

JaeHun Jo

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EDUCATION

Seoul National University, Seoul, Korea

Ph.D. in Department of Architecture, College of Engineering, Aug. 2005

- Thesis: "Prediction of Pressure Distribution due to Stack Effect in High-rise Residential Buildings and Evaluation of its Impact", Advisor: Kwang-Woo Kim

Seoul National University, Seoul, Korea

M.S. in Department of Architecture, College of Engineering, Feb. 2001

- Thesis: "A Study on the Problems of the Stack Effect in High-rise Building and the Architectural Solutions of those resulting from it", Advisor: Kwang-Woo Kim

Seoul National University, Seoul, Korea

B.S. in Department of Architecture, College of Engineering, Feb. 1999

RESEARCH AND TEACHING INTERESTS

Passive House and Zero-energy building

Energy performance evaluation and energy assessment on large commercial and industrial HVAC energy systems

Thermal & airflow simulation analysis in buildings: analyze ventilation strategies & IAQ evaluation, Thermal performance analysis, Design of smoke management systems

Stack effect engineering and airflow analysis in high-rise buildings

Development of hi-performance envelope, window and door system (especially double-skin facade)

Knowledge to consider stack pressure difference in the fields of load calculation and ventilation planning

Knowledge to achieve airtightness criteria (construction phase inspections, airtightness test, air leakage audit and thermographic surveys)

Large/Complex buildings air leakage measurement

PUBLICATION

International Papers

“A Study on the Efficiency Improvement of Multi-Geothermal Heat Pump Systems in Korea Using Coefficient of Performance”, ENERGIES, Vol.9, No.5, pp.1-19, 2016

“Experimental study for wind pressure loss rate through exteriorvenetian blind in cross ventilation”, ENERGY AND BUILDINGS, 107, pp.123-130, 2015

“Development of the Hybrid Operation Method of a Multi-Geothermal Heat Pump System and Absorption Chiller-Heater”, ENERGIES, Vol.8, No.9, pp.9320-9343, 2015

“Development of Climate Indices Using Local Weather Data for Shading Design”, SUSTAINABILITY, Vol.7, No.2, pp.1884-1899, Feb. 2015

“A Study on the Variation of Heating and Cooling Load According to the Use of Horizontal Shading and Venetian Blinds in Office Buildings in Korea”, ENERGIES, Vol.8, No.2, pp.1487-1504, Feb. 2015

“Evaluation of the Reference Numerical Parameters of the Monthly Method in ISO 13790 Considering S/V Ratio”, SUSTAINABILITY, Vol.7, No.1, pp.767~781, Jan. 2015

“Improvement of Window Thermal Performance Using Aerogel Insulation Film for Building Energy Saving”, Journal of Thermal Analysis and Calorimetry, 116, pp.219-224, 2014

“A Study on the Optimized Control Strategies of Geothermal Heat Pump System and Absorption Chiller-heater”, International Journal of Energy Research, Vol.38, No.8, pp.1083-1098, 2014

“Evaluation of the Impact of Minimum Airflow on the Energy Consumption of Single Duct VAV Terminal Boxes”, Journal of Asian Architecture and Building Engineering, Vol.13, No.1, pp.239-246, Jan. 2014

“Feasibility of Building Envelope Air Leakage Measurement Using Combination of Air-handler and Blower door”, Energy and Buildings ,Vol.62, pp.436-441, Jul. 2013

“Air Leakage Characteristics and Leakage Distribution of Dwellings in High-rise Residential Buildings in Korea”, Journal of Asian Architecture and Building Engineering, Vol.12, No.1, pp.87-92, May. 2013

“Establishing the Design Process of Double-Skin Facade Elements through Design Parameter Analysis”, Journal of Asian Architecture and Building Engineering, Vol.8, No.1, pp.251-258, May. 2009

“Simplified Prediction Method of Stack-Induced Pressure Distribution in High-rise Residential Buildings”, Journal of Asian Architecture and Building Engineering, Vol.8, No.1, pp.283-290 , May. 2009

“Characteristics of Pressure Distribution and Solution to the Problems Caused by Stack Effect in High-rise Residential Buildings”, Building and Environment, Vol. 42, No. 1, pp.263-277, Jan. 2007

“Evaluation of Inside Surface Condensation in Double Glazing Window System with Insulation Spacer: A Case Study of Residential Complex”, Building and Environment ,Vol.42, No. 2, pp.940-950, Feb. 2007

“Application of the Control Methods for Radiant Floor Cooling System in Residential Buildings”, Building and Environment ,Vol.41, No.1, pp.60-73, Jan. 2006

Domestic Papers (in Korean)

“A Study on the Geothermal Heat Pump System Performance Analysis according to Water Flow Rate Control of the Geothermal Water Circulation Pump”, Journal of The Korean Solar Energy Society, Dec. 2014

“Analysis on Regional Cooling and Heating Energy Characteristics of the Building Facade Using the Climate Index”, Journal of Korean Institute of Architectural Sustainable Environment and Building System, Aug. 2014

