

## Assoc. Prof. Dr. Pipat Chaiwiwatworakul

รศ.ดร. พิพัฒน์ ชัยวิวัฒน์วรกุล

### 1. Educational Background

- Year A.D. 2007 Ph.D. (Energy Technology), Asian Institute of Technology, Thailand  
(ปร.ด. (เทคโนโลยีพลังงาน), สถาบันเทคโนโลยีแห่งเอเชีย, 2550)
- Year A.D. 1998 M.Eng. (Energy Technology), Asian Institute of Technology, Thailand  
(วศ.ม. (เทคโนโลยีพลังงาน), สถาบันเทคโนโลยีแห่งเอเชีย, 2541)
- Year A.D. 1994 B.Eng. (Mechanical Engineering), Chulalongkorn University, Thailand  
(วศ.บ. (วิศวกรรมอิเล็กทรอนิกส์เชิงกล), จุฬาลงกรณ์มหาวิทยาลัย, ประเทศไทย, 2537)

### RESEARCH INTEREST

Rational use of energy and energy conservation in buildings, Efficient lighting, daylighting and building heat transfer, Human visual and thermal comfort, Atmospheric science

### WORK EXPERIENCE

- Oct 2007 - Present Lecturer, **Joint Graduate School of Energy and Environment (JGSEE)**  
King Mongkut's University of Technology, Thonburi (KMUTT)
- Apr 2007 - Oct 2007 Energy Engineer, Panya Consultants Co., Ltd.
- Jan 2000 - Dec 2006 Research Associate,  
Energy Field of Study, School of Environment, Resources and  
Development (SERD), Asian Institute of Technology (AIT)
- Sep 1998 - Dec 1999 Mechanical Engineer, Honeywell System (Thailand) Co. Ltd.
- Apr 1994 - Dec 1996 Mechanical Engineer (Building system designer)  
Visanucom Engineering Consultant Co. Ltd.

### PUBLICATIONS

#### International Journal

- Aryal, A., Chaiwiwatworakul, P., and Chirarattananon, S., (2023) An experimental study of thermal performance of the radiant ceiling cooling in office building in Thailand. *Energy and Buildings*. 283.March 2023
- Ingabo, S.N., Chaiwiwatworakul, P., and Chirarattananon, S., (2022) Adjustable external horizontal shading slats for daylighting in office buildings in Thailand. *Asia-Pacific Journal of Science and Technology*. 27(1).Jan-Feb 2022
- Chawphongphang, N., Chaiwiwatworakul, P., and Chirarattananon, S., (2022) Global and Diffuse Solar Radiation Characteristics of Bangkok and its Forecast Using Artificial Neural Network. *International Energy Journal*. 22(4).December 2022
- Aryal, A., Chaiwiwatworakul, P., Chirarattananon, S., and Wongsuwan, W., (2022) Subjective assessment of thermal comfort by radiant cooling in a tropical hot humid climate. *Energy and Buildings*. 254.January 2022
- Ngamket, K., Wangyao, K., Patumsawad, S., Chaiwiwatworakul, P., and Towprayoon, S., (2021) Quality improvement of mixed MSW drying using a pilot-scale solar greenhouse

biodrying system. *Journal of Material Cycles and Waste Management*. 23(2): p. 436-448.Mar

