Smart Factory Modelling and Scheduling

Smart Factory Modelling

Smart factory in which vertical integration occurs constitutes a critical basis for implementing horizontal integration. Smart factory modelling is important in Industry 4.0 as it provides basis for the optimization of management and operation of smart factory. Smart factory modelling, like enterprise modelling, refers to the abstract representation, description and definition of the structure, processes, information, and resources of a smart factory. It deals with the process of understanding a smart factory business and improving its performance through creation of smart factory models. A smart factory model is a representation of its structure, activities, processes, information, resources, people, behaviour, goals, and constraints, etc.

Smart Factory Scheduling

Smart factory scheduling refers to the scheduling of manufacturing resources such as smart machines, smart robots, and smart devices to optimize production. In a smart factory, all manufacturing resources exist as cyber-physical systems (CPS). These CPS are modularized and flexible, and can communicate with each other to make decentralized decision-makings. This represents a new production paradigm of the future. This new production paradigm poses great challenges to scheduling of production resources within a smart factory. Effective scheduling methods are critical for the production of high individualized products with high quality, low cost, and high productivity.