

## Résumé

### YOSSAPONG LAOONUAL



#### **King Mongkut's University of Technology Thonburi (KMUTT)**

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#### **Academic Training**

**2001-2006**

##### **Ph.D. in Mechanical Engineering**

Imperial College of Science, Technology and Medicine, University of London, (now Imperial College London), UK.

**2000-2001**

##### **M.Phil. in Mechanical Engineering**

University of Manchester Institute of Science and Technology (UMIST) (now University of Manchester), UK

**1994-1998**

##### **B.Eng. in Mechanical Engineering**

Sirindhorn International Institute of Technology (SIIT),  
Thammasat University, Pathum Thani, Thailand

#### **Professional Training**

**Oct 2010-Jan 2011**

##### **Graduate Diploma in East-West Knowledge Leaders Program (EWKLP)**

Japan-America Institute of Management Science (JAIMS),  
Honolulu, Hawaii, USA

**July 2020**

##### **Becoming an Agent of Sustainable Change**

*Online course through edX*, Wageningen University and Research, Netherland.

**July 2021**

##### **The Sustainable Development Goals-A global, transdisciplinary vision for the future**

*Online course through Coursera*, University of Copenhagen, Denmark.

#### **Honors and Awards**

**2017**

**British Council Alumni Award Winner in Professional Achievement**, Thailand

**2016**

**DAAD-Science Tour: City of the Future** for 1 Week Study Tour in Germany

**2011**

**Hitachi Scholarship Foundation** for 2.5 Months Research Fellowship in Japan

**2010**

**Fujitsu Scholarship** for 4 Months Management Studies at JAMIS in Hawaii

**1999-2005**

**Royal Thai Government Scholarship** for Postgraduate Studies in the UK

**1996**

**Outstanding Mechanical Engineering Student of the Year**, SIIT

## Professional Affiliations

- Honorary Member, Electric Vehicle Association of Thailand (EVAT), since 2020
- Member, Thailand Energy Storage Technology Association (TESTA), since 2021
- Member, Society of Automotive Engineers Thailand (TSAE), since 2009
- Member, Thai Society of Mechanical Engineers (TSME), since 2009
- Associate Mechanical Engineer, Councils of Engineers (COE), Thailand, since 1998.
- Associate Member, Thai Academy of Science and Technology Foundation (TAST), since 2015

## Research Interests

*Technical Research:* battery fire and explosion, electric and hybrid vehicle, internal combustion engines, renewable fuels, spray and atomization

*Policy research:* sustainability, decarbonization in transport

## Professional Work Experiences

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|---------------------|--|
| <b>2020-Present</b> | <b>Assistant to the President for Sustainability</b><br>King Mongkut's University of Technology Thonburi (KMUTT), Bangkok  |
| <b>2020-Present</b> | <b>Head of Research Center</b><br>Mobility & Vehicle Technology Research Center<br>Institute for Scientific and Technological Research and Service, KMUTT  |
| <b>2010-present</b> | <b>Affiliated Academic Staff</b><br>The Joint Graduate School of Energy and Environment (JGSEE), KMUTT   |
| <b>2018-Present</b> | <b>Associate Professor</b>   |
| <b>2016-2020</b>    | <b>Head of Automotive Engineering Division</b>   |
| <b>2011-2018</b>    | <b>Assistant Professor</b>   |
| <b>2010-2014</b>    | <b>Assistant Head of Department (for Administrative Affairs)</b>   |
| <b>2007-2011</b>    | <b>Lecturer</b><br>Department of Mechanical Engineering, Faculty of Engineering, KMUTT   |
| <b>2013-2014</b>    | <b>Expert</b> (Joint Appointment with KMUTT)<br>Thailand Automotive Institute, Bangkok   |
| <b>Apr-Jun 2011</b> | <b>Visiting Researcher</b> (客員研究員)<br>Department of Mechanical and Aerospace Engineering, Graduate School of Science and Engineering, Tokyo Institute of Technology, Japan                                     |
| <b>2007-2009</b>    | <b>Lecturer</b> ( <i>Quarter-time at RMUTL &amp; Three-quarters-time at KMUTT</i> )<br>College of Integrated Science and Technology<br>Rajamangala University of Technology Lanna (RMUTL), Chiangmai, Thailand |
| <b>1998-1999</b>    | <b>Teaching &amp; Research Assistant</b><br>SIIT, Thammasat University, Pathumthani, Thailand.   |

## **Society Committee Appointments**

<b>2021- Present</b>	<b>Committee</b> Thailand Energy Storage Technology Association (TESTA)
<b>2020-Present</b>	<b>Honorary Chairman &amp; Advisor</b>
<b>2015-2020</b>	<b>President &amp; Founding Members</b> Electric Vehicle Association of Thailand (EVAT)
<b>2022-Present</b>	<b>Regular Committee</b>
<b>2014-2022</b>	<b>Regular Member</b> Asian Transportation Research Society (ATRANS)
<b>2018-2023</b>	<b>Advisor</b>
<b>2013-2018</b>	<b>Committee</b> Thai Society of Mechanical Engineers (TSME)
<b>2009-2015</b>	<b>Committee</b> Alumni Association of Sirindhorn International Institute of Technology (ASIIT)
<b>2009-2015</b>	<b>Committee</b> Society of Automotive Engineers Thailand (TSAE)

