

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

Compliance with the latest standards

The quality of safety design varies depending on the engineer skills

Increased burden of creating technical documents

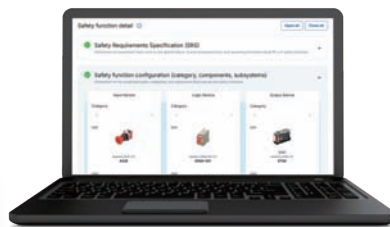
Limited knowledge sharing due to specialization

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

Standardization

Improved safety design quality through standardized risk analysis, evaluation, and reduction measures

Web application for supporting safety design
Machine Safety Design Hub



Efficiency

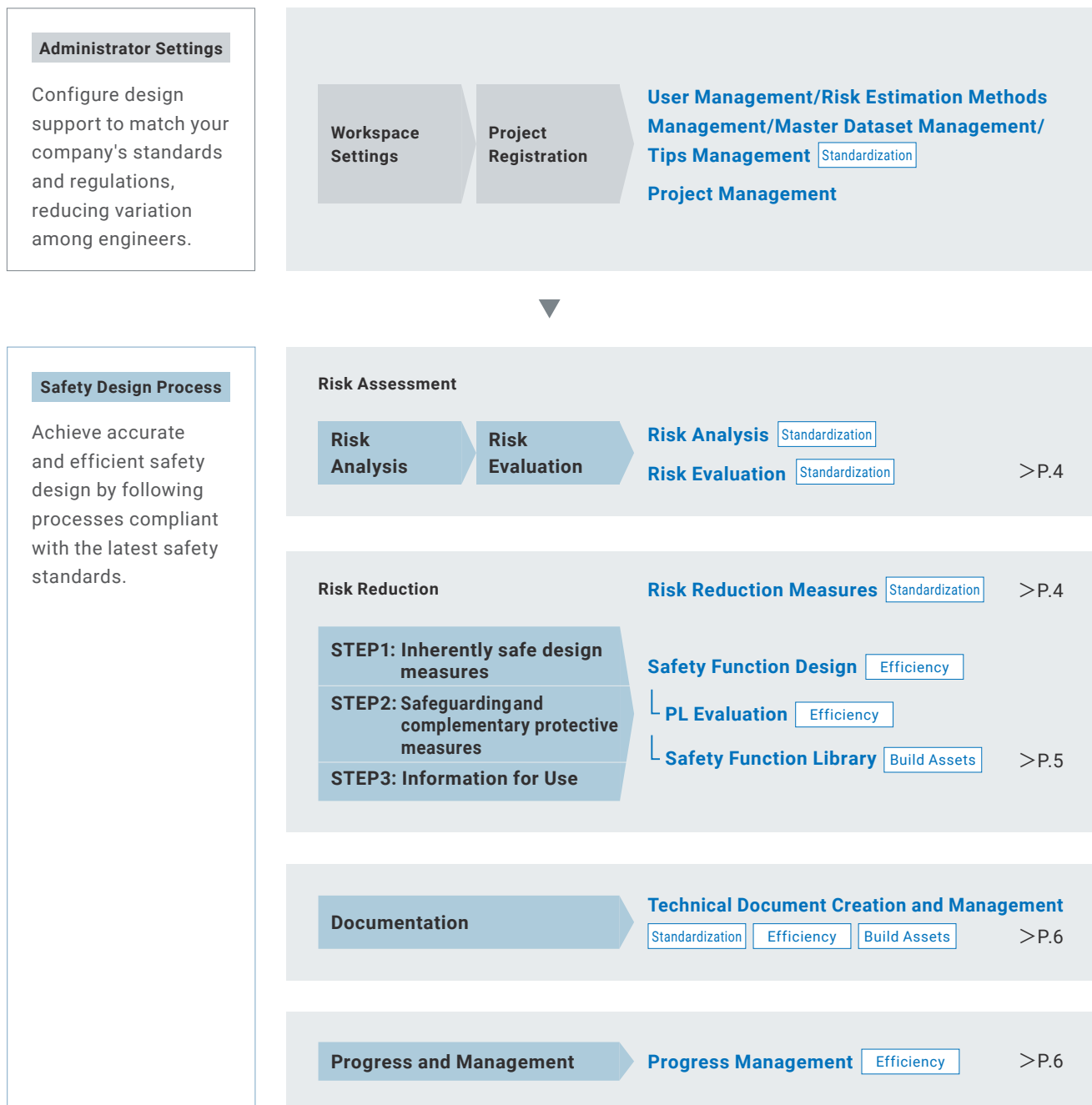
PL evaluation and automatic technical document generation functions help resolve resource shortages

