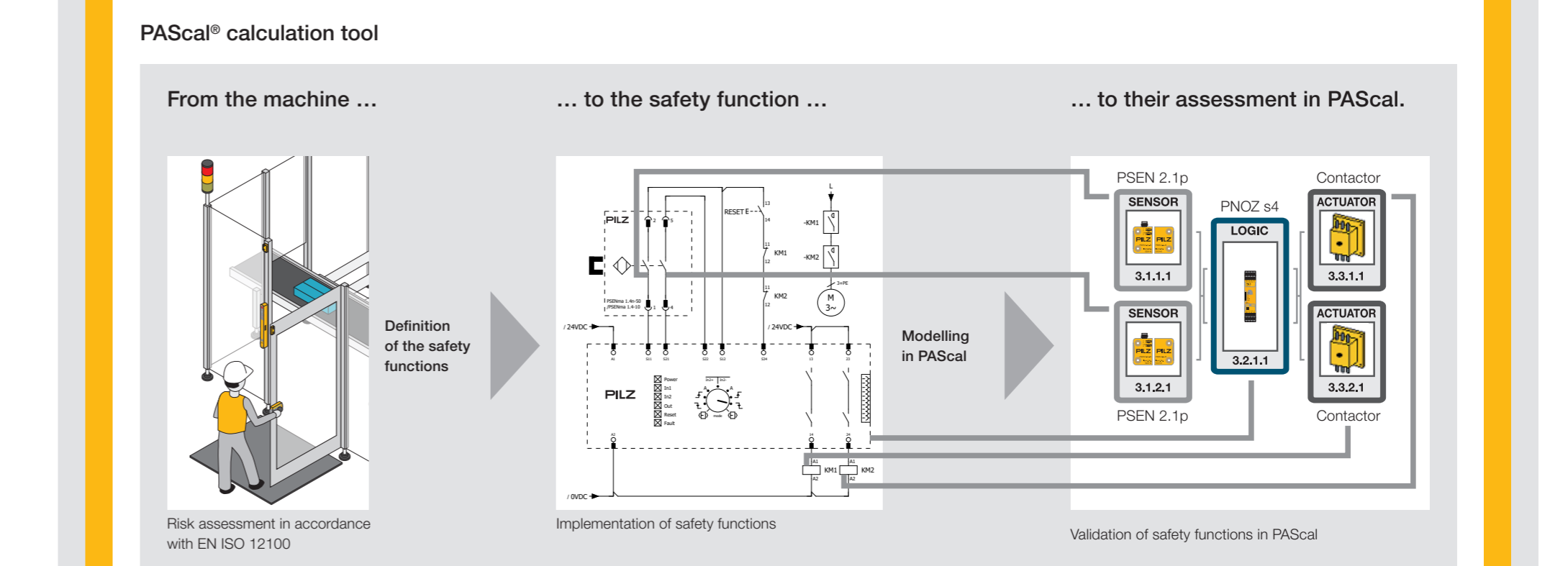
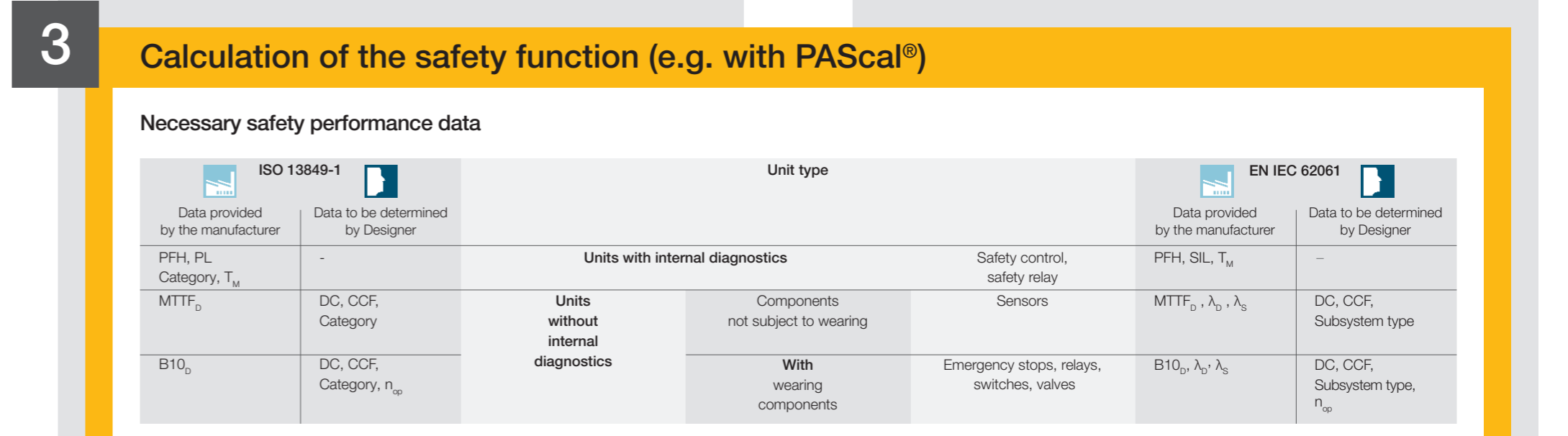
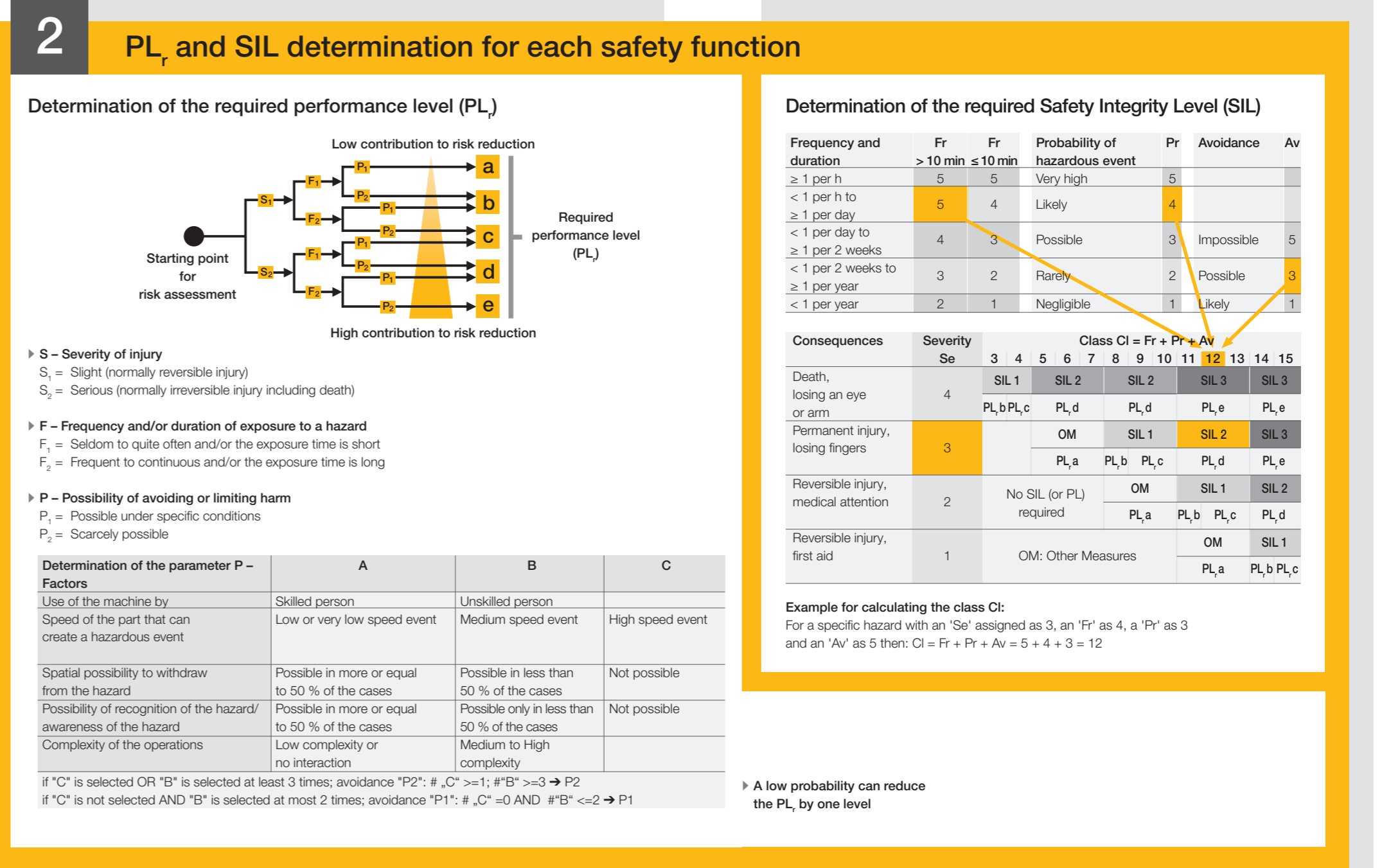
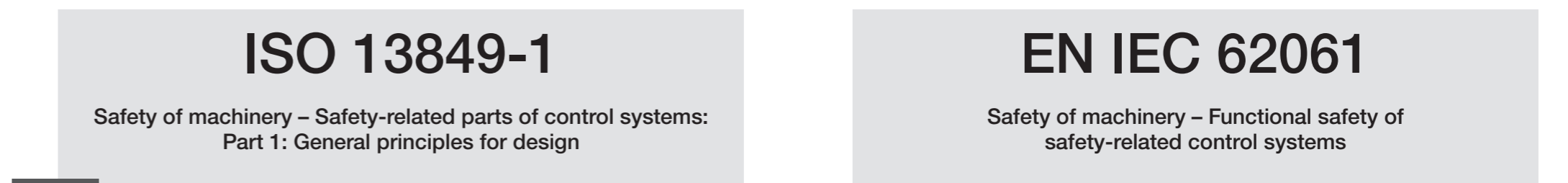
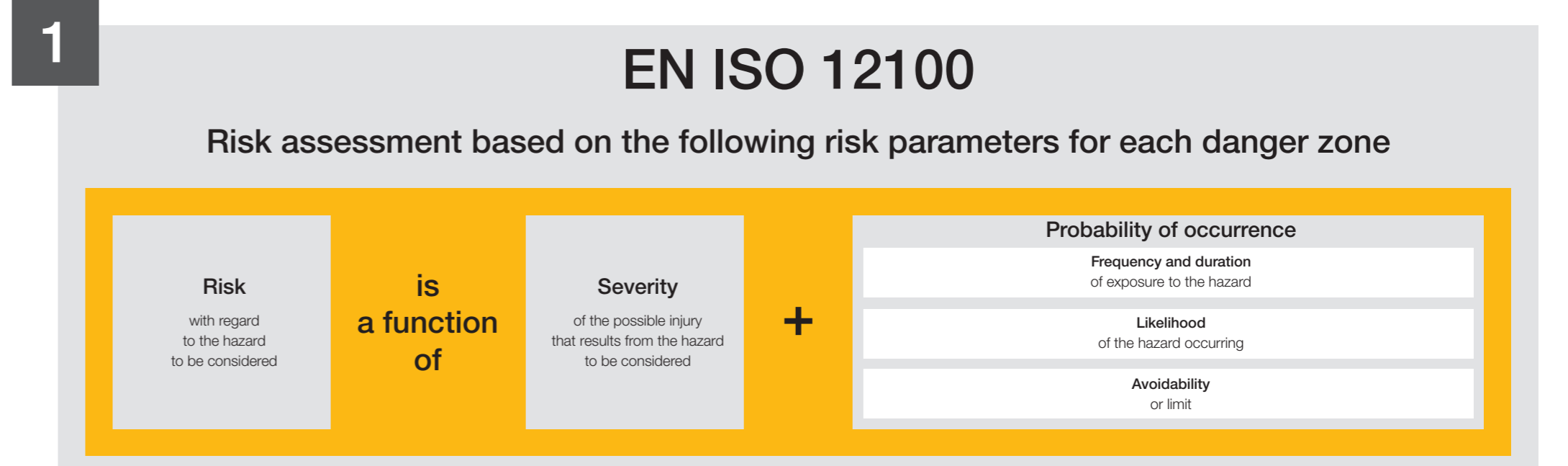
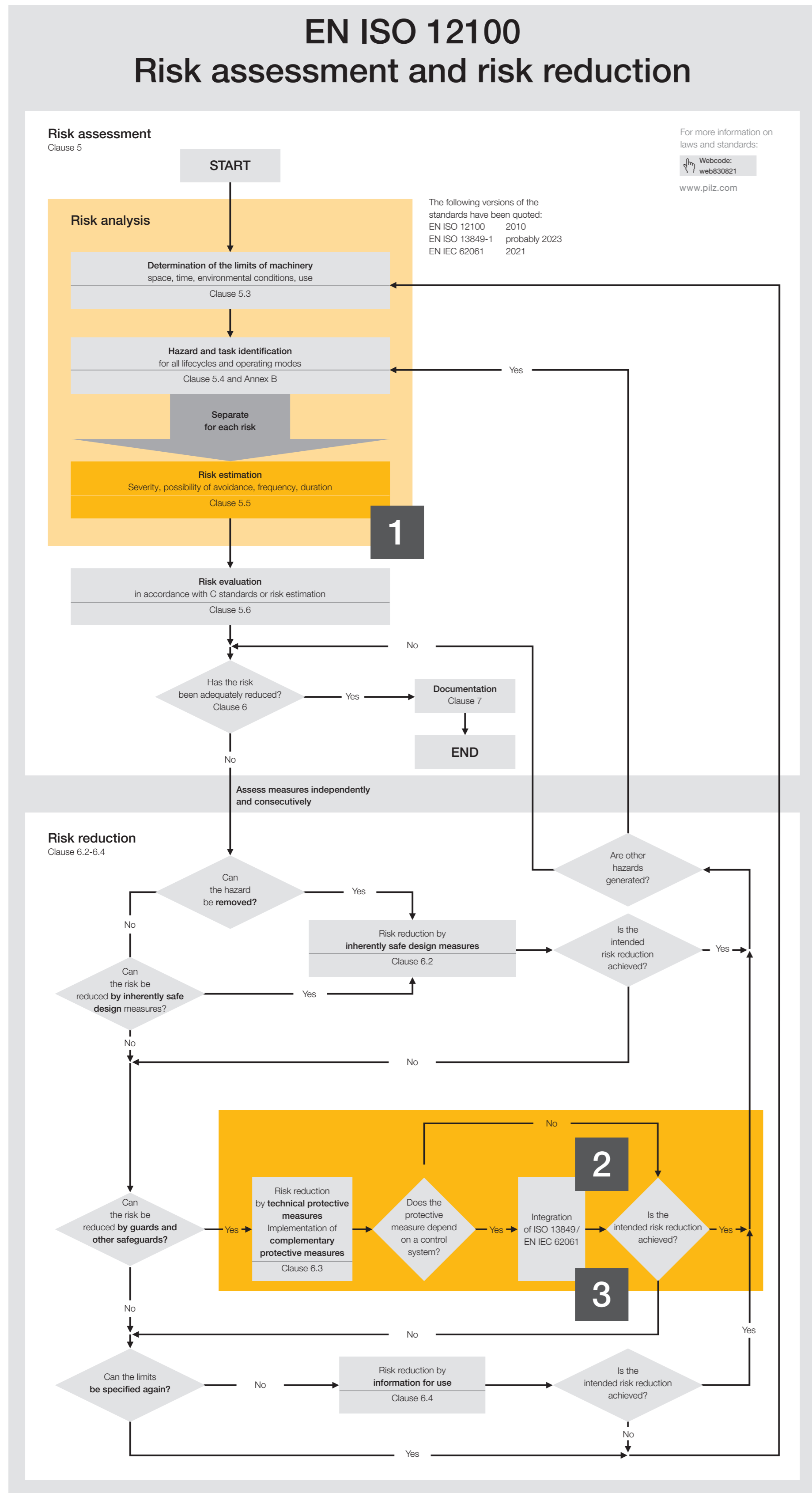


Standards Functional Safety and Risk Assessment

EN ISO 12100, ISO 13849 and EN IEC 62061



Glossary of terms

- Architecture**: Specific configuration of hardware and software elements in a safety-related control system (SCS)
- B_{10L}**: Number of cycles of products before 10% of the product range fails "dangerously"
- Category**: Classification of the subsystem in respect to its resistance to faults and the subsequent behaviour in the fault condition which is achieved by the structural arrangement of the parts, fault detection and/or by their reliability
