

ICS 25.040
CCS N 10



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 46933.2-2025

**Safety and security integration of smart factories - Part 2: Risk
assessment requirements**

智能工厂安全一体化 第2部分：风险评估要求

Issued on: December 31, 2025

Implemented on: July 1, 2026

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

1.Scope	1
2 Normative References	1
3.Terms and Definitions	1
4.Abbreviations	2
5 General Requirements	3
5.1 Evaluation Objects	3
5.2 Assessment Requirements	3
6.Risk assessment preparation activities	3
6.1 Define safety objectives and risk tolerance criteria	3
6.2 Determine the scope of risk assessment	4
6.3 Establish an assessment management and implementation working group	4
6.4 Preparation of Assessment Data	4
6.5 Selection of Assessment Tools and Methods	5
6.6 Develop a risk assessment plan	5
7.Risk assessment procedures	5
7.1 Risk Assessment Process	5
7.2 Node Partitioning	6
7.3 Deviation Determination	7
7.4 Hazard Identification	7
7.5 Threat and Vulnerability Identification	8
7.6 Hazardous Event Analysis	9
7.7 Hazardous event probability classification	10
7.8 Consequence Analysis	10
7.9 Severity of Consequences Classification	10
7.10 Initial Risk Assessment	11
7.11 Analysis of Risk Mitigation Measures	11
7.12 Protection/Safety Capability Assessment	11
7.13 Residual Risk Assessment	11
7.14 Suggestions and comments.	11
15 Appendix C (Informative) Example 16 of Hazardous Event Probability Assessment	
Appendix D (Informative) Example 19 of the Severity Grading of Consequences	
Appendix E (Informative) Example 20 of a Risk Matrix References	21

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting. This document is Part 2 of GB/T 46933 "Integrated Safety in Smart Factories". GB/T 46933 has already published the following parts.

1. General Requirements;

2. Risk Assessment Requirements;

3. System Co-design Requirements;

4. System Evaluation Requirements. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the China Machinery Industry Federation. This document is under the jurisdiction of the National Technical Committee on Standardization of Industrial Process Measurement, Control and Automation (SAC/TC124). This document was drafted by: the Mechanical Industry Instrumentation Comprehensive Technology and Economic Research Institute, and the China Petroleum Group Safety and Environmental Protection Technology Research Institute Co., Ltd. The company, the Oil and Gas Control Center of China Oil & Gas Pipeline Network Corporation, Supcon Technology Co., Ltd., and Shanghai Energy Construction Engineering Design Co., Ltd. Computing Research Co., Ltd., Shanghai Chenzhu Instrument Co., Ltd., Aerospace Intelligent Control (Beijing) Monitoring Technology Co., Ltd., Shanghai Liquefied Natural Gas Co., Ltd. Ren Company, Ningbo Hollysys Information Security Research Institute Co., Ltd., Sinopec Qingdao Refining & Chemical Co., Ltd., and Xi'an Electric Baoji Electric Co., Ltd. Limited Company. The main drafters of this document are. Guo Miao, Liu Yao, Wei Zhenqiang, Sun Tieliang, Fan Yongfeng, Zhang Jinbin, Ma Xinxin, Xiong Wenzhe, Zhang Xin, and Mei Ke. Hong Pengda, Hou Mingyan, Zhang Feng, Zhang Kai, Wu Haifeng, Zhang Zhiqiang, Zhang Zhaoyun, Zhu Jie, Sun Yongkang, Chen Xiaoquan, Zeng Zhisheng, Luo Fangwei, Cao Xinyi, Zhou Li, Nie Zhongwen, Shuai Bing, Shi Suijing, Zhu Minglu, Ren Zhigang, Zhu Xuying, Wang Zhenyu, Li Guanhui, Liu Ying, Chen Xin, Gao Longbo, Yang Liu, Zhu Hongyi, Liu Wanli.

