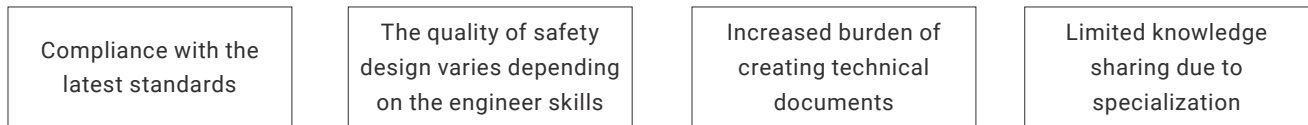


Machine Safety Design Support Web App



Machine Safety Design Hub provides integrated processes and knowledge for machine safety design

Safety design tasks are challenging due to reliance on individual expertise and personal work styles

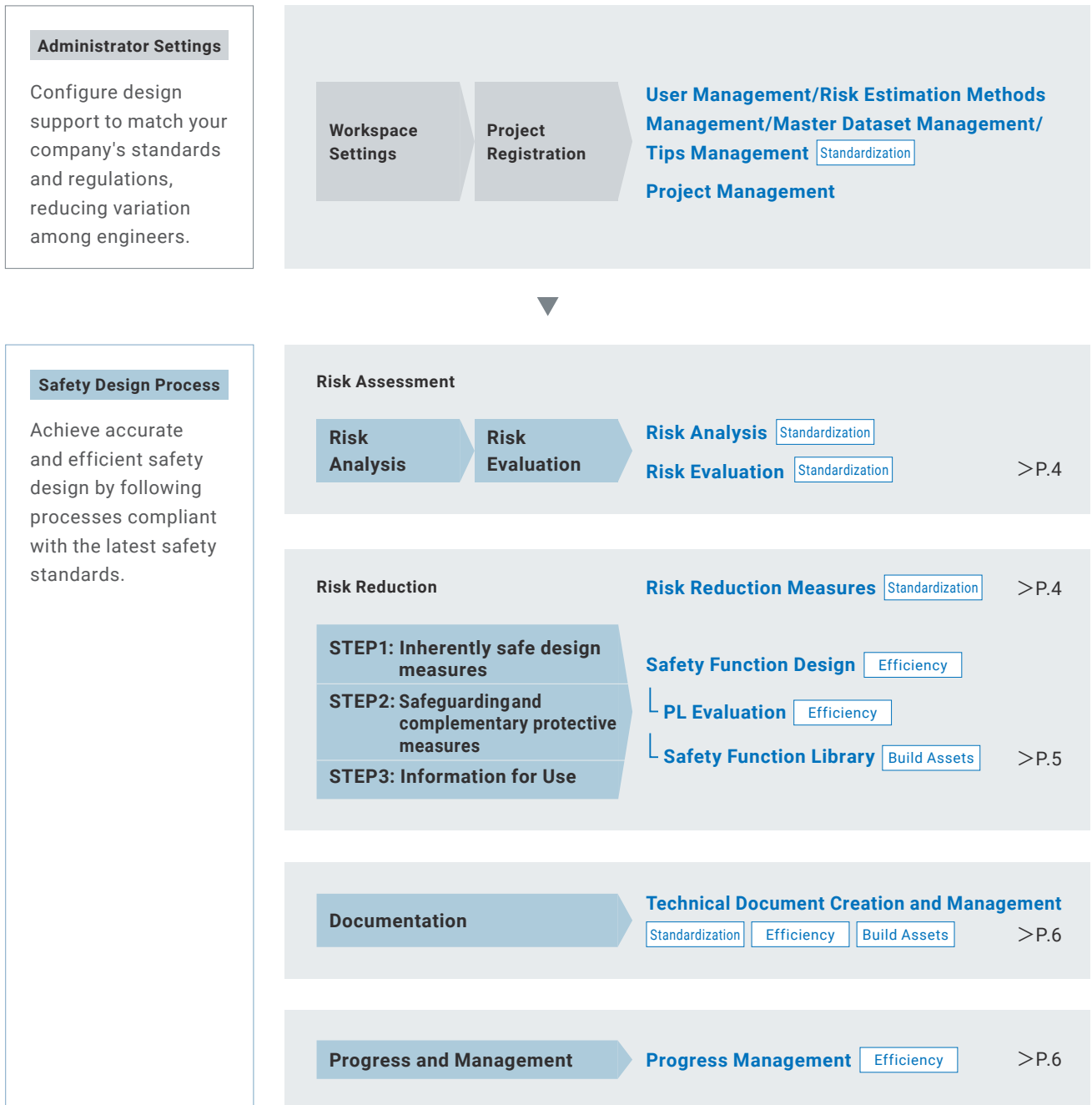


Machine Safety Design Hub helps you overcome safety design challenges throughout your organization



Deliver consistent, top-tier safety design —no matter your team's experience

Process of Machine Safety Design Hub (MSDH)



Helpful content is included within the application.

Tutorial Videos

Technical Guide

>P.7

Achieve excellence in safety design, regardless of individual proficiency

Before Differences in machine safety expertise led to inconsistencies in safety design.

After By standardizing design processes and content, consistent safety design quality is achieved for risk analysis, risk evaluation, and risk reduction measures, regardless of the engineer's experience.

Risk Analysis/Risk Evaluation Standardization

Administrators can customize "Risk Estimation Methods," "Risk Level," and "Risk Acceptance" to match your company's standards. Users then perform risk analysis and risk evaluation following design principles and admin-set guidelines.

Risk Info ID: 1988

Hazard and Accident Scenario

Hazard Type
Mechanical hazards

Cause
Moving elements

Result
Impact

Human Body Part
Hand, wrist, fist

Machine Life Cycle / Task
Operation

Risk Assessment target user
Operator, helper

Likelihood / Severity	Frequent (A)	Likely (B)	Possible (C)	Rare (D)	Unlikely (E)	Not reasonably foreseeable (F)
Catastrophic 1	Very High	Very High	High	Medium	Low	Very Low
Severe 2	Very High	High	Medium	Low	Low	Very Low
Moderate 3	High	Medium	Low	Low	Very Low	Very Low
Minor 4	Low	Low	Low	Very Low	Very Low	Very Low

