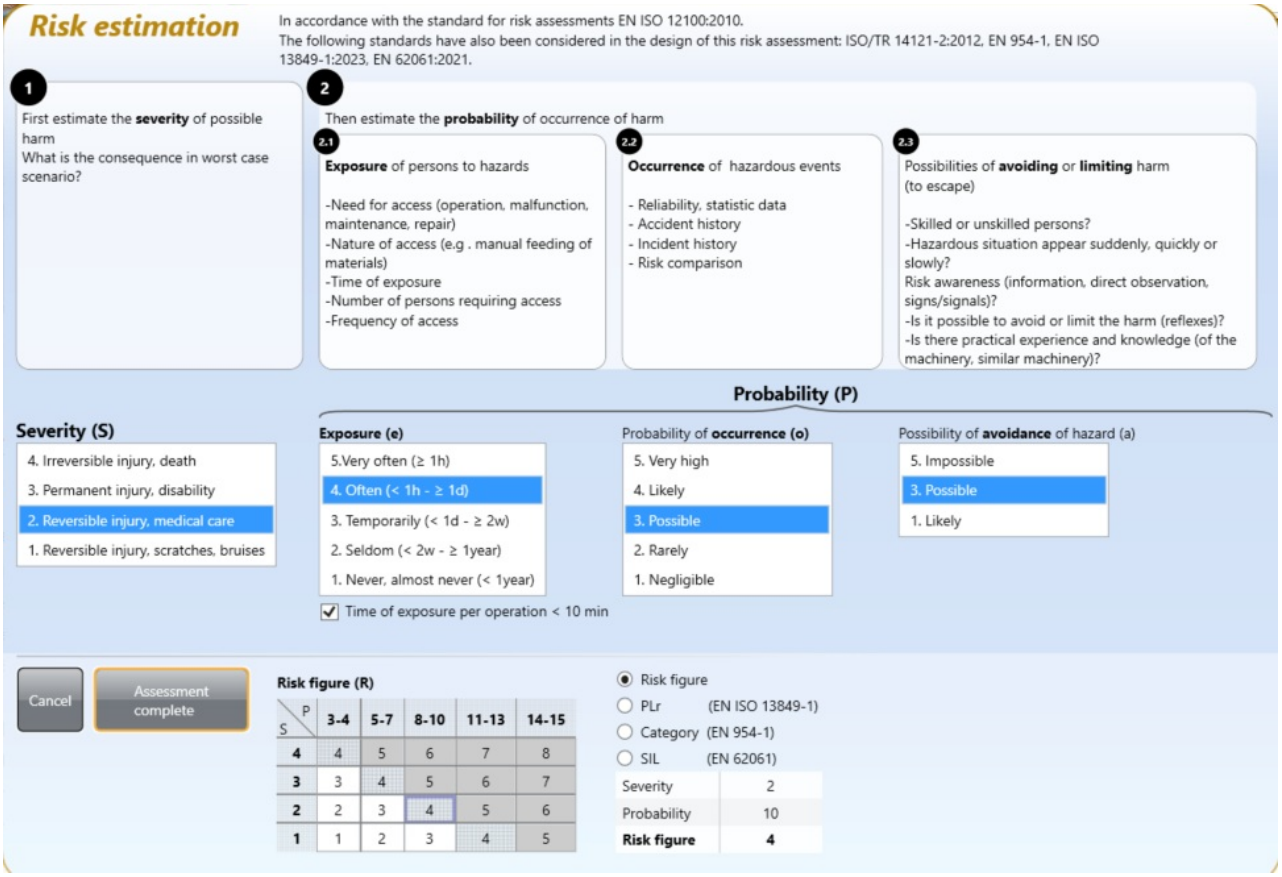
5 RISK ESTIMATION

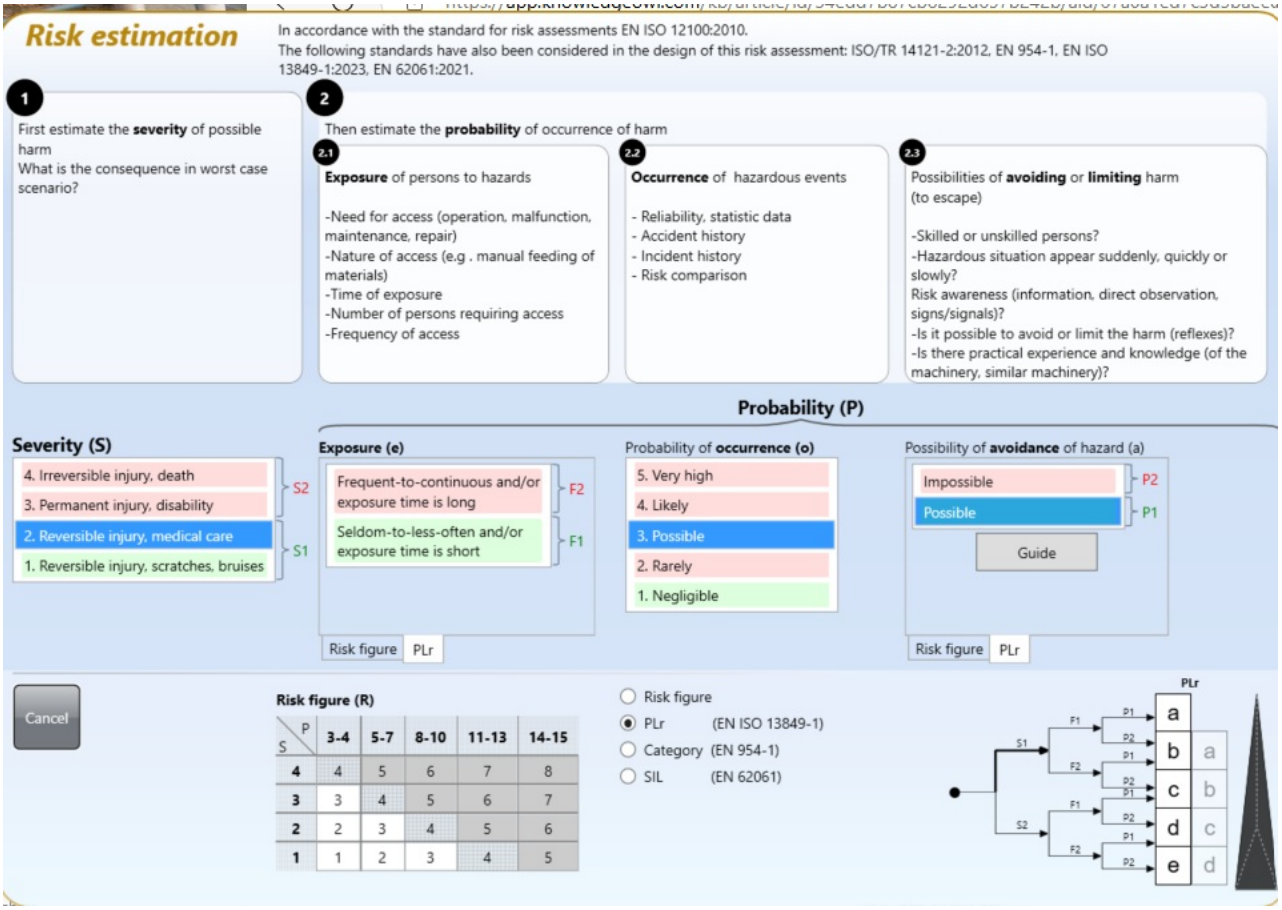
Last Modified on 03/02/2025 12:04 pm CET

Conventional risks are provided in a risk figure

When control systems are involved in causing a risk the you must use PL r , Performance Level Required



When control systems to some level involved and providing a hazard


Risk estimation
In accordance with the standard for risk assessments EN ISO 12100:2010.
The following standards have also been considered in the design of this risk assessment: ISO/TR 14121-2:2012, EN 954-1, EN ISO 13849-1:2023, EN 62061:2021.
1
First estimate the severity of possible harm
What is the consequence in worst case scenario?
2
Then estimate the probability of occurrence of harm
2.1
Exposure of persons to hazards
-Need for access (operation, malfunction, maintenance, repair)
-Nature of access (e.g . manual feeding of materials)
-Time of exposure
-Number of persons requiring access
-Frequency of access
2.2
Occurrence of hazardous events
- Reliability, statistic data
- Accident history