- Ibrahim, F., Chirarattananon, S., Rakkwamsuk, P., Chaiwiwatworakul, P., Chuanghote, S., and Hien, V.D., (2021) Solar Drive LiBr-H<sub>2</sub>O Absorption Chiller Simulation to Analyze Two Backup Options. *International Energy Journal*. 21(3): p. 361-374.Sep
- Ibrahim, F., Chirarattananon, S., Rakkwamsuk, P., Chaiwiwatworakul, P., Chuanghote, S., and Hien, V.D., (2021) Controlling Temperature and Relative Humidity of Ventilation Air by using a Cooling Coil and Rotary Heat Exchangers. *International Energy Journal*. 21(3): p. 401-414.Sep
- Aryal, A., Chaiwiwatworakul, P., Chirarattananon, S., and Wattanakit, S., (2021) A Field Survey of Thermal Comfort in Air-conditioned Space in Songkhla's Hot Humid Climate. *Engineering Journal-Thailand*. 25(2): p. 235-244.Mar
- Tummu, P., Chirarattananon, S., Hien, V.D., Chaiwiwatworakul, P., and Rakkwamsuk, P., (2017) Formulation of an OTTV for walls of bedroom in Thailand. *Applied Thermal Engineering*. 113: p. 334-344.February 2017
- Sanglee, K., Chuanghote, S., Chaiwiwatworakul, P., and Kumnorkaew, P., (2017) PEDOT:PSS Nanofilms Fabricated by A Non-Conventional Coating Method for Uses as Transparent Conducting Electrodes in Flexible Electrochromic Devices. *Journal of Nanomaterials*.January 2017
- Mettanant, V., Chaiwiwatworakul, P., and Chirarattananon, S., (2017) A model of Thai's sky luminance distribution based on reduced CIE standard sky types. *Renewable Energy*. 103: p. 739-749.April, 2017
- Fathoni, A.M., Chaiwiwatworakul, P., and Mettanant, V., (2016) Energy analysis of the daylighting from a double-pane glazed window with enclosed horizontal slats in the tropics. *Energy and Buildings*. 128: p. 413-430.September 2016
- Bukoski, J.J., Chaiwiwatworakul, P., and Gheewala, S.H., (2016) Energy savings versus costs of implementation for demand side management strategies within an energy-efficient tropical residence. *Energy Efficiency*. 9(2): p. 473-485.April 2016
- Bukoski, J., Chaiwiwatworakul, P., and Gheewala, S.H., (2016) The life cycle assessment of an energy-positive peri-urban residence in a tropical regime. *Journal of Industrial Ecology*. 21(5): p. 1115-1127.September 2016
- Taengchum, T., Chirarattananon, S., Exell, R.H.B., and Chaiwiwatworakul, P., (2014) Tracing of daylight through circular light pipes with anidolic concentrators. *Solar Energy*. 110: p. 818-829.December 2014
- Tummu, P., Chirarattananon, S., Hien, V.D., Chaiwiwatworakul, P., and Rakkwamsuk, P., (2013) Thermal performance of insulated walls enclosing residential spaces in Thailand. *Energy and Buildings*. 61(0): p. 323-332.June 2013
- Taengchum, T., Chirarattananon, S., Exell, R.H.B., Kubaha, K., and Chaiwiwatworakul, P., (2013) A study on a ventilation stack integrated with a light pipe. *Applied Thermal Engineering*. 50(1): p. 546–554.January 2013
- Chaiwiwatworakul, P. and Chirarattananon, S., (2013) Luminous efficacies of global and diffuse horizontal irradiances in a tropical region. *Renewable Energy*. 53(0): p. 148-158.May 2013
- Chaiwiwatworakul, P. and Chirarattananon, S., (2013) A double-pane window with enclosed horizontal slats for daylighting in buildings in the tropics. *Energy and Buildings*. 62(0): p. 27-36.July 2013

- Matuampunwong, D., Chiraratnanon, S., and Chaiwiwatworakul, P., (2012) Energy Saving Potential from Daylighting through External Multiple-Slat Shaded Window in the Tropics. *International Journal of Renewable Energy Research*. 2(3): p. 369-375. Jul - Aug 2012
- Samuhatananon, S., Chirarattananon, S., and Chaiwiwatworakul, P., (2011) An Experimental and Analytical Study of Transmission of Daylight Through Circular Light Pipes. *LEUKOS: The Journal of the Illuminating Engineering Society of North American*. 7(4): p. 197-199. April, 2011
- Chirarattananon, S.C., P.; Hien, V. D.; Rakkwamsuk, P.; Kubaha, K., (2010) Assessment of energy savings from the revised building energy code of Thailand. *Energy*. 35(4): p. 1741-1753 April 2010
- Chirarattananon, S.C., P, (2009) Application of Evolutionary Computation for Identification *LEUKOS* 5(2): p. 101-117. October 2009
- Chaiwiwatworakul, P.C., Surapong; Rakkwamsuk, Pattana, (2009) Application of automated blind for daylighting in tropical region. *Energy Conversion and Management*. 50(12): p. 2927-2943. December 2009

