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Enterprise-control system integration —

Part 3:
Activity models of manufacturing operations management

Intégration du système de commande d'entreprise —

Partie 3: Modèles·d'activité·pour·la·gestion·des·opérations·de·fabrication

ICS 25.040.40

This draft is submitted to a parallel enquiry in ISO and a CDV vote in the IEC.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ENTERPRISE-CONTROL SYSTEM INTEGRATION –

Part 3: Activity models of manufacturing operations management

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International Standard IEC 62264-1 has been prepared by subcommittee 65E: System aspects, of IEC technical committee 65: Industrial-process measurement and control and ISO SC5, JWG 15, of ISO technical committee 184: Enterprise-control system integration.

It is published as a double logo standard.

The text of this standard is based on the following documents:

CDV	Report on voting

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table. In ISO, the standard has been approved by 10 P-members out of 10 having cast a vote.

This publication has been drafted in accordance with ISO/IEC Directives, Part 2.

54 The list of all the parts of the IEC 62264 series, under the general title *Enterprise-control*
55 *system integration*, can be found on the IEC website.

56 The committee has decided that the contents of this publication will remain unchanged until
57 the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in
58 the data related to the specific publication. At this date, the publication will be

59 • reconfirmed,
60 • withdrawn,
61 • replaced by a revised edition, or
62 • amended.

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INTRODUCTION

This part of IEC 62264 shows activity models and data flows for manufacturing information that enables enterprise-control system integration. The modelled activities operate between Level 4 logistics and planning functions and Level 2 manual and automated process control functions. The models are consistent with the object models given in IEC 62264-2 and the Level 3 (manufacturing operations and control) definitions.

The goal of the standard is to reduce the risk, cost and errors associated with implementing enterprise systems and manufacturing operations systems in such a way that they inter-operate and easily integrate. The standard may also be used to reduce the effort associated with implementing new product offerings.

This standard provides models and terminology for defining the activities of manufacturing operations management. The models and terminology defined in this standard are:

– to emphasize the good practices of manufacturing operations;

– to be used to improve existing manufacturing operations systems;

– to be applied regardless of the degree of automation.

Some potential benefits produced when applying the standard may include:

– reducing the time to reach full production levels for new products;

– enabling vendors to supply appropriate tools for manufacturing operations;

– enabling more uniform and consistent identification of manufacturing needs;

– reducing the cost of automating manufacturing processes;

– optimizing supply chains;

– improving efficiency in life-cycle engineering efforts.

It is not the intent of this part of the standard to:

– suggest that there is only one way of implementing manufacturing operations;

– force users to abandon their current way of handling manufacturing operations;

– restrict development in the area of manufacturing operations;

– restrict use only to manufacturing industries.

Changes from IEC 62264-3 ed1 to this version are:

1. Clause *4.1 Manufacturing Operations Management* was moved to Part 1 and therefore was removed from Part 3
2. Clause *4.2 Functional hierarchy* was moved to Part 1 and therefore was removed from Part 3
3. Clause *4.4 Criterion for defining activities below Level 4* was moved to Part 1 and therefore was removed from Part 3
4. Clause *4.5 Categories of production information* was moved to Part 1 and therefore was removed from Part 3
5. Clause *4.6 Manufacturing operations information* was moved to Part 1 and therefore was removed from Part 3
6. Clause *5.3 Expanded equipment hierarchy model* was moved to Part 1 and therefore was removed from Part 3
7. Clause *5.4 Expanded decision hierarchy model* was removed from Part 3. The corresponding section was removed from Part 1 and replaced with a reference to ISO-15704 Industrial automation systems.
8. *Annex A (informative) Other enterprise activities affecting manufacturing operations* was moved to Part 1 and therefore was removed from Part 3
9. *Annex D (informative) Associated standards* was moved to Part 1 and therefore was removed from Part 3
10. *Annex F (informative) Applying the decision hierarchy model to manufacturing operations management* was removed from Part 3. The corresponding section was removed from Part 1 and replaced with a reference to ISO-15704 Industrial automation systems.

11. *Annex G (informative) Mapping PSLX ontology to manufacturing operations management* was removed from Part 3. The committee felt that this section is more appropriate as a PSLX white paper or TR.
12. The names for data were changed to match the Part 4 standard names. These name changes were made in all figures and in the text. The following data names were changed or added:
    a. *Detailed Production Schedule* changed to *Work Schedule*
    b. *Production Dispatch List* changed to *Job list*
    c. *Production Work Order* changed to *Job Order*
    d. *Work Order* changed to *Job Order*
    e. *Detailed Maintenance Schedule* changed to *Work Schedule*
    f. *Detailed Inventory Schedule* changed to *Work Schedule*
    g. The addition of *Work Masters* as objects that define how work is to be done.
    h. The addition of the management of *Work Calendars* as a task in resource management
    i. The addition of the creation of *Work Records* as a task in tracing

ENTERPRISE-CONTROL SYSTEM INTEGRATION –

Part 3: Activity models of manufacturing operations management

1 Scope

This part of IEC 62264 defines activity models of manufacturing operations management that enable enterprise system to control system integration. The activities defined in this standard are consistent with the object models definitions given in IEC 62264-1. The modelled activities operate between business planning and logistics functions, defined as the Level 4 functions and the process control functions, defined as the Level 2 functions of IEC 62264-1. The scope of this standard is limited to:

– a model of the activities associated with manufacturing operations management, Level 3 functions;

– an identification of some of the data exchanged between Level 3 activities.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61512-1:2010, *Batch control – Part 1: Models and terminology*

IEC 61512-2:2001, *Batch control - Part 2: Data structures and guidelines for languages*

IEC 62264-1 ed2, *Enterprise-control system integration – Part 1: Models and terminology*

IEC 62264-2 ed2, *Enterprise-control system integration – Part 2: Object model attributes*

IEC 62264-4 ed1, *Enterprise-control system integration – Part 4: Objects and attributes for manufacturing operations management integration*

ISO 15704:2000, *Industrial automation systems – Requirements for enterprise-reference architecture and methodologies*

ISO 22400-1, *Automation systems and integration – Key performance indicators (KPIs) for manufacturing operations management – Part 1: Overview, concepts and terminology*

ISO 22400-2, *Automation systems and integration — Key performance indicators for manufacturing operations management — Part 2: Definitions and descriptions*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

3.1.1
finite capacity scheduling
scheduling methodology where work is scheduled for production equipment, in such a way that no production equipment capacity requirement exceeds the capacity available to the production equipment

3.1.2
inventory operations management
activities within Level 3 of a manufacturing facility which coordinate, direct, manage and track inventory and material movement within manufacturing operations