RAJEEV KAMAL
Email: rajeev@mail.usf.edu, Mobile: +1813 298 7036. **Address:** 14458, Reuter Strasse Circle, Apt.-716, Tampa, Florida – 33613.

Summary and Key Skills:

- Ph.D. student in Engineering Sciences with research on cost and operation optimization of building thermal energy storage (TES) and Heating Ventilation and Air-Conditioning (HVAC) systems for peak power reduction. HVAC performance testing, building energy modelling, thermal energy storage, solar thermal power plant operation. Quantifying the benefits and impact of TES adoption on utility, end-user and renewable adoption.
- Yearlong field-testing and performance study of gas-engine driven heat pumps (GEHP) in a commercial building. Economic comparative analysis of the operation of GEHP to electrical heat pumps
- Seven years of experience in energy transmission, distribution, generation, renewable energy, natural gas, research, stakeholder management, bid process management, energy audit, consulting, distribution franchising, financial modelling, electricity tariff calculation, Information Technology in power sector, project management, and monitoring with the government, bilateral, multilateral partners and various private partners.

Education:

1. 2012 - Current: Ph.D. in Engineering Sciences, Department of Chemical and Biomedical Engineering, **University of South Florida, United States.** GPA: 3.88.
   Research: Optimization and performance study of select Heating Ventilation and Air Conditioning (HVAC) Technologies for Commercial Buildings. Field testing of natural gas heat pumps, thermal energy storage, and solar thermal power plant operation.
2. August-2015: Trainee at Summer Institute of Sustainability and Energy, University of Illinois, Chicago. 'Digital manufacturing and use of clean technologies for industries of Chicago.'
3. 2005: MBA in Power Management, National Power Training Institute, Ministry of Power and Maharshi Dayanand University, India.
4. 2003: Bachelors of Technology - Mechanical Engineering, G.B. Pant University of Agriculture and Technology, India.

Professional Experience:

2012 August– Ongoing. **Research Assistant, Clean Energy Research Centre, University of South Florida**, Tampa, Florida, www.cerc.eng.usf.edu:

- **Benefits of thermal energy storage for HVAC application:** Impact study of thermal energy storage in buildings for cooling/heating and quantifying improvements to grid quality, peak power savings and optimum operations costs.
- **Field-testing of gas heat pumps:** Yearlong energy consumption and performance study for Florida Public utility building and Plant City school buildings gas heat pump systems. Identification of the data collection points, selection of instrumentation for capturing performance parameters for GHP.
- **Thermal Energy Storage**: Development of a low-cost thermal energy storage system using phase change materials with enhanced radiation heat transfer targeting utilization of such energy storage system for all possible applications, such as future solar power plants.

2010 July – 2012 August, **Technical Expert - Renewables, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH**, New Delhi, India www.giz.de
Key Roles: Stakeholder management, resource allocations, business modelling, project planning, documentation, policy recommendations, monitoring evaluation, technical review, capacity building.
Key Area: Commercialization of solar energy in urban and industrial areas in India.

- Aesthetically adapted rooftop Solar PV system for Indo-German Chamber of Commerce, New Delhi. Implementation of Solar-rooftop PV system at stations for Delhi Metro Railway Corporation.

- Project identification included strategizing business models for commercially viable projects involving existing rooftop PV systems and new building integrated solar PV design for future stations, stadium and residential buildings.
- Pre-feasibility assessment of the top 10 sectors to suggest a potential of replacing a large percentage of the process heat requirement through solar thermal technologies and assisted companies to adopt the solar solution through current policy support and renewable energy schemes.
- Project ideation, technical evaluation, and commercial feasibility for design and sizing of residential PV array backup systems considering the various types and capacities of backup systems for urban and rural power supply and its impact on the power grid and the utility.

2006 September – 2010 July, **Deputy Manager, Feedback Ventures (P) Ltd**, Gurgaon, India www.feedbackinfra.com.

Key Roles: Identification, management, implementation of new projects including preparation of technical bids for newer businesses, client management, reporting, management of key stakeholders for each project, managing and steering program implementation teams in the field and corporate responsibility for tracking, deliverable preparation of technical reports.