### **International Conference**

- Chityuenyong, P., Wongsuwan, W., Chaiwiwatworakul, P., and Anankawanich, N. (2022) Improvement of Radiant Cooling Panel (RCP) Air Conditioning (AC) using Model Predictive Control (MPC). in *ICBIR 2022 - 2022 7th International Conference on Business and Industrial Research, Proceedings*. Bangkok, Thailand. May 19-20, 2022.
- Aryal, A., Chaiwiwatworakul, P., and Chirarattananon, S. (2021) Experimental Observation on Air-Conditioning Using Radiant Chilled Ceiling in Hot Humid Climate in *International Conference on Environmental Engineering and Green Energy Technology (ICEEGET 2021)*. Bangkok Thailand. March 8-9, 2021.
- Aryal, A., Chaiwiwatworakul, P., and Chirarattananon, S. (2021) A simulation study of radiant chilled ceiling with dedicated outdoor air system for office buildings in Thailand. in *International Conference on Engineering and Industrial Technology (ICEIT 2020)*. Pattaya Thailand. September 11 - 13, 2020.
- Suwanphitak, T., Fukuda, S. and Chaiwiwatworakul, P. . (2020) Potential Assessment of Greenhouse Gas Reduction from Efficient Energy use in Pattaya Hotels, Thailand. Bangkok, Thailand in *7th ICSTR-International Conference on Science & Technology Research*. . 22-23 December 2020.
- Umar, S. and Chaiwiwatworakul, P. (2018) An Investigation of the Vertical Diffuse Efficacy of Solar Irradiance for Thailand's climate. in *2nd International Conference on Energy and Environmental Science (ICEES2018) & 4th International Conference on Renewable Energy Technologies (ICRET2018)*. Kuala Lumpur, Malaysia. January 16-18, 2018.
- Mettanant, V. and Chaiwiwatworakul, P. (2018) An application of automated slats for tropical daylighting. in *7th International Conference on Sustainable Energy and Environment (SEE2018)*. Bangkok, Thailand. 28-30 November.
- Mettanant, V. and Chaiwiwatworakul, P. (2016) Optimization of South Window Area for Buildings in Thailand. in *The 8th International Conference on Science, Technology & Innovation for Sustainable Well-Being (STISWB VIII)*. Yangyon, Myanmar. June 15-17, 2018.

