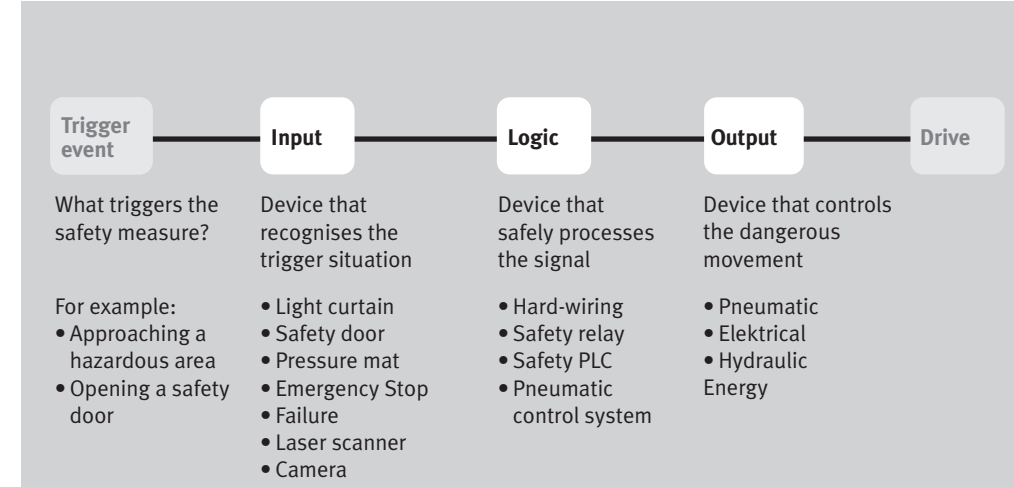
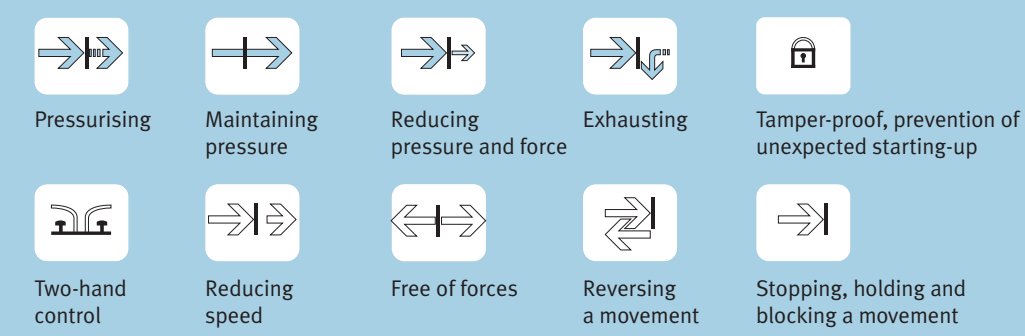


Risk assessment



10 safety functions



6 steps for evaluating whether safety measures are sufficient

EN ISO 13849-1 Applicable to safety-related parts of control systems and for all types of machines, regardless of the technology and power used – electric, pneumatic, hydraulic, mechanic.

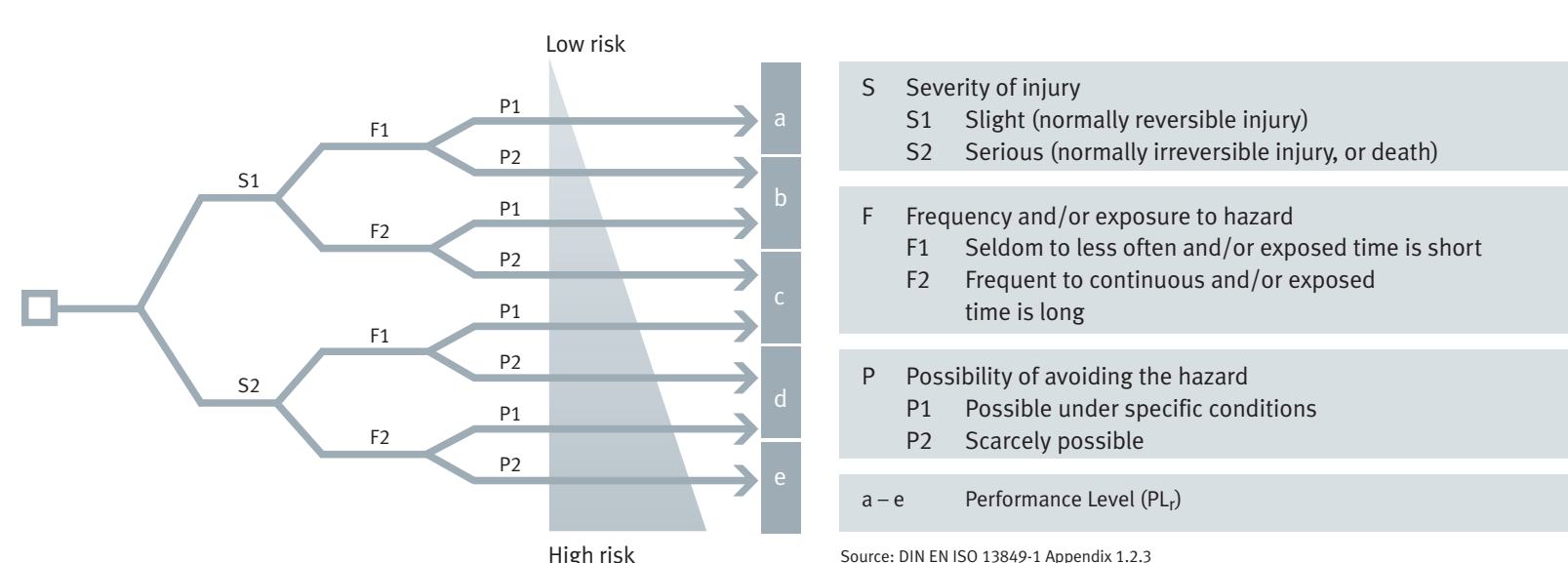
IEC 61508 Functional safety of electrical/electronic/programmable electronic safety-related systems

