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**Networked collaborative manufacturing for metallurgical
equipment - Specification for describing customer demand data**

冶金装备网络化协同制造 客户需求数据描述规范

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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. Please note that some content in this document may involve patents, and the issuing organization of this document assumes no responsibility for identifying patents. This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of Metallurgical Equipment (SAC/TC409). This document was drafted by: China Heavy Machinery Research Institute Co., Ltd., Taiyuan Heavy Industry Co., Ltd., and China First Heavy Machinery Co., Ltd. The company, Chongqing University, Zhejiang University, Erzhong (Deyang) Heavy Equipment Co., Ltd., and Baowu Equipment Intelligent Technology Co., Ltd. The main drafters of this document are: Feng Lianqiang, Wang Shechang, He Bo, Su Zhenhua, Zheng Xinyi, Yan Ping, Zhang Yanhua, Yan Ying, Yang Bo, Wang Xia, and Yang Ni. Zhang Hongxin, Zhu Xianzhong, Bai Chongyu, Liang Shurong, Xiao Huanyu, Wang Sibao, Song Mingzhong, Wang Di, Zhang Jin, Wang Zhichao, Song Meixuan, Xue Hongwei, Jing Qunping Ye Muqin, Wang Lei, He Yiping. Networked Collaborative Manufacturing of Metallurgical Equipment Customer Requirement Data Description Specification

1. Scope This document establishes the data classification and description principles for customer demand data in the networked collaborative manufacturing process of metallurgical equipment, and specifies the description requirements. Summation data structure. This document applies to metallurgical equipment collaborative manufacturing enterprises, design institutes, suppliers, etc., in the areas of demand collection, data exchange, information sharing, and application. A description of customer needs data throughout the entire implementation process.

Note. Metallurgical equipment mainly includes smelting equipment, continuous casting equipment, rolling equipment, heavy forging and extrusion equipment, etc.

4 Data Classification

4.1 Principles This classification system follows the principles of scientific rigor, systematicity, scalability, and practicality stipulated in GB/T 7027, and is used to classify customer demand data. Classification.

---Product data;

---Functional data;

---Performance data;

---Structured data;

---Security data;

---Other data. Product data is the basic data; functional data, performance data, structural data, safety data, and cost data are the core data; other data... To supplement the data, they together constructed a structured customer demand data description system.

4.2 Product Data Product data includes, but is not limited to, product identification information, product classification information, and basic metrological information, used to identify, classify, and describe products. The basic data.

4.3 Functional Data Functional data includes, but is not limited to, core processes and adaptations, automation and intelligence, energy consumption and environmental protection, security protection, operation and maintenance and services. These are the core data used to achieve the intended purpose.

4.4 Performance Data Performance data includes, but is not limited to, production efficiency, technological advancement, operational stability, system reliability, energy efficiency and environmental friendliness, and ease of maintenance. These are the core data for quantifying technical indicators.

4.5 Structured Data Structural data includes, but is not limited to, materials and manufacturing processes, functional layout, dimensions, and shape, which describe the physical composition and materials of equipment and components. Core data on material selection and overall layout.

4.6 Security Data Safety data includes, but is not limited to, intrinsically safe design and safety protection, as well as risk identification, protective measures, and system response for equipment and components. Core data related to personnel safety, etc.

4.7 Cost Data Cost data includes, but is not limited to, initial purchase cost, maintenance and repair costs, and after-sales service costs, enabling optimal resource allocation and cost control. The core data for effective control.

4.8 Other Data Other data includes, but is not limited to, customer feedback data and

technical service data.

5 Data Description Principles

5.1 Normative The data description uses a unified template and encoding rules to ensure semantic consistency.

5.2 Integrity It comprehensively covers customers' core needs in terms of functionality, performance, structure, safety, and cost.

5.3 Structural The demand data is broken down into structured data elements, which support computer parsing and processing.

5.4 Consistency There are no logical conflicts between the requirement data and the product design specifications.

5.5 Traceability Demand data has a unique identifier, supporting tracking and correlation throughout the entire lifecycle of collaborative manufacturing.

5.6 Scalability The data classification and description model allows for expansion based on specific equipment types and project characteristics.

6 Data Description Requirements

6.1 General Requirements Data descriptions should conform to the provisions of GB/T 18391.3, GB/T 18391.4, and GB/T 19488.1, and should adopt structured data formats. In this formula, the description of each data element should include at least the following core attributes.

---Name. Standardized naming of data elements;

---Definition. The precise definition and interpretation of data elements;

---Constraints. Indicate whether the data element is required, optional, or conditionally optional;

---Data types. such as strings, numbers, dates, binary streams, etc.;

Note. Supplementary explanations or examples as necessary.

6.2 Product Data The product data description model should include, but is not limited to, the core data elements specified in Table 1.

6.3 Functional Data The functional data description model should include, but is not limited to, the core data elements specified in Table 2.

6.4 Performance Data The performance data description model should include, but is not limited to, the core data elements specified in Table 3.

6.Tolerance/Accuracy Requirements. Allowable error range or measurement accuracy

requirements, such as " $\pm 2\%$ " or "accuracy class 0.5".

6.5 Structured Data The structural data description model should include, but is not limited to, the core data elements specified in Table 4.

6.6 Security Data The security data description model should include, but is not limited to, the core data elements specified in Table 5.

6.7 Cost Data The cost data description model should include, but is not limited to, the core data elements specified in Table 6.

6.8 Other Data Other data description models should include, but are not limited to, core data elements such as customer name, opinions and suggestions, and the time of submission.

7 Data Structures

The customer requirements data structure table is shown in Appendix A.