## **External Advisor and Committee**

<b>Sep 2021-Present</b>	<b>Director</b> AAPICO ITS Co. Ltd. (Subsidiary of AAPICO Hitech PCL)
<b>Sep 2020-Present</b>	<b>Committee</b> Asian Federation of Electric Vehicle Association, Republic of the Philippine
<b>Dec 2019- Present</b>	<b>Committee</b> Academic Committee No 47 Emission, Noise & Energy Vehicle Thai Industrial Standards Institute (TISI), Ministry of Industry
<b>Oct 2018-Present</b>	<b>Committee</b> Startup Committee, Bangchak Corporation PCL.
<b>Feb 2015-Present</b>	<b>Expert for Subcommittee</b> Subcommittee on Regulatory Control of Air Pollution from Motor Vehicle under Pollution Control Committee, National Environment Board, Thailand.
<b>2020-2023</b>	<b>Committee</b> Dictionary Committee for Mechanical Engineering Words Office of the Royal Society, Thailand.

- 2021-2023**                    **Council Member**  
 Council for Decarbonizing Transport in Asia, Nationally Determined Contribution-Transport Initiative for Asia (NDC-TIA), Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Federal Republic of Germany
- 2020-2023**                    **Committee**  
 National Electric Vehicle Policy Committee, Thailand.
- 2020-2021**                    **Secretary & Advisor for Sub-Committee**  
 Sub-Committee on Electric Vehicle  
 Committee on Energy, The House of Representatives.
- Jan- Mar 2020**                **Committee** (as Representative of Electric Vehicle Association of Thailand)  
 Working Group for Studying the Electricity Price for Public Electric Vehicle Charging Station under Energy Regulatory Commission, Thailand
- 2019- 2023**                    **Committee**  
 Academic Committee No 46 Vehicle Safety  
 Academic Committee No 76 Battery  
 Thai Industrial Standards Institute (TISI), Ministry of Industry
- 2019-2021**                    **Director** (as Representative of Electric Vehicle Association of Thailand)  
 Board of Directors, Thailand Automotive Institute.
- Sep-Dec 2016**                **Advisor for Sub-Committee**  
 Sub-Committee on Study of Electric Vehicle Usage Policy and Investment Promotion of Electric Vehicle Industry under Committee on Study and Preparation of Technology Development on Plug-in Electric Vehicle, The National Legislative Assembly, Thailand.
- Mar 2016-2018**                **Working Group Chairman**  
 Working Group on Consideration and Revision of Exhaust Emission Standard of New Vehicle under Subcommittee on Regulatory Control of Air Pollution from Motor Vehicle, Pollution Control Department, Thailand.
- Mar-Aug 2015**                **Advisor for Sub-Committee**  
 Sub-Committee on Alternative and Renewable Energy, and Energy Efficiency under the Committee on Energy Reform, National Reform Council, Thailand.
- 2011-2013**                    **Chairman**  
 Committee of Housing Estate Juristic Person, Saransiri Ringroad-Pracha Uthit.
- 2009-2010**                    **Drafting Committee**  
 Code of Practice for Conversion Gas Vehicle, Councils of Engineers, Thailand

## **Regular Teaching Subjects in Mechanical & Automotive Engineering Programs**

- Thermodynamics
- Fluid Mechanics
- Thermal Sciences
- Automotive Technology
- Internal Combustion Engine
- Hybrid and Electric Vehicle