IEC 61511 Functional safety – safety instrumented systems for the process industry sector.

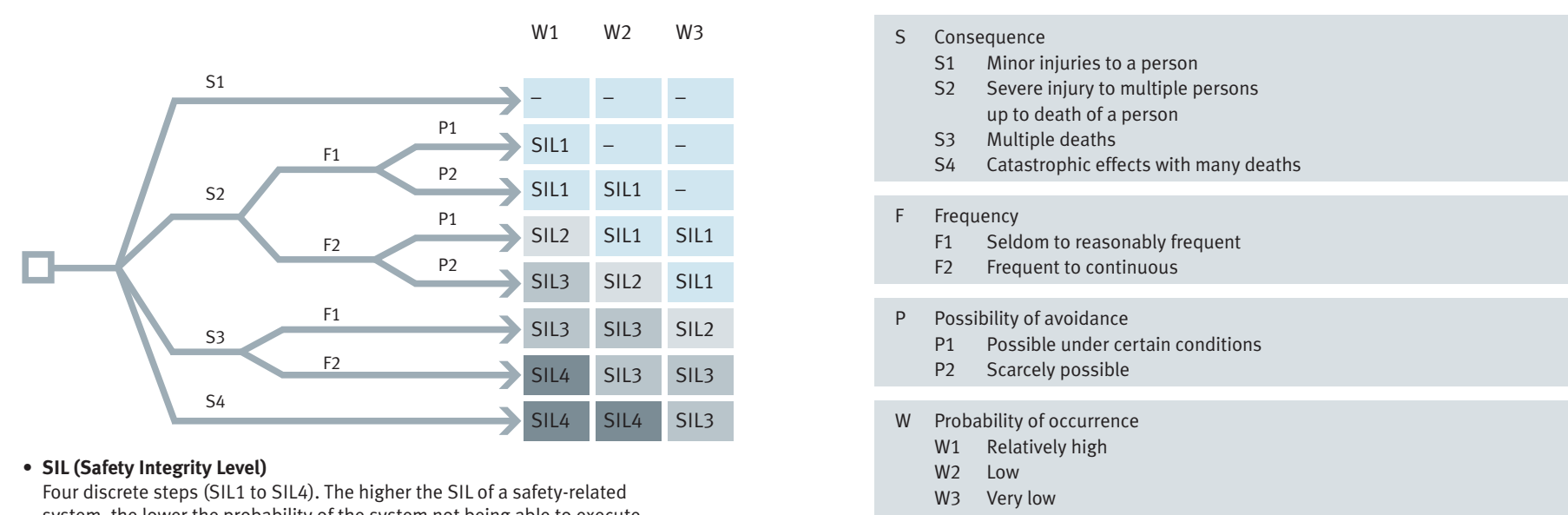
IEC 62061 Safety of machinery – functional safety of safety-related electrical, electronic and programmable electronic control systems.

