

## Professor Dr. David Banjerdpongchai

### Present Affiliation

Department of Electrical Engineering, Faculty of Engineering,  
Chulalongkorn University  
254 Phayathai Road, Pathumwan, Bangkok 10330, Thailand  
Tel +66-2218-6487 Fax +66-2251-8991  
Email: b david@chula.ac.th, david.b@g.chula.edu



### Education Background

Bachelor of Engineering (First class honor)	1989	Chulalongkorn University, Thailand
M.S. Electrical Engineering	1992	Stanford University, USA
Ph.D. Electrical Engineering	1997	Stanford University, USA

### Employment Position (present)

- Professor of Electrical Engineering
- Head of Control System Research Laboratory, Department of Electrical Engineering, Faculty of Engineering, Chulalongkorn University

### Research Interest

- Advanced process control
- Convex optimization approach to robust control design
- Energy management system and its applications

### Professional Societies

- Senior Member, IEEE
- Member, Asian Control Association
- Chair of IEEE Control Systems Society, Thailand Section

### Awards

- Best Paper Award EECON 29, EECON 26, EECON 25, AUN/SEED-Net RC EEE 2014, 2015, CASC 2016.

### Research Projects (2012-present)

1. Principal Investigator, "Design and Implementation of Advanced Process Control for Industrial Boilers", Center of Excellence in Electrical Power Technology, 7/2016-6/2017.
2. Researcher, "Solar Power Forecast in Energy Management System for the Transmission System Operation Center," Thailand National Research Council, 11/2015-2/2017.
3. Principal Investigator, "Iterative Learning Control for Linear Multi-Agent Systems with Application to Building Energy Management System," Collaborative Research Support Program under AUN/SEED-Net Project. 4/2015-3/2017.
4. Principal Investigator, "Design of Intelligent Control for Grid-Connected PV Systems," Collaborative Research Support Program under AUN/SEED-Net Project. 10/2013-3/2015.
5. Researcher, "Detailed Design and Feasibility Study of the Smart Grid Pilot Project in Mae Hong Son Province," Electricity Generating Authority of Thailand (EGAT), 10/2013-12/2014.

6. Researcher, "Research and Development of Smart Grid Technology for Building Energy Management," Energy Conservation Fund, Energy Policy and Planning Office, Ministry of Energy, 7/2013–9/2014.
7. Researcher, "Development of Smart Grid Roadmap for Electricity Generating Authority of Thailand," Electricity Generating Authority of Thailand (EGAT), 6/2012–5/2013.

#### **Journal Publication (2012-present)**

1. D. H. Nguyen and D. Banjerdpongchai, "Iterative Learning Control of Energy Management System: Survey on Multi-Agent System Framework," *Engineering Journal*, vol. 20, no. 5, pp. 1-4, November 2016.
2. A. Asawachatroj, D. Banjerdpongchai and P. Busaratragoon, "Economic Assessment of APC and RTO Using Option to Expand," *Engineering Journal*, vol. 20, no. 5, pp. 115-134, November 2016.
3. T. Nampradit and D. Banjerdpongchai, "LMI Approach to Design Robust State-feedback Controllers for Lur'e Systems with Time-invariant Delays," *International Journal of Control, Automation, and Systems*, vol. 13, no. 5, October 2015.
4. T. Nampradit and D. Banjerdpongchai, "On Computing the Worst-case  $H_\infty$  Performance of Lur'e Systems with Uncertain Time-invariant Delays," *Engineering Journal*, vol. 19, no. 3, October 2015.
5. T. Nampradit and D. Banjerdpongchai, "On Computing Maximum Allowable Time Delay of Lur'e Systems with Uncertain Time-invariant Delays," *International Journal of Control, Automation, and Systems*, vol. 12, no. 3, pp. 497-506, June 2014.
6. A. Asawachatroj, D. Banjerdpongchai and P. Busaratragoon, "Enhancement of Investment Decision Making Using Real Options with Application to Advanced Process Control Project," *Engineering Journal*, vol. 18, no. 2, pp. 37-54, March 2014.
7. T. Petkajee and D. Banjerdpongchai, "Design of Cogeneration and Analysis of Economic and Environmental Optimal Operations for Building Energy Management System," *ECTI Transaction on Electrical Engineering, Electronics, and Communications*, vol. 11, no. 2, pp. 79-94, August 2013.
8. P. X. Dang and D. Banjerdpongchai, "Design of Integrated Real-Time Optimization and Adaptive Model Predictive Control with Application to Distillation Column," *ASEAN Engineering Journal, Part D*, vol. 2, no. 1, 2013.
9. A. Asawachatroj and D. Banjerdpongchai, "Analysis of Advanced Process Control Technology and Economic Assessment Improvement," *Engineering Journal*, vol. 16, no. 4, pp. 1-4, July 2012.
10. W. Khaisongkram and D. Banjerdpongchai, "A Branch-and-Bound Algorithm to Compute the Worst-Case Norm of Uncertain Linear Systems under Inputs with Magnitude and Rate Constraints," *International Journal of Control, Automation, and Systems*, vol. 10, pp. 449-458, June 2012.