- Tumm, P., Chirarattananon, S., Duc Hien, V., Chaiwiwatworakul, P. & Rakkwamsuk, P. (2016) Development of an OTTV for walls of bedroom. In: 6th International Conference on Sustainable Energy and Environment (SEE2016), Bangkok, Thailand.
- Sanglee, K., Chuangchote, S., Chaiwiwatworakul, P. & Kumnorkaew, P. (2016) Enhanced Transparent Conducting Films by Treated Process for Full Flexible Electrochromic Devices. In: NZAAR International Conference on Environmental Engineering and Renewable Energy, Putrajaya, Malaysia.
- Mettanant, V. & Chaiwiwatworakul, P. C., Surapong (2016) A method of automated blind system to control interior daylight in buildings. In: 6th International Conference on Sustainable Energy and Environment (SEE2016), Bangkok, Thailand.
- Leelapatree, C., Chaiwiwatworakul, P., Chuangchote, S., Chenvidhya, D. & Sriprapha, K. (2016) Thermal performance evaluation of semi-transparent photovoltaic (STPV) for building application in Thailand. In: 6th International Conference on Sustainable Energy and Environment (SEE2016), Bangkok, Thailand.
- Tumm, P., Chirarattananon, S., Rakwamsuk, P., Chaiwiwatworakul, P., Chuangchote, S. & Chiarakorn, S. (2015) Influencing Factors of Energy Use of Low and Medium Income Households in Thailand. In: 2015 International Conference on Alternative Energy in Developing Countries and Emerging Economies (2015 AEDCEE), Bangkok, Thailand.
- Tumm, P., Chirarattananon, S., Rakwamsuk, P., Chaiwiwatworakul, P., Chuangchote, S. & Chiarakorn, S. (2015) Influencing Factors of Energy Use of Low and Medium Income Households in Thailand. In: 2015 International Conference on Alternative Energy in Developing Countries and Emerging Economies (2015 AEDCEE), Bangkok, Thailand.
- Somwadee Wongsit and Pipat Chaiwiwatworakul (2015) Energy Analysis from Daylighting through Doublepane Window with Horizontal Slats in Thailand. in *Advances in Applied Science and Environmental Technology (ASET2015)*. Bangkok, Thailand. February 21-22, 2015
- Anuchit Wibun and Pipat Chaiwiwatworakul (2015) An Estimation of Thailand's Hourly Solar Radiation Using Markov Transition Matrix Method. in *International Conference on Energy: World Future Alternative*. Phitsanulok, Thailand. Nov. 30 - Dec. 2, 2015
- Nupakon Kotcharak and Pipat Chaiwiwatworakul (2015) Energy Saving Potential of Radiant Cooling for Air-Conditioning in Buildings in Tropical Climate. in *International Conference on Advances in Applied Science and Environmental Technology*. Bangkok, Thailand. February 21-22, 2015
- N Inklap, P Chaiwiwatworakul, S Chuangchote, P Rakkwamsuk and C Chirarattananon (2015) Performance Assessment of Dedicated Outdoor Air System for Office Building in Thailand. in *2015 International Conference on Alternative Energy in Developing Countries and Emerging Economies (AEDCEE2015)*. Bangkok, Thailand 28-29 May 2015
- Winit Aimjaijit, Pipat Chaiwiwatworakul and Surawut Chuangchote (2015) Development of Silica Gel for Dehumidification Process of Air Conditioning in Building. in *International Conference on Energy: World Future Alternative*. Phitsanulok, Thailand. Nov. 30 - Dec. 2, 2015
- Satinee Wattanakit, Surapong Chirarattananon and Pipat Chaiwiwatworakul (2014) Comfort assessment of radiant cooling in building in tropical climate. in *5th International Conference on Sustainable Energy and Environment (SEE2014)*. Bangkok, Thailand. November 19-21, 2014