“A Study on Uncertainty Experiment depending on Testers in Airtightness Measurement of Buildings”, Journal of Korean Institute of Architectural Sustainable Environment and Building System, Apr. 2014

“A Comparison of Measured Entrance Doors' Data with those of Airtightness Standards”, Journal of Architectural Institute of Korea, Mar. 2014

“A Study on the Establishment of Large Building Airtightness Measurement Standards”, Journal of The Korean Solar Energy Society, Feb. 2014

“Evaluation on Energy Performance of Solar Heating and Cooling System in a Public Child Care Center”, Journal of The Society of Living Environment System of Korea, Feb. 2014

“Calculation Method of Window Energy Performance considering Heating and Cooling Load in Multi-family Housing”, Journal of Architectural Institute of Korea, Dec. 2013

“Research Review on the Infiltration Measurement and Calculation for the Building Entrance Door and Comparing Infiltration rate”, Journal of Korean Institute of Architectural Sustainable Environment and Building System, Jun. 2013

“A Study on the Current Status and Feasibility of New & Renewable Energy System with Survey”, Journal of The Society of Living Environment System of Korea, Apr. 2013

“Application and Improvement of the Renewable Energy Management System in Existing Buildings”, Journal of Architectural Institute of Korea, Feb. 2013

“Analysis of Airtightness Weakness of Sliding Windows in Residential Buildings”, Journal of Architectural Institute of Korea, Jan. 2013

“An Analysis of Problems and the Current Status of Renewable Energy System in Buildings”, Journal of The Korean Solar Energy Society, Oct. 2012

“Analysis on Legal Issue of Lawsuits and Subjective Judgment on Defects in Apartment Building”, Journal of The Korea Institute of Building Construction, Feb. 2012

“Comparison of Test Conditions of the Fan Pressurization Method in measuring the Building Airtightness”, Journal of Architectural Institute of Korea, Aug. 2011

“A Survey Study on the Certified Assessor for Evaluation on the Building Energy Efficiency Rating”, Journal of Korean Institute of Architectural Sustainable Environment and Building System, Mar. 2011

“The Estimation of Airtightness and Thermal Performance according to the Sliding Window Types in Residential Buildings”, Journal of Korean Institute of Architectural Sustainable Environment and Building System, Dec. 2010

“Measurements of the Dwelling Unit Airtightness in High-rise Residential Buildings”, Journal of Architectural Institute of Korea, Oct. 2010

“Evaluation of Problems and Field Measurement of Stack Pressure Profiles in the High-rise Office Building”, Journal of Architectural Institute of Korea, Jul. 2010

“Solving the Airflow Problem Caused by Stack Effect in Commercial Buildings”, Journal of Architectural Institute of Korea, Jun. 2010

“A Study on Use State of Defect Deposit Based on Actual Use Data - Focused on 3 years after Moving in Apartment Complex”, Journal of The Korea Institute of Building Construction, Apr. 2010

“A Study on Legal Issues about Defect Repair Claim on Apartment Building”, Journal of Architectural Institute of Korea, Nov. 2009

“Analysis of the Characteristics of the Pressure Distribution according to the Elevator Vertical Zoning in High-rise Buildings”, Journal of Architectural Institute of Korea, May. 2007

“Development of an Operation Model for a Multistory Type Double-Skin Facade”, Journal of Architectural Institute of Korea, Feb. 2007

“Simulation of Pressure Distribution and Solving the Pressure Differentials Problem in High-rise Residential Buildings”, Journal of Architectural Institute of Korea, Nov. 2005

“Evaluation of Pressure Difference Problems through the Prediction of Pressure Distribution in High-rise Residential Building”, Journal of Architectural Institute of Korea, Nov. 2005

“Solving the Problems Caused by Stack Effect in a High-rise Residential Building through Field Measurement and Simulation; Case Study”, Journal of Korean Housing Association, Aug. 2005

“Planning the Blind Position Considering Thermal Performance in the Intermediate Space of Double-Skin Facade”, Journal of The Society of Air-conditioning and Refrigerating Engineering of Korea, Jul. 2005

“A Study on the Cavity Height of Multi-Story Double-Skin Facade for better Thermal Performance”, Journal of The Korean Solar Energy Society, Jun. 2005

“Pressure Distribution due to Stack Effect in High-rise Residential Buildings”, Journal of Architectural Institute of Korea, May. 2005

“A Study on Development of the Operation Model for the Double-Skin Facade”,
Journal of Architectural Institute of Korea, Apr. 2003

“Analysis of the Impacts of Stack Effect in High-rise Residential Buildings”, Journal
of The Korean Housing Association, Aug. 2002

“A Case Study on the Field Measurement and Reduction of the Stack Effect in
High-rise Buildings”, Journal of Architectural Institute of Korea, Jul. 2002

“Simulation of the Stack Effect in High-rise Buildings”, Journal of The Society of
Air-conditioning and Refrigerating Engineering of Korea, Jun. 2002

