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Enterprise Control System Integration Part 3: Activity Models of Manufacturing Operations Management

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INTRODUCTION

This Part 3 standard shows activity models and data flows for manufacturing information that enables enterprise-control system integration. The modeled activities operate between Level 4 logistics and planning functions and Level 2 manual and automated process control functions. The models are consistent with the ANSI/ISA-95.00.01-2000 (hereinafter referred to as “Part 1”) object models and the Level 3 (Manufacturing Operations and Control) definitions.

The goal of the ANSI/ISA-95 series of standards is to reduce the risk, cost, and errors associated with implementing enterprise systems and manufacturing operations systems in such a way that they interoperate and easily integrate. The standards may also be used to reduce the effort associated with implementing new product offerings.

This Part 3 standard provides models and terminology for defining the activities of manufacturing operations management. The models and terminology defined in this standard:

- Emphasize good practices of manufacturing operations.
- Can be used to improve existing manufacturing operations systems.
- Can 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 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.

FOREWORD

This standard is Part 3 of a multi-part set of standards that defines the interfaces between enterprise activities and control activities.

Clause 4 of this standard is informative. The intent is to provide an overview of activities associated with production operations management, maintenance operations management, inventory operations management, and quality operations management.

Clause 5 is normative. It defines a standard template that can be applied to different categories of manufacturing operations management and defines the standard terminology to apply to the equipment hierarchy model.

Clause 6 is normative. It defines the standard terminology to apply to information and activities associated with production operations management.

Clause 7 is normative. It defines the standard terminology to apply to information and activities associated with maintenance operations management.

Clause 8 is normative. It defines the standard terminology to apply to information and activities associated with quality operations management.

Clause 9 is normative. It defines the standard terminology to apply to information and activities associated with inventory operations management.

Clause 10 is informative. The intent is to describe other activities in manufacturing operations management, not defined in previous clauses, and to list relevant standards in those areas.

Clause 11 is normative. It defines the criteria for completeness, compliance and conformance in applying the standard.

Annex A is informative. It illustrates how the rules for determining the manufacturing operations management responsibility and technology boundaries can be applied to different manufacturing enterprises.

Annex B is informative. It illustrates an example of the hierarchy of scheduling within an enterprise.

Annex C is informative. It lists standards associated with the other activities in manufacturing operations management listed in Clause 10.

Annex D is informative. It answers a list of frequently asked questions about this standard.

As currently envisioned, the ANSI/ISA-95 series will consist of the following parts under the general title, Enterprise-Control System Integration:

- Part 1: Models and terminology (published 2000)
- Part 2: Object model attributes (published 2001)
- Part 3: Activity models of manufacturing operations management (published 2005)
- Part 4: Object models and attributes of manufacturing operations management activities (in development at the time of publication of this standard)
- Part 5: Business-to-manufacturing transactions (in development at the time of publication of this standard)
- Part 6: Manufacturing operations transactions (in development at the time of publication of this standard)

1 Scope

This Part 3 standard defines activity models of manufacturing operations management that enable enterprise system to control system integration. The activities defined in this Part 3 standard are consistent with the Part 1 object models definitions. The modeled activities operate between business planning and logistics functions, defined as the Part 1 Level 4 functions, and the process control functions, defined as the Part 1 Level 2 functions.

The scope of this Part 3 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.