1 Risk assessment Determining the required Performance Level (PL_r)

Evaluation of the application

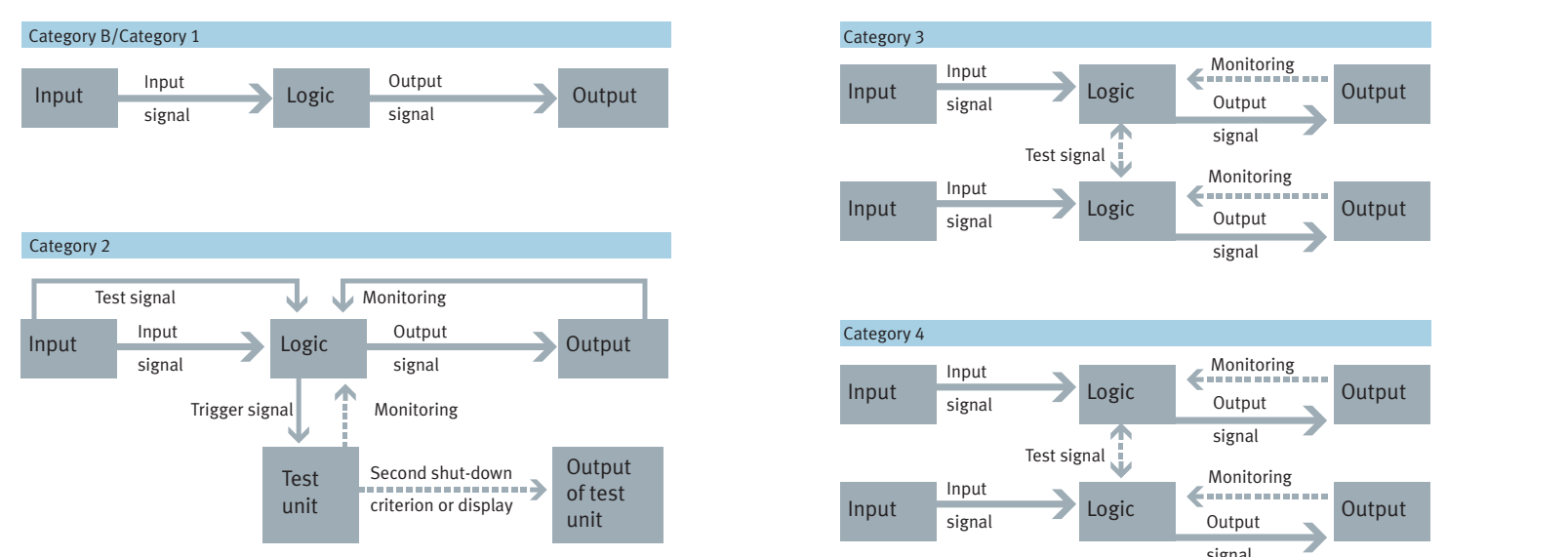


Determining the required Safety Integrity Level (SIL_r)