- CCF**: Common cause failure
- Diagnostic coverage (DC)**: Measure of the effectiveness of diagnostics, which is determined as the ratio between the failure rate of detected dangerous failures and the failure rate of total dangerous failures
- DC_{avg}**: Average diagnostic coverage
- Fault**: Abnormal condition that may cause a reduction in, or loss of, the capability of a functional unit to perform a required function
- λ**: Average probability of failure
- λ_d**: Dangerous failure rate
- λ_s**: Safe failure rate
- Mission time**: Period of time covering the intended use of a safety-related part of a control system
- MTTF_d**: Mean time to dangerous failure
- n_{pe}**: Mean frequency of operation per annum
- Performance level, required (PL_r)**: Performance level (PL) in order to achieve the required risk reduction for each safety function
- PFH**: Probability of dangerous failure per hour
- Risk**: Combination of the probability of occurrence of harm and the severity of that harm
- Safety function**: Function of the machine whose failure can result in an immediate increase of the risk(s)
- Safety Integrity Level (SIL)**: Discrete level (one out of a possible three) for describing the capability to perform a safety function where SIL 3 has the highest level of safety integrity and SIL 1 has the lowest
- Safety-related control system (SCS)**: Part of the control system of a machine which implements a safety function by one or more "subsystems"
- Subsystem**: Entity of the top-level architectural design of a safety-related system where a dangerous failure of the subsystem results in dangerous failure of a safety function

The measures outlined on this sheet are simplified descriptions and are intended to provide an overview of the standards EN ISO 12100, ISO 13849-1 and EN IEC 62061. Detailed understanding and correct application of all relevant standards and directives are needed for validation of safety circuits. As a result, we cannot accept any liability for omissions or incomplete information.

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