Theory and practice of smart factory in petrochemical industry

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Abstract

The smart factory in petrochemical industry is operational excellence as the goal in SINOPEC. The theoretical connotation of smart factory in SINOPEC will be summarized in the lecture as ‘1-2-3-4-5-6’ scheme. ‘1’ is one Intelligent manufacturing platform; ‘2’ is two support systems: technical support system and standardization system; ‘3’ is three main lines: Integration of production and management for oil refining and chemical industry, Integration of supply chain for petrochemical value chain, Integration of design and operation for asset life cycle. ‘4’ is for key capabilities, overall location-awareness, forecast and early warning, collaborative optimization and scientific decision; ‘5’ is five characteristics: automation, digitization, visualization, modeling, and integration; ‘6’ is six business domains: integrated production management and control, supply chain management, asset management, energy management, integrated safety management and control, and integrated environmental management and control. This connotation has been successfully applied in 4 pilot enterprises of Sinopec. Moreover, smart factory in Sinopec has entered phase 2.0, the construction of the 4 pilot enterprises will be promoted based on the connotation and the prior experiences. Finally, some future development trend of smart factory and further research directions are discussed.