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Intelligent manufacturing: A comparative study cross regional borders

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With the ever increasing market competition and technology advances, more and more countries or regions are placing advanced manufacturing technology on their top priorities for economic growth and social development. In Europe, for instance, Germany has announced the Industry 4.0 strategy in 2013. In the US, President Obama launched the Advanced Manufacturing Partnership (AMP) in 2011. Since then, many other initiatives have been launched, including the Advanced Manufacturing Partnership Steering Committee 2.0 (AMP 2.0) in 2013, the Nationwide Network for Manufacturing Innovation (NNMI) in 2014, and the Revitalize American Manufacturing Act signed into law by the President in December 2014. Most recently, the Chinese government published the 10-year plan and roadmap towards manufacturing the Manufacturing 2025 strategy. The largest international collaborative program Intelligent Manufacturing Systems (IMS) led by Japan is also rolling out a road map for next step with its IMS2020 vision. With all these initiatives and programs, the core technology development and implementation area is in intelligent manufacturing. To this end, key technological enablers are identified, such as Internet of Things (IoT), Cyber-physical Systems (CPS), Information and Communication Technology (ICT), etc. There is a clear trend that all regions and countries have adopted these advanced enablers, and integrate them with traditional manufacturing systems so as to create smart products and smart factories. However, the approaches and strategies in different regions vary due to variations in industrial status and market conditions. This paper will provide a comparative study on the strategies and approaches from three representative regions on intelligent manufacturing technology: Germany, US, and China. Challenges and research focus at these regions will also be addressed.

Biography

Yubao Chen is a Professor in the Department of Industrial and Manufacturing Systems Engineering at the University of Michigan-Dearborn. He is the Director of China Programs. He received his BS degree from Xi'an Jiaotong University. He received his MS and PhD degrees from the University of Wisconsin-Madison. His teaching and research interests include quality engineering, intelligent controls, advanced manufacturing systems, and production management. He has published more than 70 papers in professional journals, magazines, and conference proceedings. He is the recipient of the Outstanding Young Manufacturing Engineer Award from the Society of Manufacturing Engineers (SME), the Teetor Education Award from the Society of Automotive Engineers (SAE), the Distinguished Faculty Research Award from the University of Michigan-Dearborn, and the Custom-driven Quality Award from Ford Motor Company. He is listed in the Who's Who in Science and Technology, and Who's Who Among Asian Americans.

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