BS ISO 22400-1:2014

BSI Standards Publication

Automation systems and integration — Key performance indicators (KPIs) for manufacturing operations management

Part 1: Overview, concepts and terminology

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National foreword

This British Standard is the UK implementation of ISO 22400-1:2014.

The UK participation in its preparation was entrusted to Technical Committee AMT/5, Industrial architectures and integration frameworks.

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Automation systems and integration — Key performance indicators (KPIs) for manufacturing operations management —

Part 1: Overview, concepts and terminology

Systèmes d'automatisation et intégration — Indicateurs de la performance clé pour le management des opérations de fabrication —

Partie 1: Aperçu, concepts et terminologie

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is Technical Committee ISO/TC 184, *Automation systems and integration*, Subcommittee SC 5, *Interoperability, integration and architectures of automation systems and applications*.

ISO 22400 consists of the following parts, under the general title *Automation systems and integration — Key performance indicators (KPIs) for manufacturing operations management:*

— *Part 1: Overview, concepts and terminology*

— *Part 2: Definitions and descriptions*

The following parts are planned:

— *Part 3: Exchange and use*

— *Part 4: Relationships and dependencies*

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Introduction

Using key performance indicators (KPIs) for manufacturing operations management (MOM) is motivated by the possibility to use them to improve the value creation processes of an enterprise.

Measuring performance enables an enterprise to quantify aspects of all its activities. ISO 22400 focuses on performance measures found to be particularly meaningful for the realization of operational performance improvement. These performance measures can be achieved through combining various measurements from operations and forming what are called KPIs. The monitoring of performance is specific to identified objectives of the enterprise, and KPIs are most useful when their values can be used to identify trends relative to certain operational objectives.

Within an enterprise, the various operational areas, such as sales, manufacturing, engineering, marketing, and other business support functions, have different sets of performance indicators. These various performance indicators are used together to monitor the realization of enterprise business objectives.

An International Standard for KPIs is beneficial for comparing enterprise operations over extended periods of time and for comparing similar operations of enterprises within an industry.

The management of manufacturing operations is normally associated with an intermediate level within the functional hierarchy of a manufacturing enterprise. In IEC 62264-1, the MOM domain is the intermediate domain between the enterprise domain (Level 4) and the control domain (Levels 1 and 2).

The KPIs defined in this part of ISO 22400 are intended to be calculated using data from the control domain, and to provide both the enterprise domain and the MOM domain with decision support information to manage the enterprise.

This part of ISO 22400 presents an overview, concepts and terminology for KPIs. ISO 22400-2 covers guidelines for computing and for measuring the components of a KPI. Future parts of ISO 22400 will cover definitions for the content and context of the exchange and the use of KPIs, and specifications of relationships, dependencies among KPIs, and the maturity of the collection and use of KPIs.

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Automation systems and integration — Key performance indicators (KPIs) for manufacturing operations management —

Part 1: Overview, concepts and terminology

1 Scope

ISO 22400 specifies an industry-neutral framework for defining, composing, exchanging, and using key performance indicators (KPIs) for manufacturing operations management (MOM), as defined in IEC 62264-1, for batch, continuous and discrete industries.

This part of ISO 22400

— provides an overview of a KPI;

— presents concepts of relevance for working with KPIs, including criteria for constructing KPIs;

— specifies terminology related to KPIs;

— describes how a KPI can be used.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1.1
capability
ability to perform actions

Note 1 to entry: The definition includes attributes on qualifications and measures of the ability, as in the definition of capacity.

[SOURCE: IEC 62264–1:2013, 3.1.6, modified]

2.1.2
element
relevant measurements for use in the formula of a *key performance indicator* (2.1.5)

2.1.3
integration
state or condition wherein two or more entities are able to form, or be observed as, a single entity exhibiting a structure, a behaviour, and a boundary that are determined by the *interoperability* (2.1.4) properties of the forming entities, as needed to perform a common task

[SOURCE: ISO 18435-1:2009, 3.9, modified]

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