Risk Level Very Low Low Medium High Very High

PL_r - - - - -

Step 0 Initial risk

Risk Level: Medium
Risk Evaluation: Not acceptable

Severity: Severe 2 (1-4 scale)
Likelihood: Possible (C) (A-F scale)

Administrator Settings

User Implementation

Risk Reduction Measures Standardization

Administrators can set risk reduction measures for "Inherently safe design measures," "Safeguarding and complementary protective measures," and "Information for Use" via dropdown menus. Users can formulate risk reduction measures by following processes and administrator-set options.

Step 2 Safeguarding and complementary protective measures

Not implemented What are safeguarding and complementary protective measures?

Safeguarding: Safety sensor (ESPE)

Safeguarding Description: Install a safety light curtain at a sufficient safety distance from the conveyor opening. Use the muting function when...

Complimentary Protective Measures: Emergency Stop function

+ Add a measure

Safeguarding: + Use an existing safety function

Safety sensor (ESPE) dropdown menu:

- Guard without interlocking
- Interlocking guard
- Safety sensor (ESPE)
- Pressure-sensitive protective devices
- Other type of SPE
- Risk reduction measures for stability
- Other protective devices
- Safeguarding to reduce emissions
- Safety-related controls (SRP/CS, SCS)

Emergency Stop function dropdown menu:

- Emergency Stop function
- Escape and rescue of trapped persons
- Isolation and energy dissipation
- Handling of machines and their heavy component parts
- Safe access to machinery

The contents of the pull-down menu can be freely edited by administrators

Safety function evaluation through an intuitive interface

Before Complex evaluations were required for each circuit configuration and safety devices, increasing the risk of human error.