Traditional factories generally adopt GB/T 20438 (all parts) "Functional Safety of Electrical/Electronic/Programmable Electronic Safety Related Systems" and Application field standards (such as GB/T 21109 (all parts) "Functional Safety of Safety Instrumented Systems in Process Industries", GB/T 16855 (the relevant standard) Some of the standards are found in GB 28526 "Safety-Related Components of Mechanical Safety Control Systems" and GB 28526 "Electrical Safety of Machinery - Safety-Related Electrical, Electronic and Programmable Components". Functional safety is achieved through the

implementation of GB/T 35673 "Industrial Communication Network and System Security" (GB/T 35673 "Functional Safety of Electronic Control Systems"). Industrial control system information security is achieved through standards such as "System Security Requirements and Security Levels". Technically, relatively independent electrical and electronic programmable logic controllers (PLCs) are generally used. Electronic or mechanical protection systems are generally isolated or have limited connections between different systems. Functional safety systems and information security protection also... Relatively independent settings. With the development of smart factories, more and more intelligent and information technologies are being applied to industrial control systems, and various aspects of smart factories are becoming increasingly important. Deeper interconnectivity has been achieved between and within the same and different levels of equipment/systems. This has improved the efficiency of industrial operators and reduced costs. This, however, also increases system complexity, bringing new challenges to traditional production operation risk control. On the one hand, traditional functional safety technologies... Technical measures (such as safety instrumented systems) face more complex application environments (such as information security threats like hacker attacks and malware, and artificial intelligence). The inherent risk reduction capabilities of AI are weakened due to factors such as the risk of it going out of control; on the other hand, the increase in external influencing factors and the enhanced correlation between various units make it more difficult to mitigate risks. The applicability of existing risk protection theories is reduced; finally, the interaction and integration of different safety protection measures lead to potential conflicts and... Conflicts are escalating. Therefore, smart factories need to adopt an integrated safety approach to achieve comprehensive safety protection throughout the entire lifecycle. GB/T 46933, "Integrated Safety in Smart Factories," aims to guide smart factories in establishing an integrated safety lifecycle and to address risk assessment. The requirements for estimation, system collaborative design, and system evaluation are proposed and consist of four parts.

1. General Requirements. The purpose is to outline the overall requirements for the integrated security lifecycle, and to achieve integrated security. Basic principles.
2. Risk Assessment Requirements. The purpose is to outline the procedures and requirements for conducting integrated safety risk assessments.
3. System Collaborative Design Requirements. The aim is to address the manufacturing execution layer, process monitoring layer, and field control layer of a smart factory. The system requires collaborative design with the field equipment layer.
4. System Evaluation Requirements. The purpose is to propose methods and requirements for conducting integrated security capability evaluations. This document combines the architectural models and characteristics of smart factories in various fields, comprehensively considering the traditional risks of smart factory production and operation, as well as the risks arising from... This study examines the new risks brought about by

interconnectivity and information integration in smart factory production systems, including risk assessment objects, procedures, and methods. The document outlines relevant activities, risk assessment documents, and other requirements, summarizes the elements of integrated safety risk assessment for smart factories, and proposes a comprehensive safety plan for smart factories. A unified framework for integrated risk assessment establishes the correlation between information security threats and production safety incidents, with the goal of guiding smart factories to... The operational risks of the production system are controlled within a tolerable range. Smart factory safety integration Part

1 Scope

GB/T 46933.2-2025 is the Chinese national standard covering assessing safety and cybersecurity risk together in a connected factory - because the two are no longer separable: a compromised controller is a safety hazard, and a safety system reachable from the network is an attack surface. Part 2 of the series, first edition. It was issued on 31 December 2025 and has been in force since 1 July 2026, as a first edition. The document is under the responsibility of the China Machinery Industry Federation. This page is published from the official record of the 2025 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document specifies the general requirements for integrated safety risk assessment in smart factories, risk assessment preparation activities, risk assessment procedures, and risk assessment... Requirements for document recording. This document applies to conducting integrated safety risk assessments of smart factory production systems.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 46933.1-2025 Smart Factory Safety Integration - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 46933.1-2025, as well as the following terms and definitions, apply to this document.

3.1 harm Personal injury, damage to a person's health, or damage to property or the environment. [Source: GB/T 20438.4-2017, 3.1.1]