

Yaw-Shyan Tsay

Current position

Associate Professor
Department of Architecture /
National Cheng-Kung University, Taiwan



Research Interests

Numerical Simulation of Indoor Environment Quality
Building Heat and Moisture Environment Control
Building Acoustic and Vibration
Energy Saving Design and Estimation of Building Equipments
Applications and Evaluation of Sustainable Design

Professional Specialties

Architectural Design
Building Equipments
Architectural Environmental Engineering
Design Methods of Sustainable Buildings
Green Material

Contact

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Education

2003.10 ~ 2006.09 The University of Tokyo, Tokyo, Japan (Dr. Eng.)
Department of Architecture, School of Engineering
(Specialization: HVAC System, Computational Fluid Dynamics, Indoor Air Quality and Sustainability)

2003.04 ~ 2003.09 National Cheng-Kung University (M. Arch.)
Department of Architecture, School of Engineering
(Specialization: Building Physics, Building Equipment System, Acoustics / Vibration)

1998.08 ~ 2000.07 National Cheng-Kung University (B. Arch.)
Department of Architecture, School of Engineering

Experience

2013.02 ~ now Associate Professor, Department of Architecture,
National Cheng-Kung University, Tainan, Taiwan.

2011.08 ~ 2013.01 Associate Professor, Department of Creative Design,
National Yunlin University of Science and Technology, Yunlin, Taiwan.

2009.08 ~ 2011.07 Assistant Professor, Department of Creative Design,
National Yunlin University of Science and Technology, Yunlin, Taiwan.

2007.02 ~ 2009.07 Assistant Professor, Department of Architecture and
Urban Design, Chinese Culture University, Taipei, Taiwan.

HONAR & AWARD

1. 49th Annual Best Paper Award, SHASE of Japan, 2011.
2. Best Paper Award, 22th Annual Conference of Architecture Institute of Taiwan, 2010.
3. Best Paper Award, International Conference on Sustainable Building 2007 Taipei, 2007.

RESEARCH PROJECTS

10 Projects for sponsored by MOST (Ministry of Science and Technology) and ABRI (Architecture and Building Research Institute, Ministry of the Interior, Taiwan) after 2007 (totally fund over NTD 10 million) including

1. Review and Advancement of Green Building Material Label System, Architecture and Building Institute, Ministry of The Interior, 2014.3-2015.12. (Chair of the green building material label)
2. Review and Advancement of Green Building Label System, Architecture and Building Institute, Ministry of the Interior, 2013.3-2014.12. (Co-chair of the green building label)
3. Evaluation of Thermal Environment and Energy Conservation of Residential Building with Balcony Greenery, 2015.08-2016.07 (MOST 104-2221-E-006-219-).
4. Prediction and Evaluation of Long-term Performance of Formaldehyde Adsorptive Materials, Ministry of Science and Technology, 2014.8-2015.7 (MOST 103-2221-E-006-148-).
5. Development of Teaching-Assist System of Indoor Environmental Health, Ministry of Science and Technology, 2014.6-2015.5 (MOST 103-2622-E-006-033-CC3).
6. Study on Design Strategies of Zero-Energy Homes - Case Study of Yun-Lin Residential Buildings (1/1) (1/2), National Science Council, 2013.8-2014.7 (NSC 101-2221-E-224-094-MY2).
7. Study on the natural ventilation performance-based design method for the moisture control of housing environment, National Science Council, 2011.11-2012.10 (NSC 100-2622-E-224-017-CC3).
8. Experimental and numerical study on hygrothermal properties of local interior materials, National Science Council, 2011.8-2012.7 (NSC 100-2221-E-224-068-).
9. Development of Simulation Method for interior design via moisture buffering materials, National Science Council, 2010.11-2011.10 (NSC 99-2622-E-224-013-CC3).
10. Study on developing a simple calculation method for moisture buffering design of buildings, National Science Council, 2010.8-2011.7 (NSC 99-2221-E-224-049-).
11. Experimental and numerical study on the performance of moisture buffering material in Taiwan, National Science Council, 2008.8-2009.7 (NSC 97-2221-E-034-014).
12. Study on the applicability of moisture buffering interior materials in Taiwan, National Science Council, 2007.8-2008.7 (NSC 96-2218-E-034-002-).