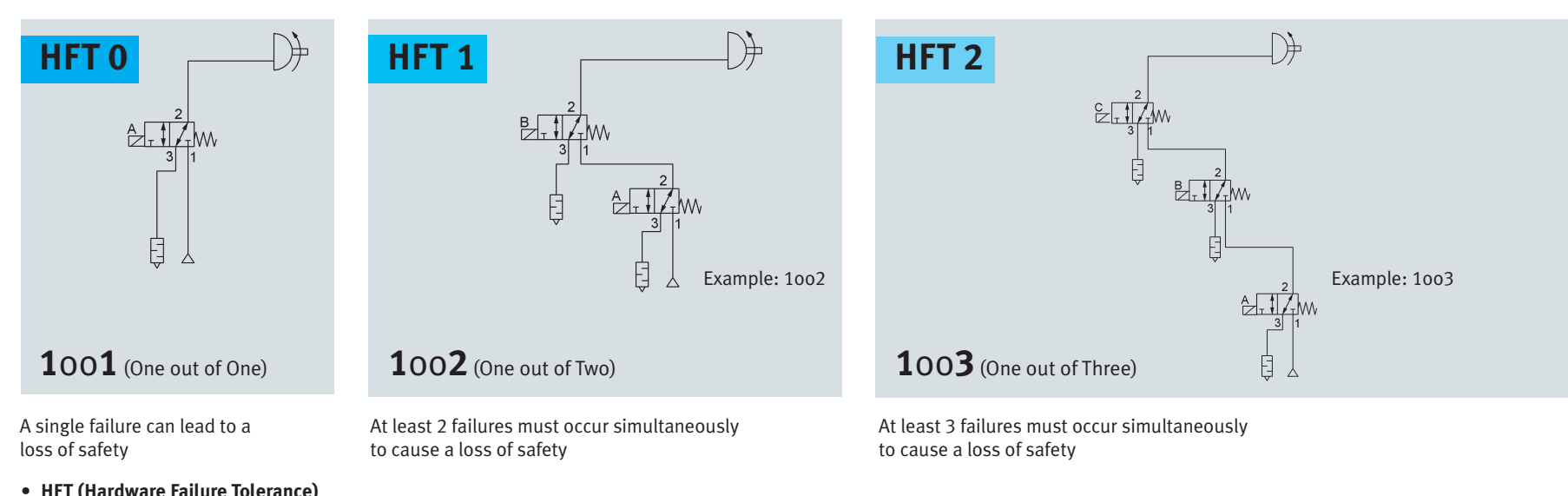


2 Designated architectures Specifications of categories

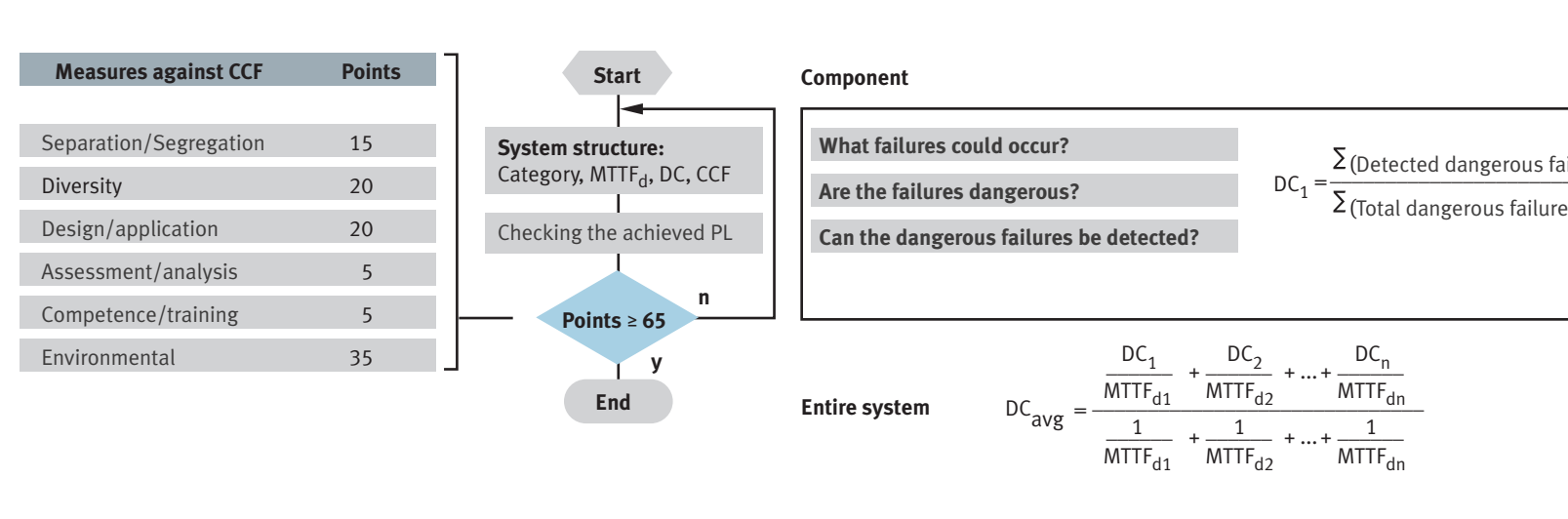
Evaluation of safety measures



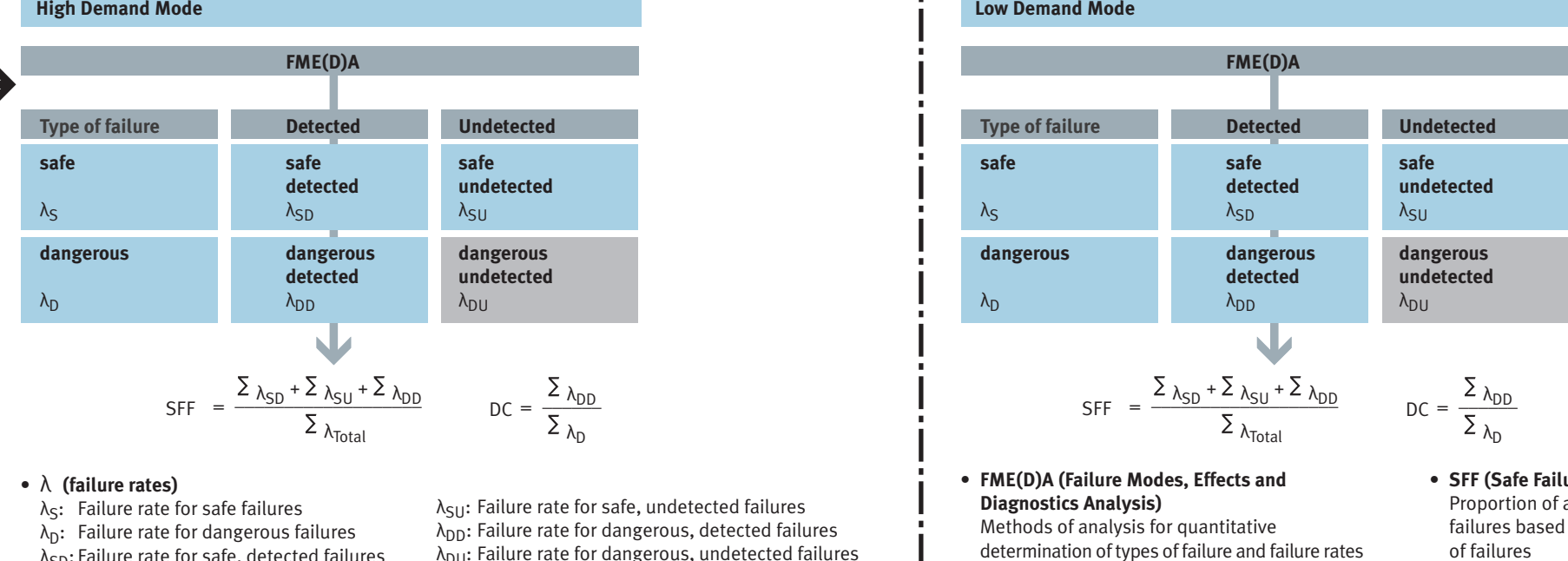
HFT Defining the Hardware Failure Tolerance