TEACHING AND ADVISING EXPERIENCE

- **Inha University (Mar. 2011 ~ Present)**
 - Introduction to Environmental Design in Buildings
 - Design of Integrated Environmental System
 - Capstone Design in Architectural Engineering
 - Introduction to Architectural Engineering
 - Mechanical Equipment planning for buildings
 - Thermal Environment in Building
- **Chungbuk National University (Sep. 2007 ~ Feb. 2011)**
- **Part-time Lecture (Mar. 2001 ~ Dec. 2005)**

Voluntary activities

- Architectural Institute of Korea, 2000~Present
- KIAEBS Korean Institute of Architectural Sustainable Environment and Building System, 2007~Present
- The Society of Living Environmental System, 2008~Present
- The Korean Solar Energy Society, 2008~Present
- The Korea Green Building Council, 2008~Present
- Institute of Passive Zero Energy Building, 2011~Present

RESEARCH ACTIVITY

Associate Professor, Dept. of Architectural Engineering, Inha University

- Development of Smart-Sensing System and Adaptive Control Method in Large Building with Openable Roof, Jul. 2015 ~ Present(Jan. 2019)
- Development of Real-time Control Method and Stack Pressure Profile Derivation by Full-scale Pressure Sensing, Nov. 2015 ~ Present(Oct. 2018)
- Airtight Construction Quality Assurance Program and Inspection Method, Feb. 2016 ~ Jun. 2017
- Pilot Project Design of Solar Shading Devices for Saving the Cooling Load in Green-retrofit Market Introduction, Nov. 2013 ~ Jun. 2014
- Energy Efficient Klima Responsive Kinetic Facade Design -Developing a Facade Engineering Package and Realizing Full-scale Models, Sep. 2013 ~ Aug. 2016
- Improvement of Airtightness and Establishment of Technical Inspection Procedure in Existing Buildings, Jun. 2013 ~ Jun. 2016
- Development of the Airtightness Criteria and Air Leakage Measurement Methods for the Zero-energy Buildings, Sep. 2011 ~ Sep. 2014
- Implementation of Hybrid Renewable Energy Facilities Sources System and Development of NE-BEMS, Sep. 2011 ~ Aug. 2014
- Development of High-performance Aerogel Facade System, Sep. 2010 ~ Aug. 2015
- Realization of Air-lock Airport for Energy Efficiency and Thermal Comfort, Jul. 2012 ~ Jun. 2013

Assistant Professor, Dept. of Architectural engineering, Chungbuk National University

- The Development of Air-lock Sliding Window System for the Zero-energy Building, May. 2010 ~ Feb. 2011
- Development of Competent Schemes for Building Energy Assessor, Apr. 2010 ~ Aug. 2010
- Development of the Air-lock Control Methods of Stack Effect and Stack-generator System, Sep. 2009 ~ Jul. 2011
- e.G Window System Development for Improvement of Living Environment in Korean Traditional Housing, Aug. 2009 ~ Apr. 2010
- Development of the Analysis Tool and Integrated Control Methods of Stack Effect in High-rise Buildings, May. 2009 ~ Apr. 2012
- A Study on Legal Issues and Objective Criteria of Defect Repair Claim in Apartment Building, Sep. 2008 ~ Aug. 2011

CONSULTING WORKS

Stack Effect Engineering and Airflow Analysis in High-rise Buildings

- Parc. 1 Tower (69F ,Seoul, Korea)
- LCT Tower (108F, Busan, Korea)
- Lotte Super Tower (123F, Seoul, Korea)
- NEATT Tower (67F, Incheon, Korea)
- MAK Tower (37F, Ulaanbaatar, Mongol)
- Beijing Headquarter Office of Samsung (57F, Beijing, China)
- Samsung R5 Project (27F, Suweon, Korea)
- Beijing POSCO Center (37F, Beijing, China)
- High-rise Residential Building (52F, Pusan, Korea)
- Samsung Headquarter Office (42F, Seoul, Korea)
- E-mart Headquarter Office (20F, Seoul, Korea)
- Centum Department Store (14F, Pusan, Korea)
- LG Electronic R&D Center (25F, Seoul, Korea)
- Ocean Resort Hotel Project (43F, Yeosu, Korea)
- Centroad Office Project (45F, Incheon, Korea)
- Hyaatt Hotel Project (34F, Pusan, Korea)
- 12 High-rise Residential Buildings (37F~69F, Korea)

Airtightness Measurements for LEED Certification

- Green Avenue Residential Block (164 units measured / total 1014 units)
- Green Walk Residential Block (210 units measured / total 1401 units)
- Central Park1 Residential Block (130units measured/ total 802units)
- Harbor View Residential Block (153units measured / total 832units)

SKILLS

- Certified Passive House Designer, Jun. 2011 (Passive House Institute, Germany)
- Large Building Air Leakage Tester, Oct. 2010 (Retrotec, USA)
- First Grade Architectural Engineer, Nov. 1999 (Human Resources Development Service of Korea)