#### **Conference Proceeding Papers (2012-present)**

1. T. Jennawasin and D. Banjerdpongchai, Design of State-Feedback Quadratic Regulator for Polynomial Systems Using Sum-of-Squares Approach, in *Proc. of International Automatic Control Conference, Taiwan*, November 9-11, 2016.
2. P. Keadtipod and D. Banjerdpongchai, Design of Supervisory Cascade Model Predictive Control for Industrial Boilers, in *Proc. of International Automatic Control Conference, Taiwan*, November 9-11, 2016.

3. P. Suwannik, T. Jennawasin, and D. Banjerdpongchai, Design of Linear Model Predictive Control for Level Control Process with Output Feedback from Wireless Transmitter, in Proc. of International Automatic Control Conference, Taiwan, November 9-11, 2016.
4. S. Anucha and D. Banjerdpongchai, Design of Nonlinear Model Predictive Control for Regenerative Thermal Oxidizer System, in Proc. of 2015 15th International Conf. on Control, Automation and Systems, Busan Exhibition & Convention Center, Busan, Korea, October 13-16, 2015.
5. N. Piphitpattanaprap and D. Banjerdpongchai, Energy Management System of Hybrid Power Generation with Battery Energy Storage and Application to MHS Smart Grid Project, in Proc. of 2015 SICE Annual Conf., InterContinental Hotel, Hangzhou, China, July 28-30, 2015.
6. S. Anucha, V. Chayavivatkul and D. Banjerdpongchai, Comparison of PID Control and Linear Model Predictive Control Application to Regenerative Thermal Oxidizer System, in Proc. of the 10th Asian Control Conf., Sutera Harbour Resort, Kota Kinabalu, Malaysia, May 31-June 3, 2015.
7. D. H. Nguyen and D. Banjerdpongchai, A Survey on Iterative Learning Control for Multi-Agent Systems, in Proc. of the 7th AUN/SEED-Net Regional Conf. on Electrical and Electronics Engineering, MJIIT, UTM, Kuala Lumpur, November 12-13, 2014.
8. S. Ko Ko Aung, D. Banjerdpongchai, and E. Leelarasmee, Analysis of Sampling Rate and Perturbation Step Size on Maximum Power Point Tracking Performance for Photovoltaic Power Generation, in Proc. of the 7th AUN/SEED-Net Regional Conf. on Electrical and Electronics Engineering, MJIIT, UTM, Kuala Lumpur, November 12-13, 2014.
9. T. Angwattanapanich and D. Banjerdpongchai, Design and Implementation of Wiener Nonlinear Model Predictive Control for Pressure Control Loop, in Proc. 2014 SICE Annual Conf., Hokkaido University, Sapporo, Japan, September 9-12, 2014.
10. N. Piphitpattanaprap and D. Banjerdpongchai, Economic Optimal Operation of Hybrid Power Generation in Normal Mode with Application to MHS Smart Grid Project," in Proc. of 2014 AUN/SEED-Net Regional Conf. on EE, University of Malaya, Kuala Lumpur, March 4-5, 2014.
11. P. Cheingjong, M. Wongsaisuwan, and D. Banjerdpongchai, Development of Advanced Process Control via Distributed Control System," in Proc. of the 36th Electrical Engineering Conf., Felix River Kwai Resort, Kanchanaburi, December 11-13, 2013.
12. T. Petkajee and D. Banjerdpongchai, Multi-objective Approach to Economic and Environmental Optimal Operations of Cogeneration for Building Energy Management System," in Proc. of the 2013 International Conf. on Electrical Engineering/Electronics, Computer, Telecommunications, and Information Technology, Maritime Park and Spa Resort, Krabi, Thailand, May 15-17, 2013.
13. T. Petkajee and D. Banjerdpongchai, Economic Optimal Operation of Combined Heat and Power Generation for Building Energy Management System," in Proc. of 2013 AUN/SEED-Net Regional Conf. in EEE, Holiday Inn Bangkok, February 4-5, 2013.
14. A. Asawachatroj, D. Banjerdpongchai, P. Busaratragoon, Real Options Approach to Estimate Financial Benefit of Advanced Process Control," in Proc. of the 2012 IEEE/SICE International Symposium on System Integration, Kyushu University, Fukuoka, Japan, pp. 829-834, December 16-18, 2012.

**Textbook** David Banjerdpongchai. Dynamical Control Systems: Analysis, Design, and Applications. Chulalongkorn University Press. June 2008.