Distributed control of shop floor for flexible manufacturing system

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ABSTRACT

The MODEARTO, presented in this research, is an architecture for distributed control system for FMS operation. Based on a contract net model, the MODERATO system has three kinds of agents-order agent, resource agent, and communication forwarding agent. Each agent performs shop scheduling and control through negotiation on contract net. No node in MODERATO system can have authority over other node. The order agent uses inteligent dispatching strategy and the resource agent supports re-negotiation. And the comunication forwarding agent plays such a role as an information buffer or transient data storage and gives information about current shop status. A bidding scheme is employed for negotiating between order agent and resource agents. The MODERATO system can support re-negotiation among resource agents and an algorithm for re-negotiation is also proposed. Experimental investiagation shows the effectiveness of the MODERAO system for computer integrated manufacturing environments.