

Name Pruk Aggarangsi
Date of Birth January 26, 1978
Position Director of
Energy Research and Development Institute-
Nakornping, Chiang Mai University
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Mechanical Engineering
Chiang Mai University, Thailand



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Education

- Bachelor of Engineering in Mechanical Engineering
Chulalongkorn University, Thailand
- Master of Science in Mechanical Engineering
- Doctor of Philosophy in Mechanical Engineering
Carnegie Mellon University, Pittsburgh, PA, USA

Expertise

- Renewable energy, waste water treatment by biogas system; design and implementation; biogas / biomass power plant design and integration.
- Numerical and finite element modeling, simulation and analysis
- Robotic system design and mechanical vibration analysis

EXPERIENCES

1999 – 2004 Service Supervisor: Jaguar Cars (Thailand) Co. Ltd.

1999 – 2015 Vice Director

2015 - Present Director: Energy Research and Development Institute – Nakornping (ERDI)
Chiang Mai University:

2007- Present Assistance Professor in Department of Mechanical Engineering, Chiang Mai
University: Lecturer / Researcher in Mechanical Engineering

Projects under supervision:

1) Project Manager:

- Thailand livestock and agricultural / industrial biogas design and development, Ministry of Energy Thailand, 2010-present.
- Thailand Small Scale Livestock Waste Management Program UNFCCC PoA 8027, in cooperation with the World Bank.
- Biogas / Bio-Methane production / upgrading for automotive and industrial applications, Ministry of Energy Thailand, 2015.
- The Nationwide Inspection and Monitoring of Engineering Standards, Safety and Performance of Power Plants, funded by Energy Regulatory Commission, 2012-2013

2) Project Advisor:

- Demonstration Project of Biomethane Utilization by Micro Gas Grid for Household Cooking, funded by Energy Policy and Planning Office, Thailand, 2015-2017.
- Promotion and Demonstration Project of Biomethane Utilization by Micro Gas Grid for Household Cooking, funded by Energy Policy and Planning Office, Thailand, 2016-2020
- Commercial Production of Biomethane Gas as the Replacement of Liquefied Petroleum Gas, funded by Energy Policy and Planning Office, Thailand, 2012-201
- The Development of a Pilot Plant for the Production of Compressed Biomethane Gas for Vehicles, funded by Energy Policy and Planning Office, 2011-2013

Academic Publications

Academic Publications (Post 2010)

