

KAUSTUBH PHALAK (KP)

Miami, FL 33143 | 405.612.1380 | kpphalak@gmail.com

PROFILE

A mechanical engineer with PhD and masters in HVAC and thermal systems. Focused passion for improving energy and control performance of building energy systems. Experience in development of energy modeling tools. Sound understanding of building physics, heat transfer and control systems.

PROFESSIONAL EXPERIENCE

RESEARCHER | BERKELEY NATIONAL LABORATORY | BERKELEY, CA 2011-2013

- Conducted research, implemented and distributed computing tools for building energy and control simulation based on Modelica
- Developed mathematical models of HVAC components for Modelica Building Library
- Validated and published results of Modelica Buildings Library with ASHRAE Std. 140
- Simulated EnergyPlus models, performed parametric studies and analyzed results
- Contributed in writing technical research project reports for government agencies like CEC and DOE
- Developed optimal start strategy of heating and cooling system for implementation in EnergyPlus

DESIGN ENGINEER | ALFA LAVAL | PUNE, INDIA 2007-2008

- Directly responsible for approval of design documents and mechanical drawings of dryers, evaporators, distillation columns and shell-tube heat exchangers for process industries
- Designed pressure vessels and heat exchangers compliant to ASME codes (Sec. VIII Div.I)
- Supervised the drawing and drafting process
- Reviewed detail mechanical drawings before passing to manufacturing and quality departments
- Issued purchase orders according to bill of materials and design requirements
- Coordinated with manufacturing department to resolve conflicts, deviations and changes during the order execution

ACADEMIC EXPERIENCE

RESEARCH ASSISTANT | CAE, UNIVERSITY OF MIAMI | CORAL GABLES, FL 2013-CURRENT

- Identified possible causes and solution to instability in air handling unit (AHU) dampers
- Developed a cascade control method to stabilize the cooling coil valve operation
- Researched and developed stable control methods for building pressurization
- Investigated methods to control outdoor air flow and building pressure when sensors are unavailable
- Authored and co-authored six research papers and presented research at conferences
- Currently working on controls to stabilize chilled water pump operation

ENERGY ENGINEER | INDUSTRIAL ASSESSMENT CENTER | UNIVERSITY OF MIAMI 2014-2015

- Audited and inspected ten industrial small to medium sized facilities in FL and installed data loggers at major equipment to analyze the energy consumption pattern
- Identified energy saving opportunities for economizers, chillers, heat recovery, insulation, air curtains, lighting, peak shaving, compressor pressure, VFD, and occupancy sensors and compared those on the basis of economic feasibility
- Contributed to ten technical reports of the assessment recommendations that suggested annual savings of 0.3 MM kWh with simple payback periods ranging from 1 month to 3 years

CO-INSTRUCTOR | CAE, UNIVERSITY OF MIAMI | CORAL GABLES, FL **2014-2015**

- Assisted in development of course material and delivered four lectures per assigned course
- Delivered lectures explaining air distribution systems, air handling units, cooling and reheat coils for CAE 581 Building Mechanical System II: HVAC Systems course in Fall 2014
- Explained heat transfer in buildings, space load analysis and calculation for CAE 681 Energy Efficient Building Design in Spring 2015

RESEARCH & TEACHING ASSISTANT | MAE, OKLAHOMA STATE UNIVERSITY | STILLWATER, OK **2008-2011**

- Implemented pump curve, VFD control and pressure based system in EnergyPlus
- Investigated for numerical methods to implement pump-system curves in EnergyPlus
- Built experimental setup, calibrated sensors and experimentally validated pump affinity laws
- Built experimental setup and measured thermal performance of undocumented solar collector
- Taught Engineering Equation Solver (EES) based computer labs for the course Vapor Power Systems
- Assisted students individually with problems pertaining to course Heat Transfer
- Evaluated quizzes and assignments, maintained records

EDUCATION

DOCTOR OF PHILOSOPHY | HVAC SYSTEMS | CAE, UNIVERSITY OF MIAMI **GPA: 3.90**

August 2016 | Dissertation: Development of Control Methods to Improve HVAC Systems Operation

MASTER OF SCIENCE | THERMAL SYSTEMS | MAE, OKLAHOMA STATE UNIVERSITY **GPA: 3.89**

Dec 2011 | Thesis: Development, Validation and Implementation of Non-Dimensional Pump Model in EnergyPlus

BACHELOR OF TECHNOLOGY | MECHANICAL ENGINEERING | UNIVERSITY OF PUNE **CGPA: 7.45/10**

SELECTED PUBLICATIONS

K Phalak, G Wang. *Minimum Outdoor Air Control and Building Pressurization with Lack of Airflow and Pressure Sensors in Air Handling Units.* Journal of Architectural Engineering 2016.

K Phalak, G Wang. *Performance Comparison of Cascade Control with Conventional Controls in Air Handling Units for Building Pressurization.* ASHRAE Winter Conference; 01/2016

G Wang, K Phalak. *Reverse Relief Airflow Prevention and Building Pressurization with a Decoupled Relief Air Damper in Air Handling Units.* ASHRAE Transactions 01/2016.

K Phalak, G Wang. *Improving Valve Operation Using Cascade Control in Single Zone Air Handling Units.* ASHRAE Annual Conference; 06/2016 (Accepted)

T Nouidui, K Phalak, W Zuo, M Wetter. *Validation and Application of the Room Model of the Modelica Buildings Library.* International Modelica Conference 2012, Munich, Germany

LEADERSHIP & CAMPUS INVOLVEMENT

TEAM LEAD | Optimum Cooling Solutions | ACC Clean Energy Challenge **2014**

TREASURER | Graduate Engineering Student Council | University of Miami **2014-2015**

SECRETARY | ASHRAE OSU Student Chapter | Oklahoma State University **2009-2011**

COMPUTER SKILLS

EnergyPlus | eQUEST | Modelica | Dymola | FORTRAN | VBA | AutoCAD | Fluent | MATLAB | Simulink | MS-Excel | MS-Project