After PL calculations are automated using pre-registered safety component data, eliminating the need for reliability checks or manual calculations. Storing evaluated safety functions in a library enables reuse across projects, improving efficiency and creating reusable safety design assets.

Safety Function Design/PL Evaluation Efficiency

Supports safety function design based on the latest ISO 13849-1:2023 (latest edition), including safety requirements specification, block diagram creation and PL evaluation.

The interface is divided into two main sections. On the left, a 'Safety function detail' panel contains several expandable sections: Safety Requirements Specification (SRS), Safety function configuration (category, components, subsystems), Parameters for PL calculation (PFH/MTTF₀/DC_{avg}), Common Cause Failure (CCF), Circuit information of devices that constitute the safety function, Software (program) information for safety-related parts, Detailed information related to category requirements, Information on environmental conditions, Information related to failures and faults of safety functions, and Related information. At the bottom of this panel is the 'PL Evaluation Result' table.

The right section shows the 'Automatic PL calculation based on selected components'. It features three columns for 'Input Device', 'Logic Device', and 'Output Device'. Each column lists a category (CH1) and a specific component with an image: 'Emergency Stop Pushbutton... A2ZE series Omron (E...)', 'Safety Relay Unit G9SA-301 Omron...', and 'Magnetic Contactor J7KC-12-xx Omron (L...)'.

Below this, a second table shows calculated values for PFH, MTTFD, and DCavg for each device type. The final 'PL Evaluation Result' table at the bottom right displays the following data:

PL _r	PL	PL _r ≤PL	PFH	CCF
0	0	Acceptable	2.6636e-8	65

Safety Function Library Build Assets

By converting pre-assessed safety functions into a library, they can be reused across multiple projects.

The 'Safety Function Library' interface is shown within the 'Machine Safety Design Hub'. It features a search bar and a 'Filter by name' option. A list of safety functions is displayed, with columns for 'No.', 'Safety function name', 'Linked Risk Info', and 'Protective measures'. The first entry is highlighted:

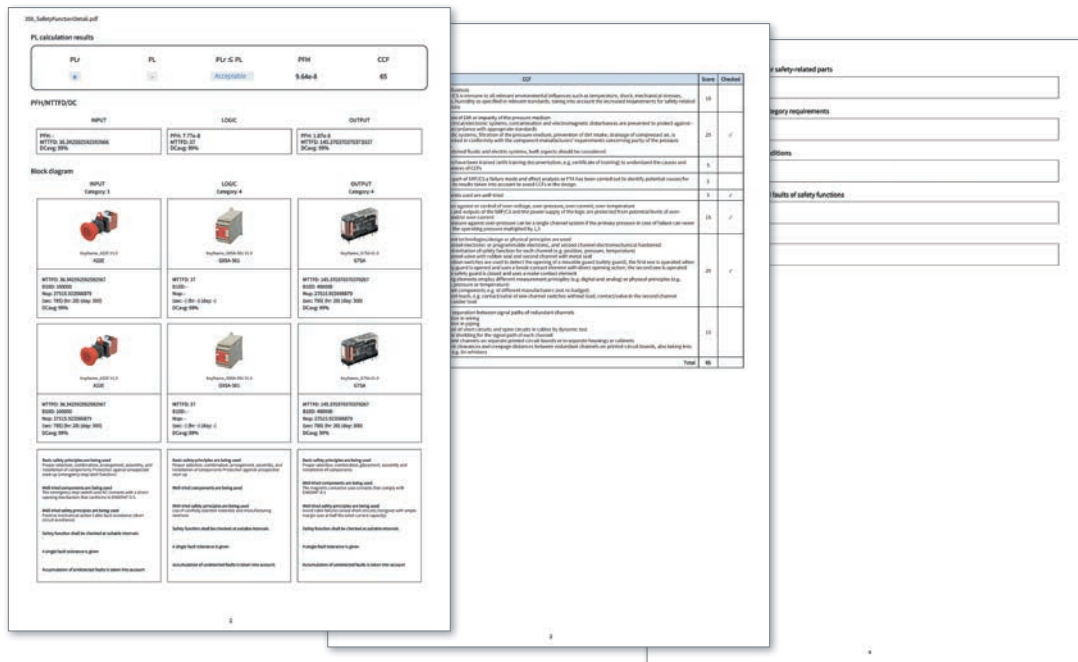
No.	Safety function name	Linked Risk Info	Protective measures
1	Emergency stop function	See corresponding data	Complementary Protective Measures
2	Safety Guard, Safety Stop switch		Safeguarding measures
3	Safety Guard, Non-constant safety switch		Safeguarding measures
4	Safety light curtain		Safeguarding measures