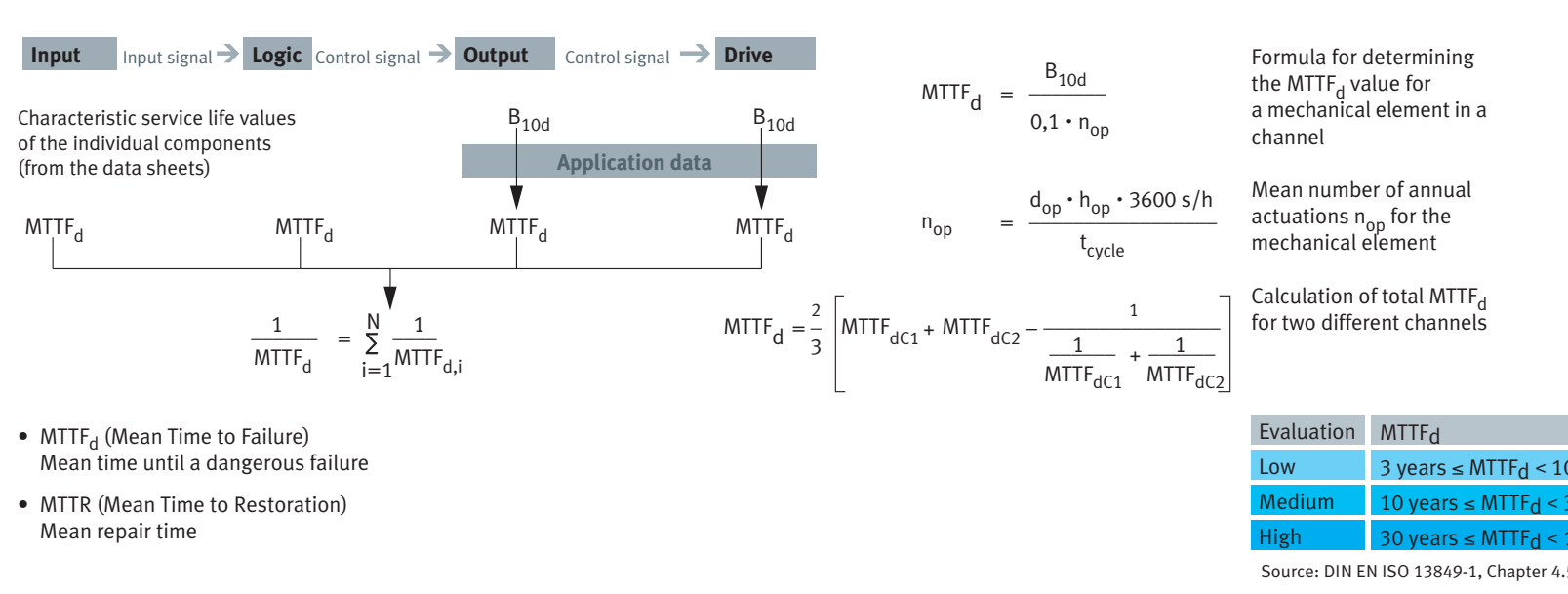
3 CCF Common Cause Failure/DC Determining Diagnostics Coverage