## **Contract Projects and Research Grants**

### ***Principal Investigator***

- Nov 2022- July 2024 Development of Autonomous Electric Bus Prototype with Communication Between Autonomous Electric Bus, People and Tourists using Mobile Application with 5G Technology in the Historical place, Funded by Office of The National Broadcasting and Telecommunications Commission
- July 2021- June 2022: Research and Development of 6-wheel Electric Multi-purpose Truck, Funded by Program Management Unit- Competitiveness (PMU C) and Sammitr Motor Manufacturing PLC.
- Sep 2020-Sep 2021: *A Feasibility Study on the Replacement of Current Diesel Vehicle by Electric, CNC, and Euro 6 Exhaust Emission Standard Vehicles in the Bangkok Metropolitan Region for Ambient PM2.5 Concentration Reduction*, Funded by National Research Council for Thailand joint with National Institute of Development Administration (NIDA).
- Jan 2020-Dec 2020: *xEV Comprehensive Research Project with KMUTT*, Funded by Toyota Daihatsu Engineering and Manufacturing (TDEM) and Toyota Motor Thailand.
- Jun 2019-July 2021: *Riding Behavior Study of Electric Motorcycle Sharing*, Funded by A.P. Honda.
- Dec 2018-Nov 2019 *Development of Evaluation of Electric Tuk-Tuk Powered by Dynax In-Wheel Motor*. Funded by Dynax Corporation, Japan.
- Aug 2018-Dec 2022: *Energy Recovery in Petroleum Processing via Integrated High Performance Technologies*, Funded by Malaysia-Thailand Joint Authority joint with Universiti Teknologi Malaysia.
- July-Dec 2018 *A Study of Business Models of Charging Stations for Supporting the Expansion of Electric Vehicle Adoption*, Funded by Energy Regulatory Commission.
- Feb-July 2018: *Networking Activity to Transform Electric Vehicle Industry to Next Generation Mobility Industry*, Funded by Department of Industrial Promotion.
- July 2017–Dec 2018: *Design of Lightweight Structure for Electric Micro Bus in Thailand using Composite Materials*, Funded by Thailand Research Fund.
- Feb-Oct 2017 *Research in Electric Vehicle Technology under Technology and Innovation Learning Center for Electric Vehicle Industry Development*, Thailand Automotive Institute.

- July 2016–Dec 2019: *Development and Promotion of Electric Bus in Thailand*, Funded by Korea Energy Technology Evaluation and Planning (KETEP).
- Aug 2015-July 2016: *Policy Research to Enhance Green Automotive Industry in Thailand*. Funded by Thailand Research Fund.
- Dec 2014-Dec 2016: *Feasibility Study of Mass Production and Adoption of Electric Motorcycle and Electric Micro Mobility in Thailand*. Funded by National Science and Technology Development Agency (NSTDA) and Electricity Generating Authority of Thailand (EGAT).
- July 2014-June 2016: *Design and Development of Ultra Compact Eco-Mobility Vehicle for Thailand (Eco-MOVE)*. Funded by Sammitr Green Power Co.Ltd., Thailand.
- June 2015: *Guideline for Development of Electric Bus in Thailand*. Supported by Program for Automotive and Autopart Industry, National Science and Technology Development Agency (NSTDA), Thailand.
- May 2014-Apr 2015: *Investigation of Effect of Ignition Improvers on Combustion Characteristics of Ethanol under CI Engine Conditions*. Supported by Higher Education Research Promotion and National Research University Project of Thailand, Office of the Higher Education Commission.
- Jun 2012 - May 2013: *Assessment of Electric Vehicle Technology Development and Its Implication in Thailand*. Funded by National Science and Technology Development Agency (NSTDA) and Electricity Generating Authority of Thailand (EGAT).
- Apr-Jul 2010: *Summary of the Current State of Technology and Future Trends in Transportation Sector. For Study of Science Technology and Innovation Policy in Energy and Environment*. Proposed to The Joint Graduate School of Energy and Environment (JGSEE), and Funded by National Science Technology and Innovation Policy Office (STI).
- Aug 2009-Feb 2011: *Development of Electrospray for Coating Ceramic Mold with Rubber Coagulant*. Funded by Thailand Research Fund under Medium Project on Rubber.
- Aug-Oct 2008: *The Evaluation on the Promotion of Gasohol E85 Policy for the Transportation Sector*. Funded by The Joint Graduate School of Energy and Environment, proposed to Thailand Research Fund.
- Jul 2008-Dec 2012: *Development of Diesel Dual Fuel (DDF) Conversion System Operating Natural Gas and Diesel using Electronic Control Unit (ECU)*. Funded by Thailand Research Fund under Master Research Grants (Window I 2008).
- Jan-Aug 2008: *The Guideline Development of Important Database Administration for Planning, Monitoring and Evaluation on the Energy Saving Policy for the Land Transportation Sector*. Funded by The Joint Graduate School of Energy and Environment, proposed to Thailand Research Fund.
- Jul-Oct 2006: *Design System of Visualisation Technique for In-Cylinder Phenomena using Natural Gas in the Retrofitted Gasoline Engine*. Funded by National Electronics and Computer Technology Centre (NECTEC), Thailand.