- Preecha Tammu, Surapong Chirarattananon, Pattana Rakwamsuk, Pipat Chaiwiwatworakul and Surawut Chuangchote (2014) A Survey of Housing Features and Thermal Comfort of Medium and Low Income Earners in Thailand. in 5th International Conference on Sustainable Energy and Environment (SEE 2014). Bangkok, Thailand. November 19-21, 2014
- Wannakanit Supachart, Thanyalak Taengchum, Surapong Chirarattananon, Pattana Rakwamsuk and Pipat Chaiwiwatworakul (2014) A study of transmission and illumination of light through rectangular light pipes with bends. in 5th International Conference on Sustainable Energy and Environment (SEE2014). Bangkok, Thailand. November 19-21, 2014
- Akawat Suntudprom and Pipat Chaiwiwatworakul (2014) Daylighting through external vertical slats on east windowed façade in a tropical climate. in 5th International Conference on Sustainable Energy and Environment (SEE2014). Bangkok, Thailand. November 19-21, 2014
- Vichuda Mettanant, Pipat Chaiwiwatworakul and Pattana Rakkwamsuk (2014) An enhancement of the daylighting from side-window using two-section venetian blind. in 5th International Conference on Sustainable Energy and Environment (SEE2014). Bangkok, Thailand. November 19-21, 2014
- Surawut Chuangchote, Pipat Chaiwiwatworakul, Siriluk Chiarakorn, Pattana Rakkwamsuk and Surapong Chirarattananon (2014) Reducing Energy Consumption Cost and Greenhouse Gas Emission for Tropical Low-income Housing: Thailand Contribution. in 5th International Conference on Sustainable Energy and Environment (SEE 2014) Bangkok, Thailand. November 19-21, 2014
- Surapong Chirarattananon, Pipat Chaiwiwatworakul and Pattana Rakkwamsuk (2014) Energy consumption and GHG emission of Thailand's residential sector. in 5th International Conference on Sustainable Energy and Environment (SEE 2014) Bangkok, Thailand. November 19-21, 2014
- Rut Praditwattanakit, Pipat Chaiwiwatworakul, and Surapong Chirarattananon. (2013) Anidolic Concentrator to Enhance the Daylight Use in Tropical Buildings. in 2013 International Conference on Alternative Energy in Developing Countries and Emerging Economies (2013 AEDCEE). 30-31 May 2013. Bangkok, Thailand.
- Meka, S., Chaiwiwatworakul, P. & Chirarattananon, S. (2013) An Experimental and Simulation Study of Daylighting in Atrium Building in a Tropics. In: 2013 International conference on Alternative Energy in Developing Countries and Emerging Economies (2013 AEDCEE), Bangkok, Thailand.
- Nipaporn Nutprasert, Pipat Chaiwiwatworakul, Satinee Wongkee, and Surapong Chirarattananon. (2013) Radiant Cooling with Dehumidified Air Ventilation for Thermal Comfort in Buildings in Tropical Climate. in International Conference on Alternative Energy in Developing Countries and Emerging Economies (2013 AEDCEE). 30-31 May 2013. Bangkok, Thailand.
- Atitaya Saradphun, Pipat Chaiwiwatworakul, and Surapong Chirarattananon. (2012) An Experimental and Simulation Study of Daylighting in Atrium Building in the Tropics. in 4th International Conference on Sustainable Energy & Environment (SEE 2011): A Paradigm Shift to Low Carbon Society. 27-29 February 2012. Bangkok, Thailand.
- Wareerat Prasertsak, S Wongkee, Pipat Chaiwiwatworakul, and Surapong Chirarattananon. (2012) An Experimental Study of Radiant Cooling for Buildings in a

Tropical Climate. in 2012 International Conference on Power and Energy Engineering (ICPEE 2012). September 1-2, 2012. Phuket, Thailand.

- Thongchai Pongtaveesap, Surapong Chirarattananon, R. H. B Exell, and Pipat Chaiwiwatworakul. (2012) Air Flow in a Hot Water Induced Stack Subject to Wind Disturbance. in 2012 International Conference on Power and Energy Engineering (ICPEE 2012). 1-2 September 2012. Phuket, Thailand.
- Thitiya Kiewkem, Pipat Chaiwiwatworakul, and Surapong Chirarattananon. (2012) Desiccant Dehumidification System for Space Radiant Cooling in Tropical Climate. in International Conference on Power and Energy Engineering-ICPEE 2012. 1-2 Sep. 2012. Phuket, Thailand.
- Pooriwat Sertsungnern and Pipat Chaiwiwatworakul. (2011) Development of Scheme to Rate Energy Performance of Air-Conditioning System for Buildings : A Case of Thailand. in 9th Eco-Energy and Materials Science and Engineering Symposium (9th EMSES 2011) 25-28 May 2011. Chiang Rai, Thailand.
- Supatcharawadee Pornkrisadanuphan and Pipat Chaiwiwatworakul. (2011) A Genetic Algorithm-Based Approach Design for Energy-Efficient Building in Thailand. in 2011 International Conference on Environmental Science and Engineering (ICESE 2011). 1-3 April, 2011. Bali Island, Indonesia.
- Karun Pantong, Surapong Chirarattananon, and Pipat Chaiwiwatworakul. (2011) Development of Energy Conservation Programs for Commercial Buildings based on Assessed Energy Saving Potentials in 9th Eco-Energy and Materials Science and Engineering Symposium (9th EMSES 2011) 25-28 May 2011. Chiang Rai, Thailand.
- Litthanoulok Laspho and Pipat Chaiwiwatworakul. (2011) Assessment and Modeling of the Daylight Efficacy in Thailand. in 2011 IEEE First Conference on Clean Energy & Technology (CET). 27-29 June 2011. Kuala Lumpur, Malaysia.
- Jintaluk Kidhen, Surapong Chirarattananon, and Pipat Chaiwiwatworakul. (2011) Development of Energy Conservation Programs for Residential and Small Commercial Building in Thailand. in 2011 IEEE First Conference on Clean Energy & Technology (CET). 27-29 June 2011. Kuala Lumpur, Malaysia.
- S Chirarattananon, V.D Hien, and P. Chaiwiwatworakul. (2010) Life Cycle Costs of Glazed and Unglazed Insulated and Un-insulated Building Walls Enclosing Spaces Used under Different Functions. in International Conference on Applied Energy. 21-23 April 2010. Singapore.
- Surapong Chirarattananon, Pipat Chaiwiwatworakul, V.D Hien, and Pattana Rugkwamsuk. (2010) Development of An Energy Rating Scheme for Existing Thai Commercial Buildings. in Renewable Energy 2010 Joint with 4th International Solar Energy Society Conference, Asia Pacific Region. 27 June - 2 July 2010. Yokohama, Japan.
- Bayu Susila, Surapong Chirarattananon, Chumnong Sorapipatana, Pattana Rukkwamsuk, and Pipat Chaiwiwatworakul. (2009) A Study on Energy Efficiency of Hotels in Bali. in World Renewable Energy Congress 2009 - Asia (WREC 2009-Asia). 19-22 May 2009. Bangkok, Thailand.
- S. Chirarattananon, V.D. Hien, P. Chaiwiwatworakul, and P. Chirarattananon. (2009) Simulation of Transmission of Daylight through Cylindrical Light Pipes. in World Renewable Energy Congress 2009 - Asia (WREC 2009-Asia). 19-22 May 2009. Bangkok, Thailand.