The 'PL Evaluation Result' table from the previous section is also visible at the bottom of the interface, showing a calculated PL of 0 and a PFH of 2.6636e-8.

Reduce time and effort for technical documentation and management

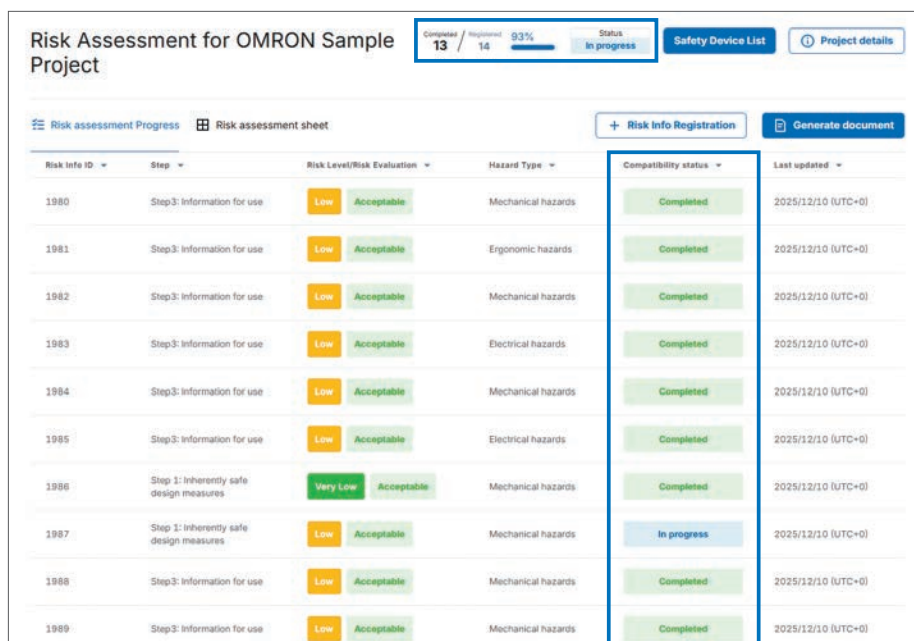
Technical Document Creation and Management Standardization Efficiency Build Assets

- Before** Risk assessment and Technical documents related to safety functions were manually created in Excel, Word, and other tools, resulting in inconsistent formats and time-consuming updates and management.
- After** Since safety design information can be saved at any time, version control of technical documents becomes easier. Additionally, technical documents are automatically generated in a standardized format, reducing the workload.



Progress Management Efficiency

- Before** Progress on risk assessment and risk reduction was managed individually, making real-time status tracking difficult. In addition, there were frequent cases of delays or omissions in information sharing among team members.
- After** Now, the overall progress of risk assessment can be monitored in real time, reducing review workload and rework.