- Koonaphapdeelert, S., Kantha, U. and Aggarangsi, P., "Biomethane: An Alternative Green Fuel to CNG," ICAE-7: The 7th International Conference on Automotive Engineering, Bangkok, April, 2011.
- Aggarangsi, A. and Teerasouontornkul, T., "Practical Design and Efficiency of Large-Scale Biogas Digesters for Swine Farms in Thailand," Journal of Sustainable Energy & Environment," Special Issue (2011) pp. 51-55.
- Aggarangsi, A., "R&D and Implementation of waste-to-energy projects in Thailand," JGSEE International Conference on Renewable Energy, Bangkok, June 2011.
- Jawana, R., Pholchan, P., Aggarangsi, P. and Rerkkriangkrai, R., "Effect of Effluent Recirculation Rate on Biogas Production from Chicken Manure," 11th National Environmental Conference on Environmental Science, Engineering and Management, Chiang Rai, March 2012.
- D. Jirachaisakdeacha, L. kumdhithahutsawakul, A. Buranarom, P. Pholchan, S. Bovonsombut, U. Kantha, P. Aggarangsi and P. Rerkkriangkrai. "Application of Paracoccus sp. CM1 on Granular Activated Carbon for Hydrogen Sulfide Removal from Biogas," Proceeding of the 8th National Environmental Conference, Chiang rai, May 2012.
- Chomchuen, S. and Aggarangsi, P., "Life Cycle Greenhouse Gas Assessment of Biogas System for Layer Chicken Farms," International Journal of Environmental Engineering and Management, Vol.3, No.2 (2012), pp. 89-96.
- P. Aggarangsi, N. Tippayawong, J.C. Moran and P. Rerkkriangkrai, "Overview of livestock biogas technology development and implementation in Thailand," Energy for Sustainable Development 17 (2013) pp. 371-377.
- C. Jitjumnong, P. Aggarangsi, and U. Kantha, "Effects of Fuel and Ignition Parameters on Gasoline Engine Performance Utilizing Compressed Bio-methane Gas as Substituted Fuel," International Conference on Alternative Energy in Developing Countries and Emerging Economies, Bangkok, (2013), pp. 33-37.
- W. Wilawan, P. Pholchan and P. Aggarangsi, "Biogas Production from Co-digestion of *Pennisetum pururem* cv. Pakchong 1 Grass and Layer Chicken Manure Using Completely Stirred Tank," International Conference on Alternative Energy in Developing Countries and Emerging Economies, Bangkok, (2013), pp. 70-73.
- K. Tachantuek, P. Aggarangsi, and C. Bureecam, "Feasibility Study of Small-Scale Electricity Generation from Anaerobic Co-Digestion of Napier Pakchong1 Grass and Manures in Thailand," International Conference on Alternative Energy in Developing Countries and Emerging Economies, Bangkok, (2013), pp. 498-502.
- J. Chuchottaworn, and P. Aggarangsi, "Heat Production of Napier Pakchong1 Grass Pellet from Gasification Process," International Conference on Alternative Energy in Developing Countries and Emerging Economies, Bangkok, (2013), pp. 883-885.
- W. Wilawan, P. Pholchan and P. Aggarangsi, "Biogas Production from Co-digestion of *Pennisetum pururem* cv. Pakchong 1 Grass and Layer Chicken Manure Using Completely Stirred Tank," Energy Procedia, Vol. 52 (2014), pp. 216 - 222.
- S. Suwansri, J.C. Moran, P. Aggarangsi, N. Tippayawong, A. Bunkham, and P. Rerkkriangkrai, "A biomethane solution for domestic cooking in Thailand," Energy for Sustainable Development, Vol. 23 (2014), pp. 68-77.
- R. Thong-inn and P. Aggarangsi, "Effect of Chicken Manure and Chlorella. Alga. Ratio on Biogas Production Efficiency," 29th Conference of Mechanical Engineering Network 2015, Thailand, pp.
- N. Tubtimsri and P. Aggarangsi, "Effect of CMU Channel Digester Internal Heating on Efficiency of Biogas Production from Swine Farm Waste Water," 29th Conference of Mechanical Engineering Network 2015, Thailand, pp. 944-951.
- W. Puttapoun, J. Moran, P. Aggarangsi and A. Bunkham, W Powering Shuttle Kilns with Compressed Bio-Methane Gas for the Thai Ceramic Industry," Energy for Sustainable Development Vol. 28 (2015), pp. 95-101.
- P. Techakawanichakul, A. Pattiya and P. Aggarangsi, "Design and Energy Analysis of Semi Continuous Reactor for Corn Cobs Pyrolysis," The 3rd National Interdisciplinary Academic Conference (TNIAC 2015), Thailand, pp. 311-316.
- P. Chainaranont, N. Jaruwasuphan, Y. Kunathon, K. Panyawuttho and P. Aggarangsi, "Studying the Effects of Temperature and Time on Hydrogen Gas Production from Bio-Methane by Steam and CO₂ Reforming," ASTC2015: The 3rd Academic Science and Technology Conference 2015, Thailand.
- N. Chaitano, P. Aggarangsi and N. Tubtimsri, WPerformance Analysis of Hi-Dilution Swine Waste Waste Biogas System with Application of Excess Heat Recovery," 13th Eco-Energy and Materials Science and Engineering Symposium 2016, pp. 106.
- L. Payattikul, K. Panyawuttho and P. Aggarangsi, "Hydrogen Production from Compressed Bio-methane Gas by Steam Reforming Process with Alumina-supported Palladium Catalyst (Pd/Al₂O₃) under Low Temperature Condition," Journal of Science and Technology, Thammasat University, Vol. 5 (2017), pp. 881-892.

- S. Koonaphapdeelert, J. Moran, P. Aggarangsi and A. Bunkham, “Low Pressure Biomethane Gas Adsorption by Activated Carbon,” Energy for Sustainable Development, Vol. 43, April 2018, pp. 196-202.
- K. Piawanich, P. Aggarangsi and J. Moran, “Modifications of SME Biomass Boiler for High Efficiency Multi-Fuel Input,” Conference: 2018 International Conference and Utility Exhibition on Green Energy for Sustainable Development (ICUE) October 2018.
- Xiaoliu Wang, et. al., “Biomass derived N-doped biochar as efficient catalyst supports for CO₂ methanation,” Journal of CO₂ Utilization 34, December 2019, pp. 733-741.
- P. Suaisom, P. Pholchan and P. Aggarangsi, “Holistic determination of suitable conditions for biogas production from Pennisetum purpureum x Pennisetum americanum liquor in anaerobic baffled reactor,” Journal of Environmental Management Vol. 247 October 2019, pp.730-737.
- N. Srilek and P. Aggarangsi, “Effects of Ionic Liquid and Biomass Concentration to Partial Vapour Pressure Change in Hydrothermal Carbonization,” IOP Conference Series Earth and Environmental Science June 2020, 495:012026
- X. Wang et.al, “Biomass derived N-doped biochar as efficient catalyst supports for CO₂ methanation,” December 2019, Journal of CO₂ Utilization 34:733-741
- W. Wang, et.al., “Bioenergy development in Thailand based on the potential estimation from crop residues and livestock manures,” Biomass and Bioenergy, January 2021, 144:105914

Commercial Magazine Column:

Textbook

Biomethane Production and Applications; Sirichai Koonaphapdeelert, Pruk Aggarangsi and James Moran, Springer Nature Singapore, Online ISBN 978-981-13-8307-6.