Build Assets

Preserve safety design as an organizational asset through the library function

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

Hazardous Situation
Dangerous area: Operating section - Feeder, unwinding/winding
When changing film, set the wrong parameters and operate the machine.

Hazardous Event
The finger breaks when it comes into contact with a moving part that suddenly starts moving at high speed.

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

Likelihood
Possible (C)

What is initial risk?

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

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

+ Use an existing safety function

Safety sensor (ESPE)

- 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

- 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.

Safety function detail

Safety Requirements Specification (SRS)

Safety function configuration (category, components, subsystems)

Parameters for PL calculation (PFH/MTTF_D/DC)

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

Related information

PL Evaluation Result

Input Device

Logic Device

Output Device

Automatic PL calculation based on selected components

Input Device

Logic Device

Output Device

PL_r

PL

PL_r≤PL

PFH

CCF

Safety Function Library Build Assets

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

Safety function detail

Safety Requirements Specification (SRS)

Safety function configuration (category, components, subsystems)

Parameters for PL calculation (PFH/MTTF_D/DC)

Common Cause Failure (CCF)

Circuit information of devices that constitute the safety function

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Related information

PL Evaluation Result

Safety Function Library

Machine Safety Design Hub

Library 1

Library 1

Library 2

Library 3

Library 4

Library 5

SRS information

SRS information

SRS information

SRS information

SRS information

Emergency stop function

Safety Guard, Safety shut switch

Safety Guard, Non-contact safety switch

Safety light curtain