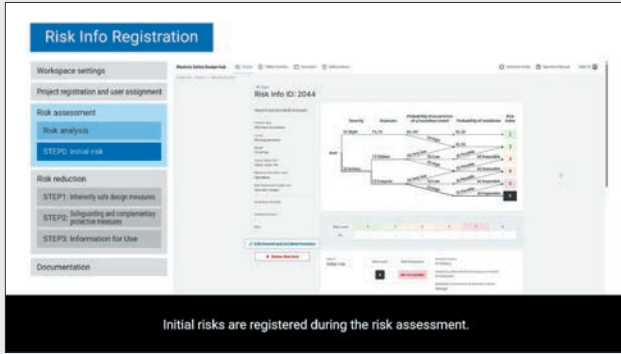


Helpful Content

Content addressing designers' questions and concerns is available within the application.

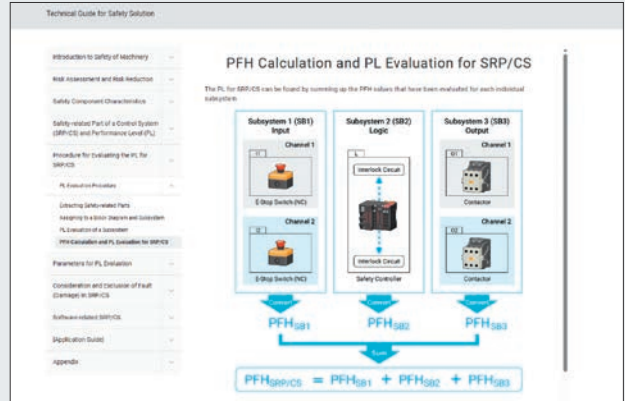
Tutorial Videos

Machine Safety Design Hub (MSDH) usage is explained clearly in videos with operation screens.



Technical Guide

Safety standards' technical terms and requirements are explained in detail with illustrations.



Machine Safety Design Hub (MSDH) Specifications

Item		Requirement
Model		MS1-ST010L/-ST020L
System Requirements	OS	Windows 11 (64-bit)
	CPU	DOS/V (IBM AT compatible machines) personal computers equipped with Intel®Core™ i5-3xxx (3rd generation: Ivy Bridge) or equivalent/later processors are required.
	RAM	8 GB RAM min. WXGA 1280 × 800, 16 million colors display min
	Browser	Microsoft Edge or Google Chrome
	Supported languages	Japanese, English (Spanish, Italian, French, and German will be supported in the future.)
License		MS1-ST010L (1 year, Maximum 10 users) MS1-ST020L (1 year, Maximum 20 users)

- Windows, Excel, Word and Microsoft Edge are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
- Intel Core is trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.
- Google Chrome is a trademark of Google LLC.
- Other company names and product names in this document are the trademarks or registered trademarks of their respective.
- Microsoft product screen shot(s) used with permission from Microsoft.
- Some images are used under license from Shutterstock.com.
- The product photographs and figures that are used in this catalog may vary somewhat from the actual products.

Note: Do not use this document to operate the Unit.

OMRON Corporation Industrial Automation Company

Kyoto, JAPAN

Contact : www.ia.omron.com

Regional Headquarters

OMRON EUROPE B.V.

Wegalaan 67-69, 2132 JD Hoofddorp
The Netherlands
Tel: (31) 2356-81-300 Fax: (31) 2356-81-388

OMRON ELECTRONICS LLC

2895 Greenspoint Parkway, Suite 200
Hoffman Estates, IL 60169 U.S.A.
Tel: (1) 847-843-7900 Fax: (1) 847-843-7787

OMRON ASIA PACIFIC PTE. LTD.

438B Alexandra Road, #08-01/02 Alexandra
Technopark, Singapore 119968
Tel: (65) 6835-3011 Fax: (65) 6835-3011

OMRON (CHINA) CO., LTD.

Room 2211, Bank of China Tower,
200 Yin Cheng Zhong Road,
PuDong New Area, Shanghai, 200120, China
Tel: (86) 21-6023-0333 Fax: (86) 21-5037-2388

Authorized Distributor:

©OMRON Corporation 2025 All Rights Reserved.
In the interest of product improvement,
specifications are subject to change without notice.

Cat. No. P171-E1-01 1225(1225)