(พฤกษ์ อักกะรังสี)

Additional materials online magazine column

https://issuu.com/ryanhofmann/docs/biogas_directory_-_vol04_hi

https://issuu.com/ryanhofmann/docs/biogas_directory_-_vol_05

https://issuu.com/ryanhofmann/docs/biogas_directory_2016

https://issuu.com/ryanhofmann/docs/biogas_directory_2015

Pre 2010 Publications:

- Aggarangsi, P., Beuth, J.L., and Griffith, M.L., 2003, "Melt Pool Size and Stress Control for Laser-Based Deposition near a Free Edge," *Solid Freeform Fabrication Proceedings*, Austin, August, pp.196-207.
- Birnbaum, A.J., Aggarangsi, P., Beuth, J.L., 2003, "Process Scaling and Transient Melt Pool Size Control in Laser-Based Additive Manufacturing Processes," *Solid Freeform Fabrication Proceedings*, (D.L. Bourell, R.H. Crawford, J.J. Beaman, K.L. Wood and H.L. Marcus eds.), Proc. 2003 Solid Freeform Fabrication Symposium, Austin, August, pp. 328-339.
- Birnbaum, A., Aggarangsi, P., Beuth, J., Bontha, S. and Klingbeil, N., 2004, "Control of Melt Pool Size and Microstructure in Laser-Based Additive Manufacturing Processes," Proceedings 2004 NSF Design, Service and Manufacturing Grantees and Research Conference, Dallas, Texas, January 2004.
- Aggarangsi, P., Beuth, J.L., Gill, D.D., 2004, "Transient Changes in Melt Pool Size in Laser Additive Manufacturing Process," *Solid Freeform Fabrication Proceedings*, Austin, August, pp.163-174.
- Klingbeil, N.W., Bontha, S. Beuth, J.L., Birnbaum, A. and Aggarangsi, P., 2005, "Prediction and Control of Melt Pool Size and Microstructure in Laser-Based Additive Manufacturing," *Proceedings 2005 NSF DMII Grantees and Research Conference*, Scottsdale, Arizona, January 2005.
- Klingbeil, N.W., Bontha, S., Gaddam, D., Brown, C., Beuth, J.L., Birnbaum, A. and Aggarangsi, P., 2006, "Modeling of Melt Pool Size and Solidification Microstructure in Laser-Based Additive Manufacturing, Proceedings 2006 NSF DMII Grantees and Research Conference, St. Louis, MI, July 2006.
- Aggarangsi, P., Beuth, J.L., Localized Preheating Approaches for Reducing Residual Stress in Additive Manufacturing, *Solid Freeform Fabrication Proceedings*, Austin, August, 2006.
- Aggarangsi, P., "Approximation of transient changes in Melt Pool Size from steady-state results for Additive Manufacturing Processes," The 6th Academic conference on Heat & Mass Transfer in Thermal Equipment, Chiang Mai, March, 2007, pp.176-181.
- Chaitanu, N. and Aggarangsi, P., "Prototype of Thermophilic CSTR Anaerobic Digester for Treating Swine Wastewater," The 23rd Conference of the Mechanical Engineering Network of Thailand, Chiang Mai, December, 2009, pp. 239.
- Chaturachat, C., Aggarangsi, P., Damrongsak, D., "Coefficient of Heat Absorbed by Metal Plate with High Temperature Heat Flux," The 23rd Conference of the Mechanical Engineering Network of Thailand, Chiang Mai, December, 2009, pp. 55.
- Wongsapai, W. and Aggarangsi, P., "The Economic Evaluation of the Performance-Base Tax Incentive for Energy Efficiency and Renewable Energy Project in Thailand," International Conference on Green and Sustainable Innovation, Chiang Rai, December, 2009, pp. 130.
- Jetapai, P., Wongsuwan, W., Polchai, A., Aggarangsi, P., "Parameter Optimization of ECU for CMU-F410 Race Car," The 6th International Conference on Automotive Engineering, Bangkok, Thailand, March 2010.
- Inpramoon, A., Jawana R., Aggarangsi, P. and Tippayawong N., "Biogas Production from Animal Waste Using Hybrid Reactor," GMSTEC2010: International Conference for a Sustainable Greater Mekong Subregion, Bangkok, August, 2010, pp.176-181.
- Jino, P. and Aggarangsi, A., "Optimum Biogas Pressure Booster Design Based on Energy Utilization Characteristics," The 3rd National Conference on Sciences and Social Sciences (NCSST 2010), Mahasarakham, Thailand, August, 2010, pp. 47-55.
- Inpramoon, A., Jawana, R., Aggarangsi, P. and Tippayawong, N., 2010. Biogas Production from Animal Waste Using Hybrid Reactor. International Conference for a Sustainable Greater Mekong Subregion, Bangkok, Thailand.