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SHI-SHANG JANG, PROFESSOR

- 國立清華大學 學士，民國六十七年
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- B.S. National Tsing-Hua University, ROC, 1978
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主要研究領域

本實驗室的主題是將製程控制及最適化方法應用在先進製程及能源節約的領域上。

- **二氧化碳捕捉之模擬**
二氧化碳捕捉及再生系統的穩態/動態模擬與製程能源最佳化及動態過程控制模擬。
- **類神經網路建模及取樣技術之研究**
非線性工業變數撰擇及製程模式化及和最佳化。
- **批次控制及錯誤診斷歸類於半導體製程**
本研究主要解決的問題為半導體製程中產品機台之混和生產問題與找尋導致機台不一致性的重要參數。
- **虛擬量測於TFT/LCD製程之開發**
利用統計方法來開發虛擬量測之模型並預測最終電性結果，來改進產品品質，並提早預測產品品質好壞。
- **汽輪機與冷卻水塔之最佳化操作及效能評估模型之發展**
本研究主要目的為發展汽輪機與冷卻水塔之最佳化操作模型與效能評估模型，以達到節能省碳之目的。

Main Research Interests

The objective of our research is to implement control and optimization theory to the areas of advanced process control and energy integration of the semiconductor and chemical plants:

- **CO₂ Capture Process modeling**
Steady state/dynamic simulation and process energy optimization and dynamic process control of a CO₂ stripping and regeneration System.
- **Advanced Artificial Neural Network Modeling**
Nonlinear modeling for industrial processes using on-line data based on theory of variable selections and ANN modeling techniques.
- **Run to run control for mixed run process and Fault Detection and Classification in semiconductor industry**
These works are focus on the development of advanced statistical models for the purpose RtR control and searching the key variables which caused product quality difference by FDC data.
- **Development of virtual metrology Technology for TFT/LCD Processes**
In this work, we implement statistical methods to predict the final quality values of a TFT/LCD tool.
- **Integrated Optimal Operation based on Local Model Network for Turbine Generator and Cooling Tower and Performance Evaluation**
The optimization problem is formulated as that of maximizing the net power generation of all power producing and consuming devices with Fans operating limitations as constraints.

代表作 (Selected Publications)

- Jia-Lin Kang, Kai Sun, David Shan-Hill Wong, **Shi-Shang Jang***, Chung-Sung Tan, "Modeling Studies on Absorption of CO₂ by Monoethanolamine in Rotating Packed Bed", International Journal of Green House Gas Control, 25, 141-150, 2014.
- Jian-Guo Wang, Shyan-Shu Shieh, **Shi-Shang Jang***, David Shan-Hill Wong, Chan-Wei Wu "A two-tier approach to the data-driven modeling on thermal efficiency of a BFG/coal co-firing boiler", Fuel, 111, 528-534, 2013.
- Yu-Jeng Lin, David Shan-Hill Wong **Shi-Shang Jang*** and Jenq-Jang Ou, "Control Strategies for Flexible Operation of Power Plant with CO₂ Capture Plant", AIChE Journal, 58, 9, 2624-2949, 2012.
- Tian-Hong Pan, David Shan-Hill Wong, **Shi-Shang Jang***, "A Virtual Metrology for Predicting End-of-Line Electrical Properties Using A MANCOVA Model with Tools Clustering", IEEE Transactions on Industrial Informatics, 99, 1551-3203, 2011.
- Ming-Da Ma, David Shan-Hill Wong, **Shi-Shang Jang*** and Sheng-Tsaing Tseng, "Fault Detection Based on Statistical Multivariable Analysis And Microarray Visualization", IEEE Trans. Ind. Informat, 6, 1, 18-24, 2010.