Manufacturing system control software based on the object-oriented design methodology

Abstract

Recent demands that manufacturing system becomes flexible and productive make manufacturing system control software complex and cost intensive. For overcoming that problem, control software must be flexible to changing environment and agile software development is needed. So many manufacturing system control software using object-oriented methodologies are proposed. But, traditional methodologies have error-prone discontinuities in the modeling process from design to implementation. This paper uses Real-Time Object-Oriented Modeling (ROOM) and Object Modeling Technique (OMT) as the solution of this discontinuity. ROOM provides a single basic model for all phases of software development. OMT diagrams present object structure and their static relations clearly. We present a software development methodology for manufacturing system by using ROOM as basic model and OMT as object structure analysis. Based on that methodology, we design model base for agile manufacturing control software development. And we develop manufacturing system control and simulation software, named IMOS (Intelligent Manufacturing Operating System), which has reconfigurability and expandability.

Key words : Object-oriented design, Manufacturing system control, OMT, ROOM
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