### **Co-Investigator**

- Oct 2021- Jan 2023: *Next Generation Automotive Industry's Capability Enhancement in Thailand through the Development of Swappable Battery Platform for Electric Motorcycle*, Funded by Program Management Unit- Competitiveness (PMU C).
- Apr 2018 – Mar 2019: *Development of Plan for Public Transport System Utilizing Electric Vehicle Technology*, Funded by Office of Transport and Traffic Policy and Planning.
- Sep -Nov 2017: *Study and Recommendation of Government Actions for Human Resource Development in the EEC area*, Funded by Eastern Economic Corridor Office of Thailand.
- Sep-Oct 2014: *Investigation of Problem and Maintenance Schedule of Bus Rapid Transit (BRT) System (Sathon–Ratchaphruek route)*, Contracted with Krungthep Thanakom PCL.
- Jan 2013-Feb 2014: *Study and Testing the Use of Gasohol E85 in the Laboratory of Small Agricultural Engine and Motorcycle*, Contracted with Frontier Engineering Consultant Co.,Ltd. Funded by Department of Alternative Energy Development and Efficiency (DEDE).
- Jan 2013-Jan 2014: *Study on the Setting up of Energy Efficiency Standard for Heat Pump*, Funded by Department of Alternative Energy Development and Efficiency (DEDE).
- May 2012 – Aug 2012: *Industry Clinique for Small and Medium Enterprises Suffered from Flood Crisis*. Contracted with Department of Industrial Promotion, Ministry of Industry.
- Mar 2012 - Aug 2012: *Energy Saving for Small Enterprise: ES for SE* Contracted with Department of Industrial Works Ministry of Industry.
- Dec 2010- Jun 2013: *Demonstration of Thailand's First Ethanol Bus*. Jointed with 12 partners during Dec 2010- Aug 2011 by Energy Conservation Promotion (ENCON) Fund, Energy Policy and Planning Office (EPPO) Ministry of Energy.
- Oct 2010-Sep 2011: *Feasibility Study of Using the Energy Saving Device for Automobile in Bangkok*. Proposed to Energy Conservative (ENCON) Fund, Energy Policy and Planning Office (EPPO).
- Oct 2010-Sep 2011: *A Case Study on Energy and CO<sub>2</sub> Intensities in Thai Freight Transport by Trucks*. Funded by Asian Transportation Research Society (ATRANS).
- Oct 2010-Jan 2011: *Feasibility Study of Energy Conversion Analysis of Thermal Process for Electric Generation from Municipal Solid Waste (MSW) of Hat Yai City*. Contracted with GiDec Ltd.
- Nov 2009-Sep 2010: *Possibility of Ethanol Usage as Diesel Substitute in Thai Transportation Sector*. Funded by Asian Transportation Research Society (ATRANS), Thailand.
- Jan-Aug 2009: *Development Program of Bio Ethanol Engine Heat Pump for Driving Air Conditioners*. Contracted with Department of Industrial Promotion, Ministry of Industry, Thailand.
- Oct 2008-Apr 2010: *Development of Bio Ethanol Engine Heat Pump for Driving Air Conditioners*. Cooperative Research among Department of Industrial Promotion (DIP), Ministry of Industry, the Kingdom of Thailand and Japan Automotive Research Institute (JARI) Funded by New Energy and Industrial Technology Development Organization (NEDO), Japan.

- Jun-Aug 2008: 6<sup>th</sup> *Total Energy Management (TEM 6) Program* for Improving the Energy Management on the Collaborative Industrial Factory. Contracted with Department of Industrial Promotion, Ministry of Industry, Thailand.
- Dec 2007-Jun 2008: *Feasibility study of Bio-fuel Heat Pump (BHP) System for Air Condition Unit*. Contracted with Department of Industrial Promotion, Ministry of Industry, Thailand.
- 2007-2008 *Training Primary School Teachers to Create the Teaching Media for Lifelong Learning*, Phrarajatan Thap Lamu School, Phang Nga, Thailand, Tsunami Disaster Relief by KMUTT Working Group under H.R.H. Princess Maha Chakri Sirindhorn's Initiative Projects, Supported by KMUTT.
- Aug-Oct 2006: *Design and Built of Engine Testing Room*. Contracted with National Metal and Materials Technology Center (MTEC), Thailand.
- Jan-May 2005: *Spray Droplet Size and Current Measurement of the Gasoline Electrostatic Injector*. Funded by Scion-Sprays Ltd, UK.
- Oct 2001: *Smoke Visualisation of Flows within a Diskus Inhaler*. Granted by GlaxoSmithKline (GSK), UK.

#### **Project Advisor**

- Oct 2021-Sep 2022: *Study of the Effects of Biofuels on the Characteristics of Ultrafine Particulate Matter from Diesel Engine integrated Unit of Partially Premixed Compression Ignition (PPCI) and the Installation of Diesel Particulate Filter (DPFs) into the Exhaust Line*, funded Thailand Science Research and Innovation (TSRI).
- July 2021-Mar 2022: *Research & Development of Electric Motorcycle Prototype for Testing*, granted by GP Motor (Thailand).
- July 2016-Mar 2016: *The Study of Safety Requirement Draft for Electric Vehicle in Thailand*, funded by Road Safe Fund and Proposed to Department of Land Transport, Thailand.
- May-July 2015: *Investigation of Energy Efficiency of Electric Bus*, granted by Loxley Plc, Thailand.
- Apr 2012-May 2013: *Feasibility Study of Commercial Electric Passenger Vehicle and Charging Station in Thailand* by Joint Graduate School of Energy and Environment (JGSEE), Granted by PTT Plc, Thailand.
- Jan 2013-Aug 2013: *Research Study on the Setting up of Fuel Efficiency Standard for Vehicle* by Thailand Automotive Institute, Funded by Department of Alternative Energy Development and Efficiency (DEDE).
- Jan 2013-Dec 2013: *Human Resource Development Program for Automotive Industry* by Thailand Automotive Institute, Funded by Office of Industrial Economics