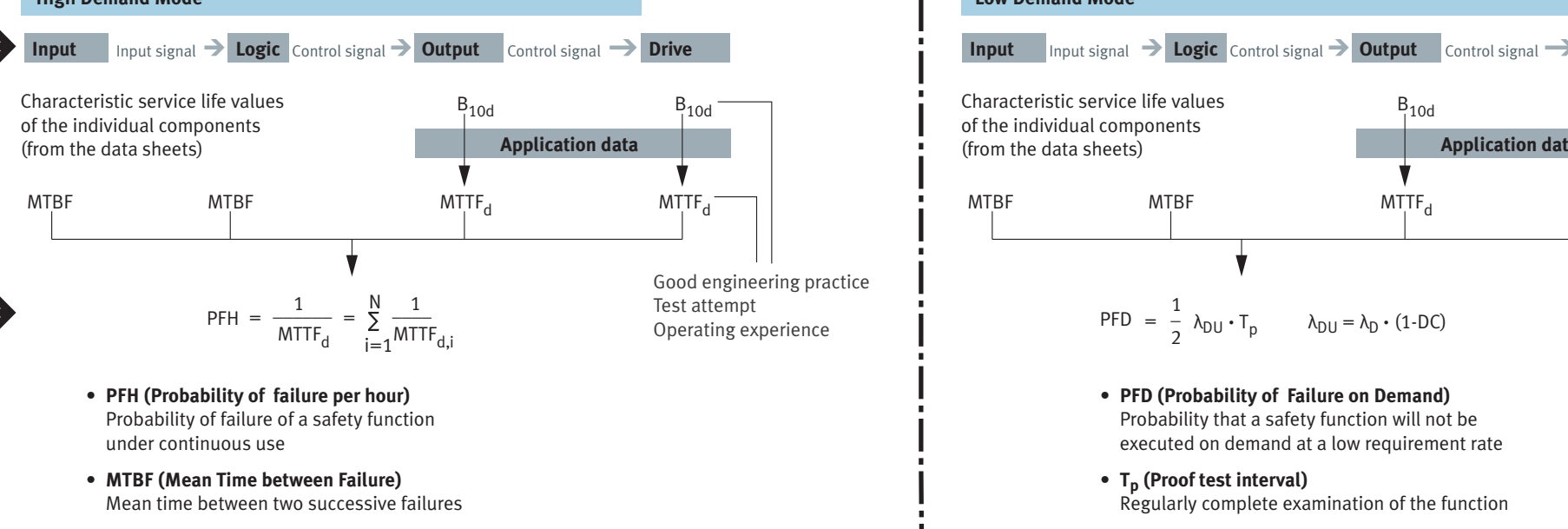
SFF Defining the Safe Failure Fraction



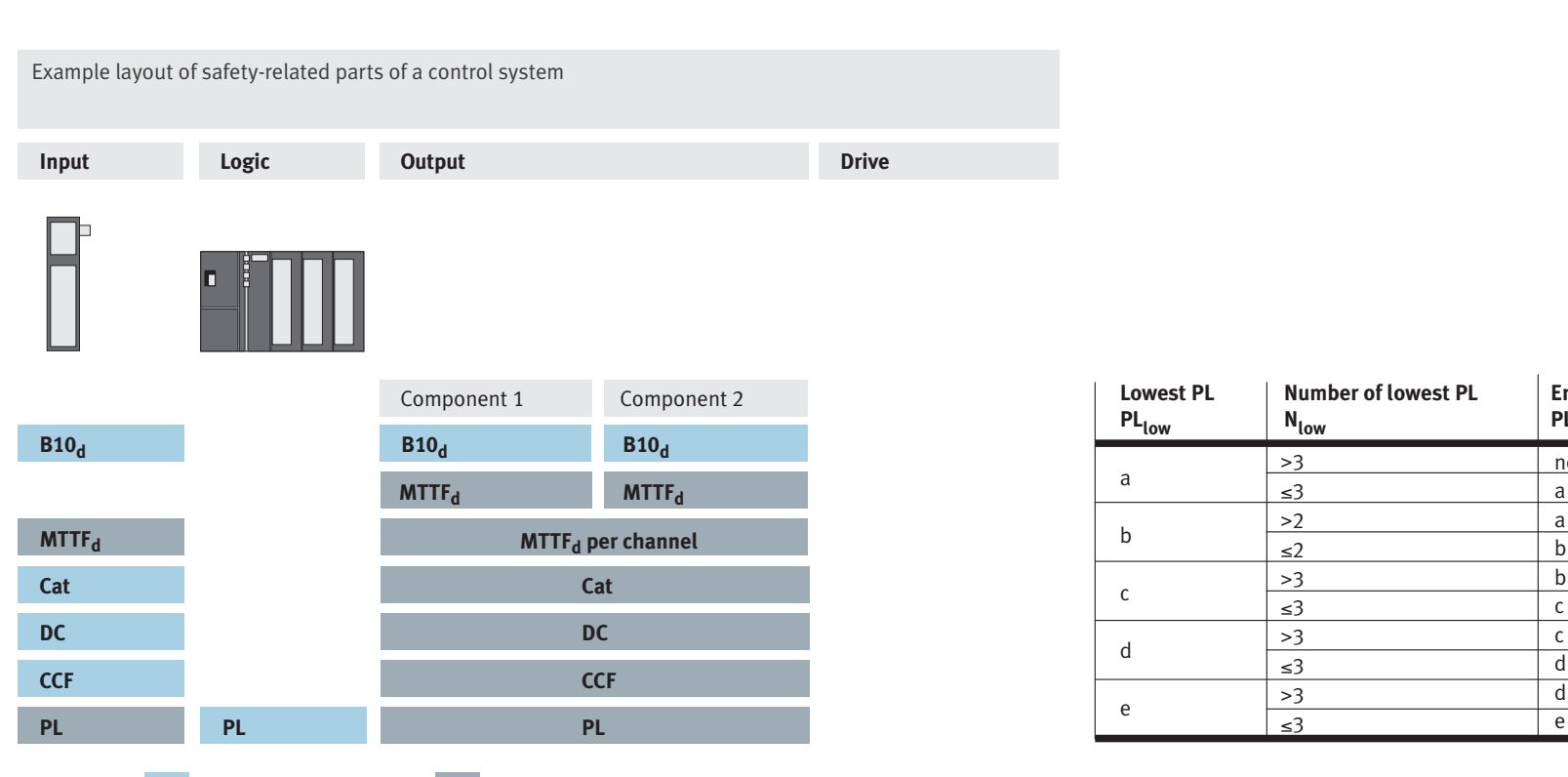
4 MTTFd Definition of the Mean Time To Failure