Protective measures

Protective measures

Protective measures

Protective measures

Reduce time and effort for technical documentation and management

Technical Document Creation and Management

Standardization

Efficiency

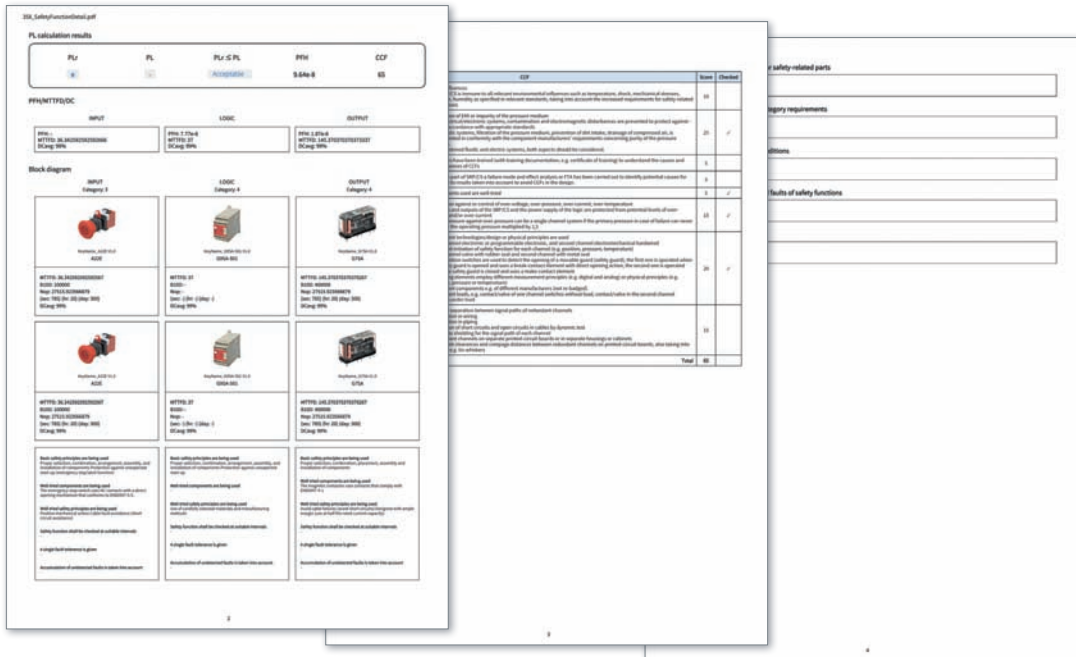
Build Assets

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.

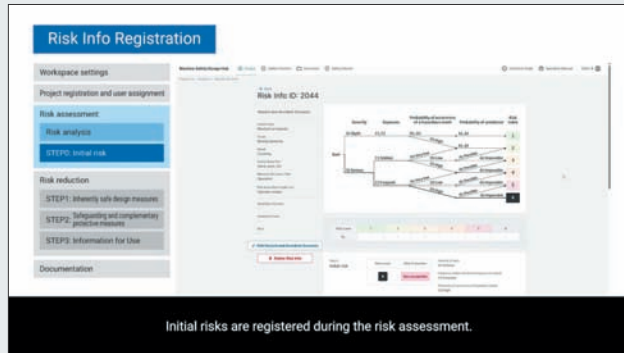
Risk Assessment for OMRON Sample Project					
Completed 13 / Registered 14		Status: In progress		Safety Device List Project details	
Risk assessment Progress		Risk assessment sheet		+ Risk Info Registration Generate document	
Risk Info ID	Step	Risk Level/Risk Evaluation	Hazard Type	Compatibility status	Last updated
1980	Step3: Information for use	Low Acceptable	Mechanical hazards	Completed	2025/12/10 (UTC+0)
1981	Step3: Information for use	Low Acceptable	Ergonomic hazards	Completed	2025/12/10 (UTC+0)
1982	Step3: Information for use	Low Acceptable	Mechanical hazards	Completed	2025/12/10 (UTC+0)
1983	Step3: Information for use	Low Acceptable	Electrical hazards	Completed	2025/12/10 (UTC+0)
1984	Step3: Information for use	Low Acceptable	Mechanical hazards	Completed	2025/12/10 (UTC+0)
1985	Step3: Information for use	Low Acceptable	Electrical hazards	Completed	2025/12/10 (UTC+0)
1986	Step 1: Inherently safe design measures	Very Low Acceptable	Mechanical hazards	Completed	2025/12/10 (UTC+0)
1987	Step 1: Inherently safe design measures	Low Acceptable	Mechanical hazards	In progress	2025/12/10 (UTC+0)
1988	Step3: Information for use	Low Acceptable	Mechanical hazards	Completed	2025/12/10 (UTC+0)
1989	Step3: Information for use	Low Acceptable	Mechanical hazards	Completed	2025/12/10 (UTC+0)

Helpful Content

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

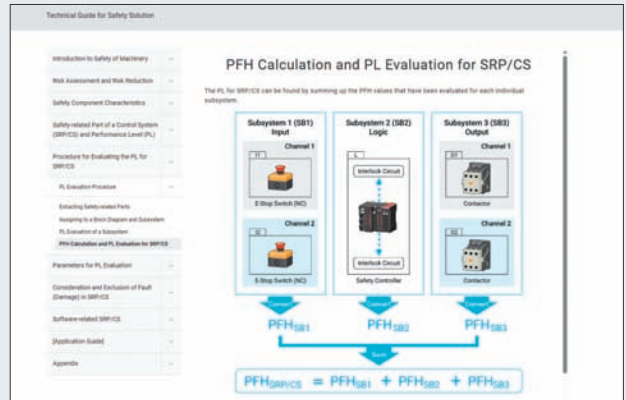
Tutorial Videos

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
License		MS1-ST010L (1 year, Maximum 10 users) MS1-ST020L (1 year, Maximum 20 users)

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

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