#### **Research Publications**

##### **Peer-Reviewed Journals**

- Aiemsathit, P., Narkchinwong, P., Sriburin, J., Kariyawasam, H., **Laonual, Y.** (2023) Effectiveness of Spraying F-500 Substance of Twin-Fluid Nozzle on Suppression for Lithium-Ion Battery Cell Fires,



- 2023 IEEE Transportation Electrification Conference and Expo, Asia-Pacific (ITEC Asia-Pacific), Chiang Mai, Thailand, 2023, pp. 1-6. <https://ieeexplore.ieee.org/document/10372231>
- Charoen-amornkitt,P., Nantasaksiri, K., Ruangjirakit, K., **Laonual, Y.** (2023) Energy Consumption and Carbon Emission Assessment of Battery Swapping Systems for Electric Motorcycle, *Heliyon*, 9, e22887. <https://doi.org/10.1016/j.heliyon.2023.e22887>
  - Munsin, R., Udtasri, J., Topaiboul, S., Kowtakul, P., Yeunyongkul, P., Nuntapap, N., Jarupoom, P., Rakyat, M., **Laonual, Y.**, Srichai, P., Ruttanadech, N., Chungcharoen, T. (2022) *A Study on Binderless Co-Pelletization of Industrial Rice-Powder Wastes and Teak Sawdust at Low and Elevated Temperatures*. *Case Studies in Chemical and Environmental Engineering*, 6, 100250. <https://doi.org/10.1016/j.cscee.2022.100250>.
  - Chombo, P.V., **Laonual, Y.** (2022) *Quantification of Heat Energy Leading to Failure of 18650 Lithium-ion Battery Abused by External Heating*. *Journal of Loss Prevention in the Process Industries*, 79, 104855. <https://doi.org/10.1016/j.jlp.2022.104855>
  - Hemisi, C.H., Chombo, P.V., **Laonual, Y.**, Wongwises, S. (2022) *An Electro-Thermal Model to Predict Thermal Characteristics of Lithium-Ion Battery Under Overcharge Condition*, *Energies* 15, 2284. <https://doi.org/10.3390/en15062284>
  - Chombo, P.V., **Laonual, Y.** (2022) *Prediction of the Onset of Thermal Runaway and Its Thermal Hazards in 18650 Lithium-ion Battery Abused by External Heating*. *Fire Safety Journal*, 129, 103560. <https://doi.org/10.1016/j.firesaf.2022.103560>
  - Bobi, S., Kashif, M., **Laonual, Y.** (2022) *Combustion and Emission Control Strategies for Partially-Premixed Charge Compression Ignition Engines: A Review*, *Fuel*, 310 (A), 122272. <https://doi.org/10.1016/j.fuel.2021.122272>
  - Bobi, S., **Laonual, Y.** (2022) *Evaluation of Heat Loss to Cylinder Wall of Compression Ignition Engine by Heat Transfer Models*, *GMSARN International Journal*, 16 (3), pp 240-246. <http://gmsarnjournal.com/home/wp-content/uploads/2021/10/vol16no3-3.pdf>
  - Chombo, P.V., **Laonual, Y.**, Wongwises, S. (2021) *Lessons from the Electric Vehicle Crashworthiness Leading to Battery Fire*, *Energies*, 14 (16), 4802. <https://doi.org/10.3390/en14164802>
  - Mbulu, H., **Laonual, Y.**, Wongwises, S. (2021) *Experimental Study on the Thermal Performance of a Battery Thermal Management System using Heat Pipes*, *Case Studies in Thermal Engineering*, 26, 101029. <https://doi.org/10.1016/j.csite.2021.101029>
  - Chombo, P.V, **Laonual, Y.** (2020) *A Review of Safety Strategies of a Li-ion Battery*, *Journal of Power Sources*. <https://doi.org/10.1016/j.jpowsour.2020.228649>
  - Kunakorn-ong, P., Ruangjirakit, K., Jongpradist, P., Aimmanee, S., **Laonual, Y.** (2020) *Design and Optimization of Electric Bus Monocoque Structure Consisting of Composite Materials*, *Proceedings of*