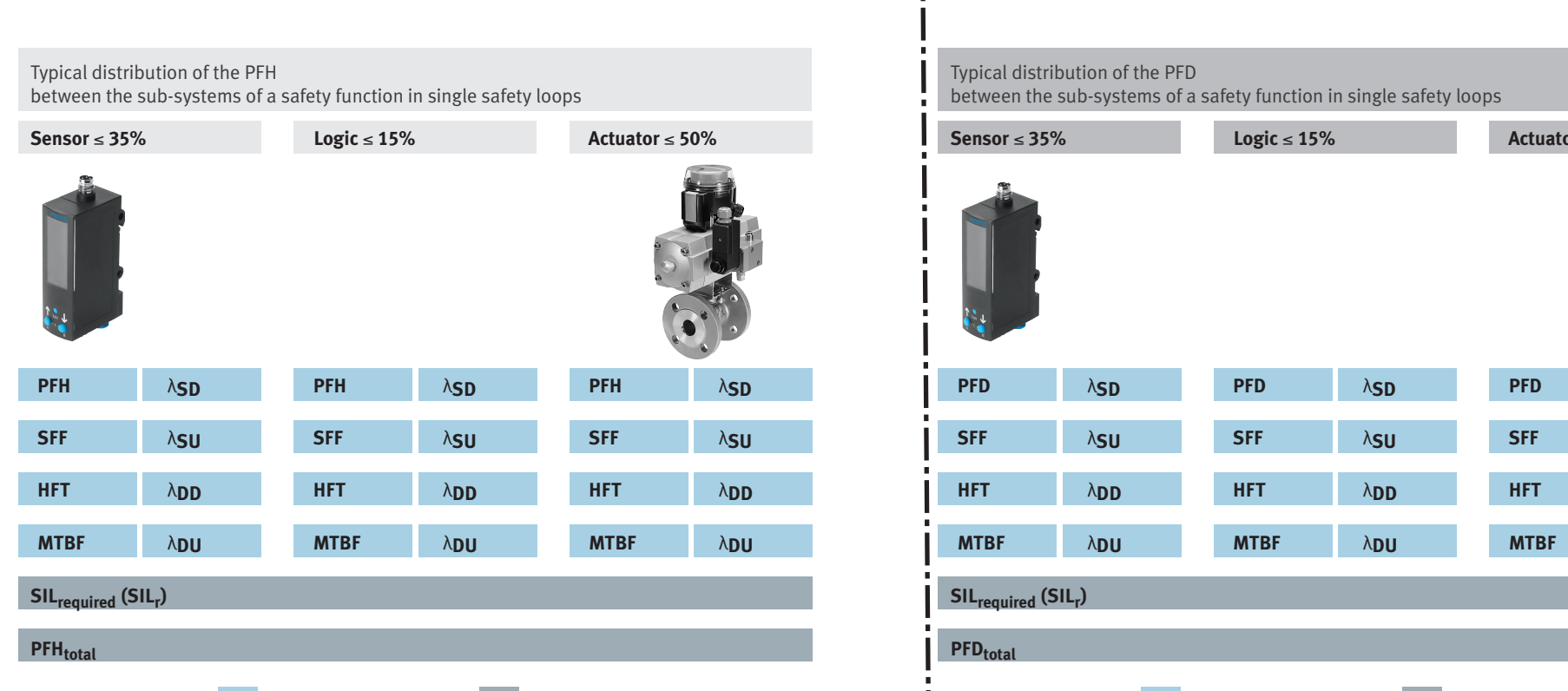
PFH/PFD Determination of the probability of failure