PUBLICATIONS

Paper in Refereed Journals

1. T.-H. Lo, Y.-S. Tsay, C.-L. Chiang and C.-Y. Lee, Experimental Evaluation of Indoor Formaldehyde Decomposition Performance of Atmospheric Plasma Reactor Utilizing Sensor Network, *International Journal of Distributed Sensor Networks*, Vol.2015, Article ID 761439.
2. S.-F. Hwang, C.-W. Chen, S.-C. Chung, and Y.-S. Tsay: Finite Element Simulation of the Vibration Provided by Sandwich Rigid Panel with a Resilient Material In Between under Heavyweight Impact, *Shock and Vibration*, Vol. 2014 , Article ID 507830.
3. S.-C. Chung, Y.-S. Tsay*, Y.-C. Yeh, F.-C. Chen, Y.-H. Shen: The Study on Light Floor Impact Sound Improvement By Void Slab Applied with Surface Covering Materials, *Advanced Materials Research* Vol. 374-377, pp 1545-1552, Oct. 2011.
4. Y.-C. Yeh, Y.-S. Tsay*, C.-M. Chiang: Study on the Performance and Application of Interior Moisture Buffering Materials for the Typical Housing in Taiwan, *Advanced Materials Research*, Vol. 250-253, pp 3723-3729, May 2011.
5. Y.-S. Tsay, S. Kato, R. Ooka, M. Koganei, N. Shoda, K. Nishida, K. Kawamoto: Study on non-condensing air-conditioning system – Performance when combining desiccant cooling system with co2 heat pump, *HVAC&R Research, Special Issue*, Vol. 12, No. 3c, pp.917-933, 2006.
6. Y.-S. Tsay, S. Kato, R. Ooka, M. Koganei, N. Shoda, Study on the applicability of combining desiccant cooling system with heat pump in hot and humid climate, *ASHRAE Transactions*, Vol.112, Part 1, pp.189-194, 2006.

Paper in Refereed Conference Proceedings

1. Y.S. Tsay, H.C. Lin, Y.C. Yeh: Study on the Use of Anti-microbial Coating to Reduce Microbial Pollution in Ducts, *Indoor Air 2016*, Ghent(Belgium), Jul. 3-8, 2016.
2. M.C. Lu, W.J. Chiu, Y.S. Tsay: The Effect of Vertical Greenery with Cross Ventilation on Improving Thermal Comfort, *Indoor Air 2016*, Ghent(Belgium), Jul. 3-8, 2016.
3. J.Y. Lin, C.H. Lin, Y.S. Tsay: A Model for Predicting the Evapotranspiration Rate of Wild Allamanda for Living Wall Systems, *Indoor Air 2016*, Ghent(Belgium), Jul. 3-8, 2016.
4. W.L. Tseng, C.T. Huang, Y.S. Tsay, Y.H. Chang: The Moisture Buffering Effect of Finishing Coatings on Wooden Materials, *Indoor Air 2016*, Ghent(Belgium), Jul. 3-8, 2016.
5. N.T. Chen, K.S. Liu, Y.S. Tsay, J.Y. Lin, Y.R. Dong: Developing HMI of the iMOD Sensing and Consulting System for Indoor Environment Health, *Indoor Air 2016*, Ghent(Belgium), Jul. 3-8, 2016.
6. C.C. Lee, K.C. Huang, J.W. Chang, Y.S. Tsay, C.M. Chiang: Efficiency assessment of indoor formaldehyde level and cancer risk reduction for using of sorptive building materials, *Indoor Air 2016*, Ghent(Belgium), Jul. 3-8, 2016.
7. Y.S. Tsay, Y.C. Yeh, C.Y. Wu: Study on Residential Policy of ZEH for Local Action in Taiwan, *SB 2014*, Barcelona(Spain), Oct. 28-30, 2014.
8. N.T. Chen, B.L. Sun, Y.S. Tsay: Study on the Establishment of Indoor Environmental Health Housekeeper System -- Using Environmental Sensing and Consultation as an Example, *SB 2014*, Barcelona(Spain), Oct. 28-30, 2014.
9. N.T. Chen, C.T. Tzeng, Y.S. Tsay, C.R. Chen: Impact Of Air Guide Design Of Residential Balcony On Indoor Ventilation In Southern Taiwan, *Indoor Air 2014*, Hong Kong (China), Jul. 7-12, 2014.
10. Y.C. Yeh, Y.S. Tsay: Moisture Buffering Assessment of Material Applied in Residential Unit using Mold Germination Graph Method in Taiwan, *Indoor Air 2014*, Hong Kong (China), Jul. 7-12, 2014.
11. Y.S. Tsay, M. Tsai, Y.C. Yeh: Study on Strategies for ZEH Design in Taiwan – The Case Study of One Dwelling House in Yunlin, *Indoor Air 2014*, Hong Kong (China), Jul. 7-12, 2014.
12. Y.C. Yeh, Y.S. Tsay, C.M. Chiang, Y.L. Lo: Study on Simulation of Residential Moisture Buffering Design By Effective Moisture Penetration Depth Method – The Case Study of Douglas Fir in A Single Zone Residential Unit in Taiwan, *CLIMA 2013*, Prague (Czech), Jun. 16-19, 2013.
13. Y.S. Tsay, M. Tsai, Y.C. Yeh: Study on Strategies for ZEH Design in Taiwan: The Case Study of One Dwelling House Design, *CLIMA 2013*, Prague (Czech), Jun. 16-19, 2013.