- Surapong Chirarattananon and Pipat Chaiwiwatworakul. (2009) Evolutionary Computation: A New Method to Determine Parameter Values of Luminance Distribution Model for Tropical Sky in Sustainable Development to Save the Earth: Technologies and Strategies Vision 2050: (SDSE2008) 7-9 April 2009. Bangkok, Thailand.
- Pipat Chaiwiwatworakul and Surapong Chirarattananon. (2009) A Preliminary Study on Reducing of Representative Sets of CIE Standard Sky Luminance Distributions for Tropical Thai Sky. in World Renewable Energy Congress 2009 - Asia (WREC 2009-Asia). 19-22 May 2009. Bangkok, Thailand.
- Pipat Chaiwiwatworakul, Surapong Chairattananon, and Patana Rakkwamsuk. (2009) Automated Blind for Daylighting with Concern on Visual Comfort in Tropical Region. in The 3rd South East Asia Technical University Consortium (SEATUC). 24-27 February 2009. Universiti Teknologi, Malaysia.

#### **National Journal**

- Haule, E., Chaiwiwatworakul, P., and Chirarattananon, S. (2020) The Performance of External Vertical slats for Shading West Windows in Office Buildings. Naresuan University Journal: Science and Technology. 28(3): p. 69-78. July-September 2020
- Ingabo, S.N., Chaiwiwatworakul, P. and Mettanant, V. (2020) Impact of Adjustable External Horizontal Shading Slats on Indoor Visual Comfort in Tropical Climate. Naresuan University Journal: Science and Technology. 28(1): p. 23-37. Jan - Mar 2020
- Mettanant, V. and Chaiwiwatworakul, (2016) Heat Transmission of Double-Pane Windows with Horizontal Slats for Thailand. Science and Technology Mahasarakham University. 35(6): p. 698-705.

#### **National Conference**

- Surapong Chirarattananon, Pipat Chaiwiwatworakul, Vu Duc Hien, and Pattana Rugkwamsuk. (2010) Development of an Energy Performance Rating Scheme for Existing Thai Commercial Buildings. in 1st National Energy Congress: Energy Crisis and Solutions for Thailand. 18-20 February 2010. Bangkok Exhibition and Convention Center, Thailand.