5 Entire system – Target: PL ≥ PL_r



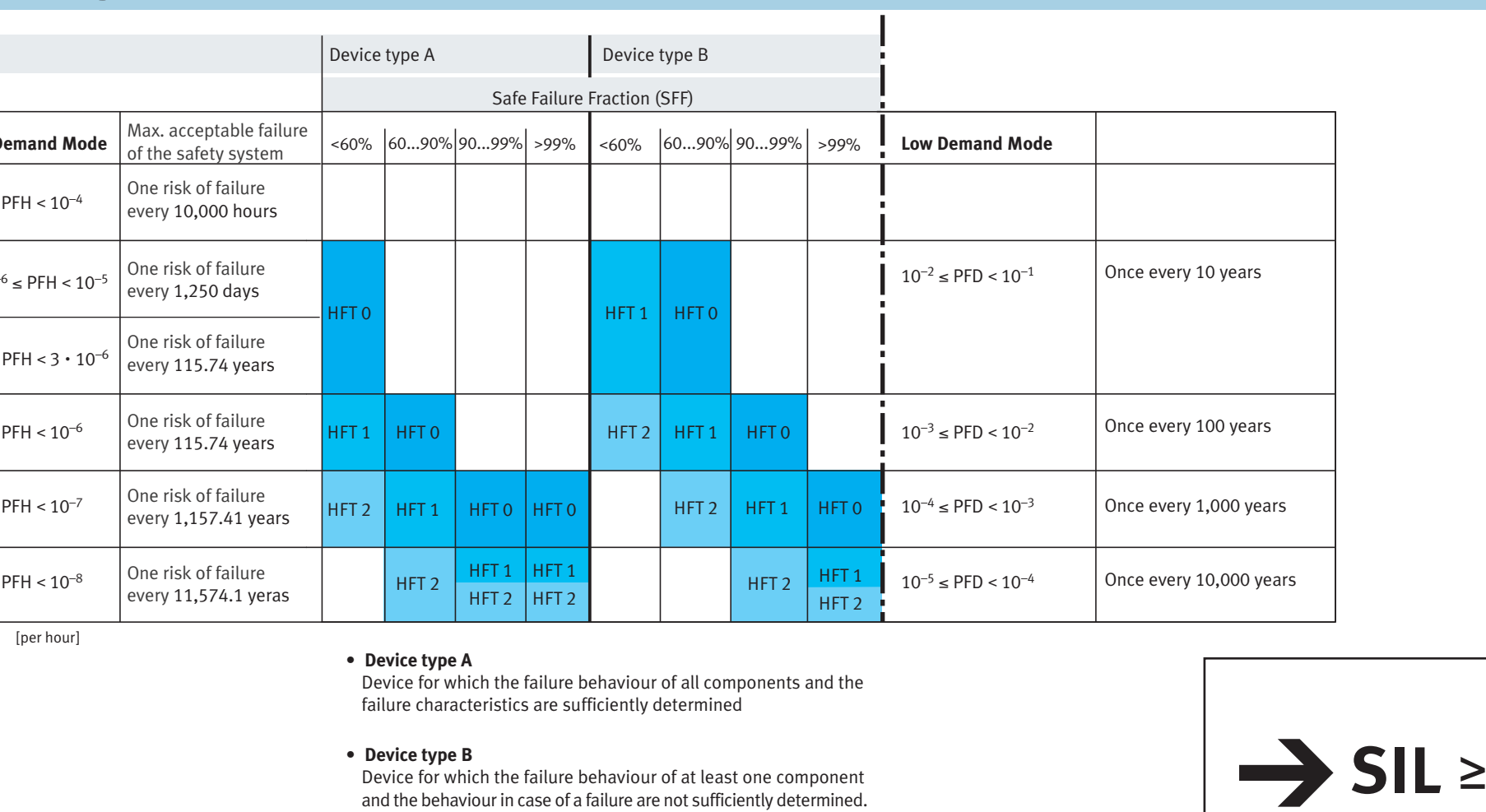
Target: SIL ≥ SIL_r



6 Evaluation – Target: PL ≥ PL_r



Target: SIL ≥ SIL_r



→ PL ≥ PL_r

→ SIL ≥ SIL_r