14. Y.C. Yeh, Y.S. Tsay, C.M. Chiang: Study on Numerical Simulation Applied to Moisture Buffering Design Method – The Case Study of Pine Wood in A Single Zone Residential Unit in Taiwan, ICABE 2012, Stockholm (Sweden), July 11-13, 2012..
15. Y.S. Tsay, M. Tsai, Y.C. Yeh: Study on Zero Energy Home Design Strategies in Taiwan: The Case Study of One Dwelling House in Chiayi City, ICABE 2012, Stockholm (Sweden), July 11-13, 2012.
16. S.-C. Chung, Y.-C. Yeh, Y.-S. Tsay, K.-H. Hsu, C.-M. Chiang: Study On The Contingent Valuation Methods Applied on Sustainable Policies Making Process – The Case Study of Illumination Replacing On Campus In Taiwan, 2011 World Sustainable Building Conference (SB11), Helsinki (Finland), Oct. 18-21, 2011.
17. Y.-C. Yeh, Y.-S. Tsay, S.-C. Chung, C.-M. Chiang Study on Constructing The Revitalization of Community Industry – The Case Study of The Communities around the Hu-Shan Dam in Taiwan, 2011 World Sustainable Building Conference (SB11), Helsinki (Finland), Oct. 18-21, 2011.
18. S.-C. Chung, Y.-S. Tsay, Y.-C. Yeh, F.-C. Chen, Y.-H. Shen: The Study on Light Floor Impact Sound Improvement By Void Slab Applied with Surface Covering Materials, ICTAS 2011, Xian (China), Sep. 22-24, 2011.
19. S.-C. Chung, Y.-S. Tsay, Y.-C. Yeh: The experimental investigation on floor impact sound insulation with floor coverings construction, Inter-Noise 2011, Osaka (Japan), Sep. 4-7, 2011.
20. Y.-C. Yeh, Y.-S. Tsay, C.-M. Chiang: Study on the Performance and Application of Interior Moisture Buffering Materials for the Typical Housing in Taiwan, CEABM 2011, Haikou (China), Jun. 18-20, 2011.
21. Y.-S. Tsay, C.-M. Chiang, Y.-C. Yeh: Numerical study on the influence of moisture buffering effect and energy impact of interior materials in hot and humid climates, Indoor Air 2011, Austin (USA), Jun. 5-10, 2011.
22. Y.-C. Yeh, Y.-S. Tsay, C.-M. Chiang: Study on the passive design of the moisture buffering layer for the typical town house in Taiwan, Indoor Air 2011, Austin (USA), Jun. 5-10, 2011.
23. Y.-S. Tsay, C.-M. Chiang, S. Kato, R. Ooka, K.-T. Huang: Study on the Moisture Buffering Effect and Energy Impact of Interior Materials in Taiwan, The 2008 World Sustainable Building Conference, Melbourne (Australia), Vol.2, pp.2372-2377, Sep.21-25, 2008.
24. Y.-S. Tsay, R. Ooka, S. Kato: Study on the Prediction of Indoor Humidity Distribution with Coupling Simulation of CFD and Vapor Diffusion Analysis through Building Materials, SB07 Taipei, Taipei (Taiwan), Nov. 9-11, 2007 (Best Paper Award).
25. Y.-S. Tsay, S. Kato, R. Ooka, M. Koganei, K. Nishida, N. Shoda, K. Kawamoto: Performance Analysis of the CO₂ Heat Pump Combined Desiccant Air-Conditioning Systems Applied to Dedicated Outdoor Air Systems, IAQVEC, Sendai (Japan), Oct. 28-31, 2007.
26. W. Cho, S. Kato, R. Ooka, Y.-S. Tsay, M. Koganei, N. Shoda, K. Kawamoto: Study on dehumidification performance of FAM-Z rotor, IAQVEC, Sendai (Japan), Oct. 28-31, 2007.
27. R. Hu, S. Kato, R. Ooka, Y. Ishida and Y.-S. Tsay: Study on Optimization of Utilization on Moisture-Conditioning Materials by Means of Contribution Ratio of Humidity, IAQVEC, Sendai (Japan), Oct. 28-31, 2007.
28. R. Hu, S. Kato, Y. Ishida, H. Huang, Y.-S. Tsay: Study on development of new indices to assess the contribution of moisture sources to indoor humidity – Proposal for CRH and a transient calculation on the steady-state flow field in a room, Roomvent, Helsinki (Finland), Jun. 13-16, 2007.
29. Y.-S. Tsay, R. Ooka, S. Kato, M. Koganei, N. Shoda, K. Kawamoto, K. Nishida, Study on Indoor Heat and Moisture Transport with Coupling Simulation of CFD and Vapor Diffusion through Building Materials, Healthy Buildings, Lisbon (Portugal), Jun. 4-8, 2006.
30. S. Kato, R. Ooka, Y.-S. Tsay, M. Koganei, N. Shoda, K. Kawamoto, K. Nishida, Study on Non-Condensing Air-Conditioning System by Combining Desiccant Air-Conditioning System with CO₂ Heat Pump, Healthy Buildings, Lisbon (Portugal), Jun. 4-8, 2006.
31. Y.-S. Tsay, S. Kato, R. Ooka, M. Koganei, N. Shoda, K. Kawamoto, K. Nishida, Study on Non-Condensing Air-Conditioning System by Combining Desiccant Air-Conditioning System with CO₂ Heat Pump, AGS (Alliance for Global Sustainability) Annual Meeting, Bangkok (Thailand), Mar. 19-22, 2006.