*the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science.*

<https://doi.org/10.1177/0954406220917690>

- Munsin, R., **Laonual, Y.**, Jugjai, S., Matsuki, M., and Kosaka, H. (2015) *Effect of Glycerol Ethoxylate as an Ignition Improver on Injection and Combustion Characteristics of Hydrous Ethanol under CI Engine Condition*, *Energy Conversion and Management*, 98, pp 282-289. <https://doi.org/10.1016/j.enconman.2015.03.116>
- Jugjai, S. Praweenvisan, A., **Laonual, Y.** (2015) *Flow and Mixing in a Model Swirl Combustor Equipped with a Telescopic End Plate Porous Medium*, *Journal of Research and Applications in Mechanical Engineering*, 3 (1), pp 7-21  
<https://ph01.tci-thaijo.org/index.php/jrame/article/view/141533/104877>
- Munsin, R., **Laonual, Y.**, Jugjai, S., Imai, Y. (2013) *An Experimental Study on Performance and Emissions of a Small SI Engine Generator Set Fuelled by Hydrous Ethanol with High Water Contents up to 40%*. *Fuel*, 106, pp 586-592. <https://doi.org/10.1016/j.fuel.2012.12.079>
- Gupta, P., Wang, V., Kanbua, P. and **Laonual, Y.** (2011) *Impact of Water Contents Blended with Ethanol on SI Engine Performance and Emissions*, *Journal of Research and Applications in Mechanical Engineering*, 1(1), pp 49-56.  
<https://ph01.tci-thaijo.org/index.php/jrame/article/view/150231>
- Makmool, U., Jugjai, S., Tia, S., **Laonual, Y.**, Vallikul, P. and Fungtammasan, B. (2011) *Laser-Based Investigations of Flow Fields and OH Distributions in Impinging Flames of Domestic Cooker-top Burners*, *Fuel*, 90, pp 1024-1035. <https://doi.org/10.1016/j.fuel.2010.11.011>
- Shrimpton, J.S., and **Laonual, Y.** (2006) *Dynamics of Electrically-Charged Transient Evaporating Sprays*. *International Journal for Numerical Method in Engineering*, 67(8), pp 1063 - 1081. <https://doi.org/10.1002/nme.1647>

### **Peer-Reviewed Conference**

- Aiemsathit, P., Narkchinwong, P., Sriburin, J., Kariyawasam, H., **Laonual, Y.** (2023) *Effectiveness of Spraying F-500 Substance of Twin-Fluid Nozzle on Suppression for Lithium-Ion Battery Cell Fires 2023 IEEE Transportation Electrification Conference and Expo, Asia-Pacific (ITEC Asia-Pacific), Chiang Mai, Thailand, 2023*, pp. 1-6. <https://ieeexplore.ieee.org/document/10372231>
- Leelamian, G., Chynsriroj, P., Yamprien, P., Voratartrakul, A., Seeluang, K., Phaireeron, P., Walitwarangkoon, C., Mahasaksiri, P., Chollacoop, N., **Laonual, Y.** (2021) *Modification of Mobile Air-Conditioning Systems (MACs) for Small Electric Vehicle Conversion*, *International Conference on Applied Energy 2021 (ICAЕ)*, 29 November – 5 December. Thailand/Virtual. *Energy Proceedings*, Vol. 23. <https://www.energy-proceedings.org/wp-content/uploads/icae2021/1643262143.pdf>

