Rolf Jacobson - Research Fellow, LEED AP, CPHC

EDUCATION:

2011 Masters of Science, Sustainable Design, CDES, University of Minnesota
2007 Masters of Architecture, CDES, University of Minnesota
2001 Bachelor of Arts, St. Olaf College, Northfield, MN Major: Physics, Math

EXPERIENCE:

2015-16 **Research Fellow,** Center for Sustainable Building Research
Research Projects include:

- Minnesota Sustainable Housing Initiative (www.mnshi.umn.edu) – High performance housing case study analysis and documentation for the mnshi website database.
- SB2030 and B3 Program – LCA analysis and renewable energy levelized cost analysis

2007-16 **Owner and principal,** Skandia Design & Consulting, LLC
Provide design, energy, and envelope consulting services for new private residences and home renovation projects. Work with homeowners, architects, and developers to design and build high-performance homes. Additional services include energy modeling (REM Rate, PHPP, Energy-10), window and envelope selection, HVAC and renewable energy systems planning, hygrothermal modeling (WUFI) and thermal bridge analysis (THERM).

2013-15 **Research Consultant,** University of Minnesota Cold Climate Housing Program and DOE Building America NorthernSTAR team member
Research projects include:

- Best of NorthernSTAR – energy modeling and analysis of energy saving measures (mechanical systems, air sealing, and exterior insulation) employed in an affordable housing deep energy retrofit.
- Ground Source Heat Pump Field Study – Data analysis and energy modeling for in-situ residential ground source heat pump installations.
- Innovative Insulation Retrofit for Concrete Block Foundations – Data analysis and drafting research report on impacts of various insulation strategies for existing concrete block foundations including core fills and shallow exterior insulation.
- Excavationless Insulation Retrofit for Foundations – Presentation development on the combined hydrovac/pourable foam technology for insulating existing foundations.
- Building Science Education Development for trades and students.

2008–12 **Research Fellow**, Center for Sustainable Building Research
Research projects included:

- Development of Upstream Energy Design Guidelines for single family and multi-family affordable housing projects.
- High Performance Commercial Windows Design Guide, with NREL - Data analysis, graph production, and website development (http://www.commercialwindows.org)
- Minnesota Sustainable Housing Initiative (www.mnshi.umn.edu) - Research, analysis, and costing of sustainable design strategies and technologies, energy modeling, website design and production, and community design charrettes, focused on affordable housing
- Design Guidelines for Sustainable Housing - Research paper comparing sustainable building guidelines and rating systems such as LEED NC, submitted to Yonsei University, S. Korea

- Minnesota Site and Building Carbon Calculator, submitted to MPCA
- Post Occupancy Evaluations – utility bill analysis for normalized water and energy use, submitted to Washington County

2010–11 **Fulbright Student Researcher,** Centre for Zero Emissions Buildings (ZEB)
Self-directed Master's of Science thesis research in Norway on the comparative performance of 8 types of passive house envelopes commonly used in cold climates. Building science topics included life cycle environmental impacts, hygrothermal performance, thermal bridging, and 2-D U-value analysis. Worked with NTNU professors and SINTEF researchers to learn software programs and analysis techniques for WUFI, THERM, PHPP, and 2-D U-values.

2006-08 **Research Assistant**, Center for Sustainable Building Research
Research projects included:
- Viking Terrace Green Building Health Outcome Evaluation - helped conduct multi-unit blower door and pressure testing, indoor air quality monitoring, and utility bill analysis for 60-unit affordable housing complex.

2006-10 **Architect Intern**, Abraham + Associates Architects
Primarily responsible for the successful completion of LEED EB certification for 65,000sf office building in Edina, MN. Work included documenting and managing credit submittals, drafting organizational sustainability policies, conducting client meetings, and participating in HVAC recommissioning efforts.

2003-05 **Framer**, Olympic Construction
Worked as a framer for local home construction company, learning the process and technique of wood frame construction.

2000-02 **Project Coordinator**, enXco Wind Energy Development
Worked as a project manager in the Midwest office of a nation-wide, utility-scale wind energy developer. Identified and scouted potential sites, organized and led landowner meetings/acquisition efforts, and managed landowner and meteorological tower databases.

COMPUTER SKILLS:
WUFI Pro hygrothermal modeling software, THERM heat flow modeling software, Athena Eco-calculator life cycle environmental analysis, PHPP 2007, WUFI Passive, REMRate, Energy-10, BEopt, CostWorks construction cost database, Adobe Photoshop, Adobe Illustrator, Google Sketchup and Layout, Microsoft Office Suite

ORGANIZATIONS & PROFESSIONAL ACTIVITIES:
Passive House Alliance Twin Cities, Board Member
Building Enclosure Council of MN
LEED accredited professional (LEED AP)
Certified Passive House Consultant (CPHC)

AWARDS & HONORS:
Fulbright Scholarship, 2010/2011

Thesis Prize nomination, University of Minnesota, 2007
ARCC King Student Medal for Excellence in Architectural + Environmental Design Research, University of Minnesota, 2007
Graduated Magna Cum Laude, Phi Beta Kappa, with Departmental Distinction in Physics, St. Olaf College, 2001

PUBLISHED PAPERS & ARTICLES

Minnesota Department of Commerce, 2016. "Residential Ground Source Heat Pump Study"
US Department of Energy, 2015. "NorthernSTAR 1 ½ Story Demonstration House of Cold Climate Solutions for Affordable Housing"
Home Energy Magazine, November 2014. "Comparing Eight Cold Climate Envelopes"
U.S. Department of Energy, 2014. "Innovative Retrofit Strategies for Concrete Masonry Foundations"
GRIN Verlag, 2011. "Performance of 8 Cold Climate Envelopes for Passive Houses"

PRESENTATIONS

Halfmoon Continuing Education 1-day Seminar, Passive House Planning and Design – Sept. 2016
Duluth Energy Design Conference – February 2015, '13, '12
MN Sustainable Building 2030, 10-wk Course – March 2015, '14, '13, '12
Northeast Sustainable Energy Association, Building Energy Conference – March 2014
Passive House Institute US National Conference – September 2016, '15, '14, '13, '12,
AIA MN Convention and Exposition – November 2013, 2015
Passive House Alliance Minnesota Chapter (presentation and webinar) – May 2013
Passivhus Norden (Scandinavian Passive House Conference in Trondheim, Norway) – October 2012
AIA MN Building Enclosure Council (BEC) – February 2012