Factories of the future: challenges and leading innovations in intelligent manufacturing

Abstract
This paper reviews some of the most recently reported research into challenges and leading innovations in intelligent manufacturing for the Factories of the Future (FoF). Such research can be categorised as addressing five broad topic areas: manufacturing systems frameworks, theories and models; the pervasiveness of Cyber-Physical Systems (CPSs); the critical role of semantic technologies and interoperability; the Virtual Organisation (VO) of manufacturing systems and the servitisation of manufacturing systems. The paper analyses conceptual, theoretical, empirical and technological contributions from several leading authors in domain area. This paper identifies a wide range of research topics from the elaboration of manufacturing systems frameworks to models, from sensors to CPSs, to the application of semantic technologies and interoperability architectures of the data and information generated by manufacturing agents, how VOs are shaping manufacturing environments and the increasing challenge of deploying manufacturing systems to support servitisation. The paper concludes elaborating final considerations on the challenges and leading innovations in intelligent manufacturing for the FoF research area.

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