- Kittijungjit, T., Lapchit, P., Klamrassamee, T., Sukjai, Y., **Laonual, Y.** (2020) *Thermodynamic and Economic Analyses of Power Generation from Gas Turbine Exhaust*, The 5<sup>th</sup> TSME International Conference on Mechanical Engineering (TSME-ICOME), 1-4 December. Ubon Ratchathani, Thailand.
- Chombo, P.V, **Laonual, Y.** (2020) *Investigation of the Thermal Hazard of Faulty Li-ion Battery under External Heating*, International Conference on Energy, Environment and Climate Change (International Conference on Utilities and Exhibition)- ICUE 2020, Asian Institute of Technology Conference Center (AITCC), Pathumthani, Thailand, Hybrid Mode-Virtual Conference and on-Location, 20-22 October. <https://doi.org/10.1109/ICUE49301.2020.9307122>
- Tangsriwong, K., Lapchit, P., Kittijungjit, T., Klamrassamee, T., Sukjai, Y., **Laonual, Y.** (2020) *Modeling of Chemical Processes using Commercial and Open-Source Software: A Comparison between Aspen Plus and DWSIM*, International Conference on Sustainable Energy and Green Technology 2019 (SEGT), Millennium Hilton Bangkok, 11-14 December. IOP Conf. Series: Earth and Environmental Science 463 (2020) 012057. <http://doi.org/10.1088/1755-1315/463/1/012057>
- Ruangjirakit, K., **Laonual, Y.**, Tangamchit, P., Lim, O. (2019) *An Evaluation of Electric Bus Energy Consumption in Bangkok Traffic Conditions*, 32<sup>nd</sup> Electric Vehicle Symposium (EVS32), Lyon, France, 19-22 June.
- Ruangjirakit, K., Kunakorn-ong, P., Jongpradist, P., Aimmanee, S., **Laonual, Y.**, *Design of Lightweight Electric Bus in Thailand using Composite Materials*, 32<sup>nd</sup> Electric Vehicle Symposium (EVS32), Lyon, France, 19-22 June.
- Yiankamolsing, C., **Laonual, Y.**, Channarong, S., Katikawong, W., Sasawat, P., Yaotanee, B. (2019) *A Development of Electric Tuk Tuk Conversion in Thailand*, 2019 IEEE Transportation Electrification Conference and Expo, Asia-Pacific (ITEC Asia-Pacific 2018), BITEC, Bangkok, 8-10 May. <http://doi.org/10.1109/ITEC-AP.2019.8903895>
- Charadsuksawat, A., **Laonual, Y.**, Chollacoop, N. (2018) *Comparative Study of Hybrid Electric Vehicle and Conventional Vehicle under New European Driving Cycle and Bangkok Driving Cycle*, 2018 IEEE Transportation Electrification Conference and Expo, Asia-Pacific (ITEC Asia-Pacific 2018), BITEC, Bangkok, 6-9 June. <http://doi.org/10.1109/ITEC-AP.2018.8432599>
- Ruangjirakit, K., **Laonual, Y.**, Charadsuksawat, A., Kiattikomol, V., Sridan, S. (2018) *A Study of Grid-to-Wheel Energy Consumption of Electric Vehicle on Real Road Tests in Bangkok*, 2018 IEEE Transportation Electrification Conference and Expo, Asia-Pacific (ITEC Asia-Pacific 2018), BITEC, Bangkok, 6-9 June. <http://doi.org/10.1109/ITEC-AP.2018.8432596>
- Chanthevee, P., Hirai, S., Lailuck, V., **Laonual, Y.**, Sriam P., Rompho, S., Chanurai, N., Masomtob, M. (2018) *A Simplified Approach for Heat Generation Due to Entropy Change in Cylindrical LCO Battery*, 2018 IEEE Transportation Electrification Conference and Expo, Asia-Pacific (ITEC Asia-Pacific 2018), BITEC, Bangkok, 6-9 June. <http://doi.org/10.1109/ITEC-AP.2018.8433303>

- Chingthamai, N., Korakot, S., **Laonual, Y.**, (2017) *Experimental Investigation of Electrospray Coating Technique for Microporous Layer of Electrodes in PEMFCs*, The 8th International Conference on Applied Energy (ICAE2016), Beijing International Convention Center, Beijing, China, 8-11 October 2016, Energy Procedia, 105, 1806-1812. <http://doi.org/10.1016/j.egypro.2017.03.523>
- Ratanarodcharoen. S., Ruangjirakit. K., Kaewtatip. P., **Laonual. Y.**, Tangamchit. P, Limthongkul. P. (2016) *Performance Improvement of Existing Electric Motorcycles in Thailand by Modifying Battery from Lead Acid Battery to Li-ion Battery*, The 7<sup>th</sup> TSME International Conference on Mechanical Engineering, Duangtawan Hotel, Chiang Mai, 13-16 December.
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### **Professional Magazine**

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- **Laonual, Y.** (2013) *Ethanol Fuel Technology for Substitution of Diesel Part 1 & 2*, Automotive Navigator Magazine, Thailand Automotive Institute, Jul-Sep 2013 & Oct -Dec 2013 issues.
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### **Theses**

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- **Laonual, Y.** (2001) *Visualization of Internal Fluid Flow and Sprays with Scaled-up Valve Covered Orifice (VCO) Injection Nozzles*. M.Phil. Thesis, UMIST, (now the University of Manchester).
- Chittawanit, S., and **Laonual, Y.** (1998) *Single Droplet Combustion of Diesel Blends with Palm Oils*. B.Eng. Mechanical Engineering Project Report, SIIT.

### **Advisers of Postgraduate Study**

Current Postgraduate Advisees: 6 master's degree students and 1 PhD Student

Completed Postgraduate Advisees: 16 master's degree students and 2 PhD Student

### **Theses under Supervision**

#### **Doctoral 's Thesis**

1. Ronnachart Munsin, *A Fundamental Study of Bio-Ethanol Combustion under SI and CI Engine Conditions*. D.Eng. in Mechanical Engineering, KMUTT, Joint-supervised with Prof. Sumrerng Jugjai, D.Eng., Academic Year 2014.
2. Pius Victor Chombo, *Analysis of the Destructive Energy and Thermal Hazards on the Failure of 18650 Li-ion Battery Under External Heating Condition*, PhD in Energy Technology, Academic Year 2021.