- Incident history
- Risk comparison
2.3
Possibilities of avoiding or limiting harm (to escape)
-Skilled or unskilled persons?
-Hazardous situation appear suddenly, quickly or slowly?
Risk awareness (information, direct observation, signs/signals)?
-Is it possible to avoid or limit the harm (reflexes)?
-Is there practical experience and knowledge (of the machinery, similar machinery)?
Probability (P)
Severity (S)
4. Irreversible injury, death
3. Permanent injury, disability
2. Reversible injury, medical care
1. Reversible injury, scratches, bruises
S2
S1
Exposure (e)
Frequent-to-continuous and/or exposure time is long
Seldom-to-less-often and/or exposure time is short
F2
F1
Risk figure
PLr
Probability of occurrence (o)
5. Very high
4. Likely
3. Possible
2. Rarely
1. Negligible
Possibility of avoidance of hazard (a)
Impossible
Possible
P2
P1
Guide
Risk figure
PLr
Cancel
Risk figure (R)
S \ P
3-4
5-7
8-10
11-13
14-15
4 4 5 6 7 8
3 3 4 5 6 7
2 2 3 4 5 6
1 1 2 3 4 5
Risk figure
PLr (EN ISO 13849-1)
Category (EN 954-1)
SIL (EN 62061)
PLr
S1
S2
F1
F2
P1
P2
a
b
c
d
e