



INDUSTRIAL MANAGEMENT



Seminario Permanente en Diseño, Gestión y Optimización de Procesos Industriales y de Servicios

Seminar on Design, Management and Optimization of Processes in Industry and Services

“Industry 4.0 and its application in the semiconductor industry”

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Summary: The term of Industry 4.0 was first used in 2011 at the Hannover Fair and has become a fashion. Many organizations want to enjoy the benefit of Industry 4.0 through implementing the key technologies, such as big data, AI, IoT or 3D printing. In this talk, the essence of Industry 4.0 will be explained. The relations among the key technologies are clarified. Real case studies of the realizations of a smart factory are given. We demonstrate a cyber-physical production system (CPPS) that we are implementing at the Semiconductor fabs. In the CPPS, maintenance schedules and move targets of each process step are set to reduce system variability, jobs are dispatched to meet the move targets and spare parts inventory is reduced due to reliable forecast. Through the real-time data acquisition capability and strong computing power, both the vertical integration and horizontal integration in the Industry 4.0 have been achieved.

KAN WU is an Assistant Professor at Nanyang Technological University. He has ten year experience in the semiconductor industry, from consultants to managers. Upon graduating from Berkeley in 1996, he joined TEFEN USA, a consulting company specialized in fab productivity improvement. In 1998, he joined TSMC and was elected as a team member of the Expert Team of Manufacturing Excellence in 2001. During this period, he guided the in-house development of scheduling and dispatching systems and provided training for production planning and scheduling. In 2003, he joined Inotera Memories as a manager in the Industrial Engineering department. He led the schedule control team to ramp up a 300mm DRAM fab successfully, constructed the simulation models, and led various types of productivity improvement projects. After he got his PhD from Georgia Tech in 2009, he joined Sensor Analytics (in the US) as the CTO. The company offers optimal sampling solutions for semiconductor inspection tools. His PhD dissertation was awarded the 3rd place for the IIE Pritsker Doctoral Dissertation Award, and he currently owns 3 licenses and 6 US patents in the field of semiconductor manufacturing.