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

GB/T 18975.1-2025

Replacing GB/T 18975.1-2003

**Industrial automation systems and integration - Integration of life-cycle
data for process plants including oil and gas production facilities - Part
1: Overview and fundamental principles**

工业自动化系统与集成 流程工厂（包括石油和天然气生产设施）生命周期数据集成 第1部分：综述与基本原理

(English Translation)

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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 based on GB/T (Z)18975 "Industrial Automation Systems and Integration - Life Cycles of Process Plants (including Oil and Gas Production Facilities)".

Part 1 of "Periodic Data Integration". GB/T (Z)18975 has published the following parts.

- Part 1: Overview and Basic Principles;
- Part 2: Data Model;
- Part 4: Initial Reference Data;
- Part 10: Compliance Testing;
- Part 12: Lifecycle Integrated Ontologies Represented in Web Ontology Language (OWL);
- Part 13: Integrated Asset Program Lifecycle.

This document replaces GB/T 18975.1-2003 "Industrial Automation Systems and Integration Process Plants (including oil and gas production facilities)".

"Lifecycle Data Integration Part 1: Overview and Basic Principles" is compared with GB/T 18975.1-2003, except for structural adjustments and compilation.

Aside from the logical changes, the main technical changes are as follows.

---The scope list has been expanded to include "Methods for requirements analysis and reference data development" and "Data exchange templates in specific contexts and their relationship with conceptual data." According to the model mapping" and "Data exchange template development in specific contexts and its mapping method with conceptual data models" (Chapter 1);

---The terms "application protocol" and "process-specific plant data" have been removed;

---The terms "application protocol" and "process plant specific data" have been removed (see 3.1.1 and 3.1.10 in the 2003 edition);

---The abbreviation "AP" has been removed (see section 3.2 of the 2003 edition);

--- Added abbreviations "AIM, ETEB, LB, OSEB, POSC, UML, XML" (see Chapter 4);

---The definitions of the terms "Class", "Product Class", "Core Class", "Data", "Fact Class", "Manufactured Product Class", "Proprietary Class", and "Standard Class" have been changed.

(See 3.1.1, 3.1.2, 3.1.4, 3.1.5, 3.1.8, 3.1.14, 3.1.16, 3.1.20; 3.1.2, 3.1.3, 3.1.5, 3.1.6 of the 2003 edition) 3.1.9, 3.1.16, 3.1.18, 3.1.22);

---The term "data storage" has been changed to "data storage" (see 3.1.6, 3.1.7 in the 2003 edition);

---The terminology has been changed from "conceptual data model" to "conceptual data model", "implementation method" to "implementation method", and "reference database" to...

"Reference Data Library" was added, and its definition was changed (see 3.1.3, 3.1.10, 3.1.19, and 3.1.4, 3.1.12, and 3.1.21 in the 2003 version).

---Added ISO/T S10303-28 compliance requirements for exchange files (see 6.2);

---Added an example illustrating the ISO 10303-25 mapping (see 7.1.1).

This document is modified to adopt ISO 15926-1:2004 "Industrial automation systems and integration in process plants (including oil and gas production facilities)".

Lifecycle data integration, Part 1: Overview and basic principles.

The technical differences between this document and ISO 15926-1:2004, and the reasons therefor, are as follows.

---GB/T 16262.1 has replaced ISO/IEC 8824-1:1995 to adapt to my country's technical conditions and increase operability;

---ISO 10303-1:1994 has been replaced with GB/T 16656.1 to adapt to my country's technical conditions and increase operability;

---ISO 15926-2 has been replaced with GB/T 18975.2 to adapt to my country's technical conditions and increase operability;

---ISO 10303-21:1994 has been replaced by GB/T 16656.21-2008, as the ISO standard has been obsolete;

---ISO 10303-28:2003 has been replaced by GB/T 16656.28-2010 because the ISO standard has been updated;

---ISO 10303-11:2004 has been replaced with GB/T 16656.11 to adapt to my country's technical conditions and increase operability;

---ISO 13584-1:2001 has been replaced with ISO 13584 (all parts), since ISO 13584 (all parts) is cited in this document.

The following editorial changes have been made to this document.

---The note under the title of Chapter 3 has been removed;

---The list of abbreviations in version 3.2 has been adjusted;

---Explanations for Parts 10, 12, and 13 have been added to Chapter 4;

---The index was deleted.

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 Automation Systems and Integration (SAC/TC159).

Introduction

GB/T (Z)18975 is a series of standards for lifecycle data integration in the process industry, and its purpose is to provide a common language for computer systems.

This is to achieve interoperability.

The "Integration" is planned to consist of the following parts.

---Part 1: Overview and Basic Principles. The purpose is to describe the scope and function of GB/T (Z) 18975 and its basic principles.

---Part 2: Data Model. The aim is to define a conceptual data model for representing process plant lifecycle technology information using computers.

According to the model.

---Part 3: Geometric and Topological Reference Data. The purpose is to specify the number of geometric and topological data that can be recorded when using Part 2.

Geometry and topology concepts.

---Part 4: Initial Reference Data. The purpose is to provide an initial set of core reference data items for the process plant.

---Part 6: Methodology for developing and validating reference data. The aim is to provide rules for managing reference data in process plants.

---Part 7: Distributed System Integration Implementation Methods. Template Method. The aim is to provide a method based on the data model in Part 2...

A template method for row data integration.

---Part 8: Distributed System Integration Implementation Methodology. Implementation using the Network Ontology Language (OWL). The purpose is to provide a method for using Part 7...

Specifications for data integration using RDF and OWL.

---Part 10: Conformity Testing. The purpose is to describe the conformity with each part of GB/T (Z) 18975.

---Part 11: Simplified Reference Data for Industrial Use. The aim is to provide a framework based on RDFS (Resource Description Framework).

Schema defines a simplified method for using reference data in process industries.

---Part 12: Lifecycle Integration Ontology Represented in Web Ontology Language (OWL). The purpose is to specify the use of OWL for representation.

The process plant industrial data is integrated into an ontology throughout its entire