Key Projects:

- Restructured Accelerated Power Development and Reforms Programme (USAID) in 9 electricity distribution companies for monitoring and advising for IT infrastructure establishment across power distribution businesses and process automation and efficiency.
- Consultation for power distribution companies for states of Gujarat and Uttaranchal for improvement in the existing Revenue Cycle Management processes including metering, billing and collection activities.
- Project monitoring and management for states of Sikkim and Rajasthan involving the implementation of a web-based monitoring system of hydro-power plants (Sikkim), distribution feeder upgradation project (Rajasthan).
- Developed and imparted training program for capacity building of utilities Distribution Reform Upgrade and Management (USAID), the training to the trainers of national level government institutes and power utilities in 3 state-level workshops at Karnataka, Sikkim and Maharashtra for planning and implementing distribution franchising.
- Due-diligence and implementation of input based electricity franchise in 3 states, Uttar Pradesh, Uttaranchal, and Haryana. Prepared tariff revision petition for 2007-08 for Punjab, Gujarat and Sikkim governments and USAID

June 2005 - August 2006, Executive Officer, **North Delhi Power Ltd.** New Delhi, India. www.ndpl.com.

Key roles: Responsible for project management multiple consumer survey outsourced projects such as consumer indexing, spot billing, and meter reading/billing/bill distribution.

Key Projects:

- Technical and commercial monitoring of the franchise implementation, Formulated handheld-based metering system for franchise, implemented a micro-feeder franchise business model.
- Commercial quality assurance management of North Delhi Power Limited. Controlled and monitored commercial revenue leakage points in consumer clusters. Undertook load violation drive for recovering the demand charges through voluntary disclosure of loads by consumers.

Software Skills

System Advisory Model, EnergyPlus, OpenStudio, MatLab, CVX, Gurobi, HAP 4.6, Primavera® Systems, MS-Projects, SketchUp, AutoCAD, MS Office, Photoshop 7, MySQL, SolidWorks.

Languages

Proficient in English, Hindi, Bengali

Presentations and Publication

- A. Sedaghat, M. Ram, A. Zayed, **R. Kamal** and N. Shanahan, "Investigation of Physical Properties of Graphene-Cement Composite for Structural Applications," *Open Journal of Composite Materials*, Vol. 4 No. 1, 2014, pp. 12-21. doi: 10.4236/ojcm.2014.41002.

- P. D. Myers, Jr., T. E. Alam, **R. Kamal**, D.Y. Goswami and E. Stefanakos, “Nitrate salts doped with CuO nanoparticles for thermal energy storage with improved heat transfer”, *Applied Energy*, Vol. 165, 2016, 225-233. doi: 10.1016/j.apenergy.2015.11.045
- **R. Kamal**, A. Narasimhan, C. Wickramaratne, A. Bhardwaj, D. Y. Goswami, E. K. Stefanakos and H. A. Ingley, “Field performance of a Gas-Engine Driven Heat Pump in a Commercial Building”, (2015 - *In Progress).*
- A. Mueller, M. Orosz , A. Narasimhan , **R. Kamal** , H. F. Hemond and Y. Goswami, “Evolution and feasibility of decentralized concentrating solar thermal power systems for modern energy access in rural areas”, (2015 - In review).
- C. Wickramaratne, F. Moloney, T. Pirasaci, **R. Kamal**, D. Y. Goswami, E. K. Stefanakos, “Experimental study on thermal storage performance of cylindrically encapsulated PCM in a cylindrical storage tank with axial flow”, ASME (2016 accepted)
- Oral presentation and poster - **R. Kamal**, D. Y. Goswami, C. Jotshi, E. K. Stefanakos, H. A. Ingley, “Performance Evaluation and Field Testing of Gas Heat Pump,” FESC Workshop-2014, Gainesville, Florida.
- Poster - **R. Kamal**, C. Jotshi, D. Y. Goswami, E. K. Stefanakos, “Performance Testing of a Solar Air Conditioning System”, IDEA-2013 and Research Day-2013, USF, Tampa, Florida.

Awards

- 2015. The Florida High Tech Corridor Council's Matching Grants Research Program
- 2014. Academic Scholarship from ASHRAE- Florida West Coast Chapter
- 2014. The Florida High Tech Corridor Council's Matching Grants Research Program
- 2013. Academic Scholarship from ASHRAE- Florida West Coast Chapter
- 2004. ISO 9000:2000 Series Auditor/Lead Auditor Training

Membership and Societies

- 2015-current. President of ASHRAE student chapter, USF
- 2013-current. ASHRAE member
- 2014. ISES-Power USF student chapter founding member

Internships:

2004 May – 2004 June. ABB-Network Management Systems Division, Bangalore, India

- Distribution Automation system and it's Cost Benefit Analysis.

2002 May. Steel Authority of India Limited (SAIL), Durgapur Steel Plant, India

- Study of processes and operation of India’s largest steel manufacturing facilities.