## Master's Thesis

1. Charles Mohamed Hamisi, *Computational Modelling and Simulation of Lithium-Ion Battery Thermal Behavior Overcharged under Controlled Surrounding Temperatures*, M.Eng. in Energy Technology and Management, KMUTT, Academic Year 2021.
2. Shahzad Bobi, *Investigation of Diesel Combustion Characteristics and Energy Balance in Transition from Compression Ignition to Partially Premixed Compression Ignition Combustions*, M.Phil. in Energy Technology, Academic Year 2021.
3. Chai Wayne Ng, *Modelling and Simulation of Electric Vehicle Consumption for Range Estimation*, M.Eng. in Automotive Engineering, KMUTT, Joint-supervised with Dr. Nuwong Chollacoop, Academic Year 2020.
4. Pemamwat Chanthavee, *Thermal Performance of Cooling System using Liquid Coolant at Cylindrical Cell Terminals for Lithium-ion Battery Module*, M.Eng. in Automotive Engineering, KMUTT, Joint-supervised with Dr. Manop Masomtob, Academic Year 2017.
5. Natthika Chingthamai, *Development of Electrospraying Coating Technique for Catalyst Deposition in Proton Exchange Membrane Fuel Cells (PEMFCs)*, M.Eng. in Mechanical Engineering, KMUTT, Joint-supervised with Dr. Korakot Sombatmankhong, Academic Year 2017.
6. Athimet Charadsuksawat, *Comparative Study of Hybrid Electric Vehicle Energy Management under Testing Conditions between Bangkok and European Driving Cycle*, M.Eng. in Automotive Engineering, KMUTT, Joint-supervised with Dr. Nuwong Chollacoop, Academic Year 2017.
7. Onnalin Chayaphum, *The Effect of Mobile Air Conditioning System Operation on Fuel Consumption Based on the Driving Cycle Tests for Sub-Compact Cars*, M.Eng. in Automotive Engineering, KMUTT, Joint-supervised with Dr. Atikorn Wongsatanawarid, Academic Year 2016.
8. Sitthibhorn Chiawthada, *Investigation of combustion and emission characteristic of ethanol direct injection engine for partially premixed combustion (PPC) and homogeneous charge compression ignition combustion (HCCI)*, M.Eng. in Automotive Engineering, KMUTT, Joint-supervised with Dr. Peerawat Saisirirat, Academic Year 2016.
9. Rachen Chumueang, *Investigation of Change in Injection Timings and Injection Pressures on Combustion Characteristics and Emissions of Ethanol Partially Premixed Combustion*, M.Eng. in Mechanical Engineering, KMUTT, Joint-supervised with Dr. Nuwong Chollacoop, Academic Year 2014.
10. Veeraphol Wang, *The Investigation of Pre-Injection Flow Characteristics in the Constant Volume Combustion Chamber using the Particle Image Velocimetry (PIV) Technique*, M.Eng. in Automotive Engineering, KMUTT, Joint-supervised with Dr. Nuwong Chollacoop, Academic Year 2014.
11. Nawee Nuntapap, *Investigation of Normal and Abnormal Combustion Characteristic at High Load Conditions of Dual Fuel Engine using Natural Gas and Diesel as Fuels*, M.Eng. in Mechanical Engineering, KMUTT, Academic Year 2013.

12. Rubchai Jensrakoo, *Development of Control Strategy for Flex-Fuel Engine using Ethanol Content*, M.Eng. in Electrical Engineering (Control System & Instrumentation Engineering), Joint-supervised with Dr. Sarawan Wongsas and Dr. Diew Koolpiruck, Academic Year 2013.
13. Chanon Koythong, *Development of Diesel Dual Fuel (DDF) Conversion System Operating Natural Gas and Diesel using Electric Control Unit (ECU)*, M.Sc. in Robotic and Automation, KMUTT, Joint-supervised with Dr. Szathys Songshon, Academic Year 2011.
14. Puwadon Kaewkamjun, *Development of Electrospray for Coating Ceramic Mold with Rubber Coagulant*, M.Eng. in Mechanical Engineering, KMUTT, Joint-supervised with Dr. Szathys Songshon, Academic Year 2011.
15. Ob Nilaphai, *Study of the Effect of Injection Strategies using Biodiesel on a Combustion Characteristics of Common Rail Injection System Compression Ignition (CI) Engine*, M.Eng. in Mechanical Engineering, KMUTT, Joint-supervised with Dr. Szathys Songshon and Dr. Nuwong Chollacoop, Academic Year 2010.
16. Annop Praweenvisan, *Study of the Mixing within Liquid Fuel Porous Burner by using Particle Image Velocimetry*, M.Eng. in Mechanical Engineering, KMUTT, Joint-supervised with Prof. Sumrerng Jugjai, D.Eng, Academic Year 2009.

#### **Personal Interests and Hobbies**

- **Volunteering Work**, e.g. Rural School Development Activity
- **Playing Sport** e.g. Biking, Squash, Badminton, Football
- **Reading Book**, e.g. Thai and World History, Biography of Important People
- **Others**, e.g. Driving, Sightseeing, Watching Movie and Musical Play and Collecting Stamp