

Interoperability between production and business

a DKE brochure on IEC 62264 *Enterprise-control system integration* (in German)

This review has been done, because the brochure is a very good example for promotion of standards. The reviewers recommend the brochure to be considered as a pro-forma for similar standard promotion efforts.

IEC 62264, a multi-part standard under the responsibility of ISO/IEC SC65A/JWG15, is concerned with the integration of business and production systems of manufacturing enterprises. The brochure provides an overview of the multi-part standard IEC 62264 and describes information and operational models for production management with production and maintenance planning, quality management and inventory management. System aspects of interoperability and the roles of the IT systems involved are presented. One of the main concepts used in the standard is object oriented modelling based on UML and XML.

The brochure also includes the description of an XML-implementation of the interfaces identified in parts 1 and 2 of the standard.

The standard uses a hierarchical business model with 4 levels (level 4 business planning and logistics, level 3 manufacturing operation and control, levels 2, 1 and 0 present the cell or line supervisor-, operational- and process control functions). The levels 2, 1 and 0 are not addressed by the standard.

The emphasis is on integration of levels 3 and 4 with the intention to provide a complete and industry-wide useable definition and description of all functions needed and all information exchanged between the levels identified, leading to a clear definition of system boundaries (ERP – MES – DCS/SCADA) and responsibilities (which activities belong to which level).

The different parts of the standard provide:

Part 1: definition of system boundaries for both the business and control system and a common terminology for the production control system (*Manufacturing Execution System = MES*). Functional object models describe the latter. The information exchanged between levels 4 and 3 are categorised as product definitions, production capabilities, production schedule and production performance.

Part 2: describes the attributes of the objects identified in part 1 with the intention to provide the base for the implementation of the data and object model for the information exchanged between the two levels.

Part 3: develops a generic level 3-activity model for selected level 3 activities. The aim is to provide a functional structure of level 3 and enable identification of the intra level information exchange.

Part 4: describes analogue to part 2 the attributes of the objects identified in part 3. Since in part 3 the generic activity model was introduced part 4 develops a generic data and object model (*Common Work Model*), which is to be used for the identified information categories production, quality, maintenance and inventory.

Part 5: addresses additional aspects of interoperability between levels 3 and 4 not covered in the parts 1 and 2. It introduces transaction models, which allow to identify the context of the information exchanged across the levels 3-4 interface and to specify the role and responsibilities of the systems involved.

Informationsbroschüre des DKE K 931 zur Normenreihe DIN EN 62264 "Integration von Unternehmens-EDV und Leitsystemen" published by DKE (<http://www.dke.de/dke/>), 25 pages.