

J. Neymark & Associates

Golden, Colorado • USA

• Building Energy Simulation • Software Testing and Validation • Codes & Standards •

JOEL NEYMARK, P.E.

Principal

EDUCATION

Master of Science. Mechanical Engineering, 1988, Colorado St. University, Fort Collins, CO.

Bachelor of Science. Mechanical Engineering, 1982, University of Illinois, Urbana, Illinois.

EXPERIENCE

1992 - **Principal**

Present J. Neymark & Associates (JNA), Golden, Colorado

An engineering practice providing research and technical support to:

- Argonne National Laboratory (Argonne) and National Renewable Energy Laboratory (NREL), to develop building energy simulation test (BESTEST) procedures in collaboration with American Society of Heating Refrigerating, and Air-Conditioning Engineers (ASHRAE), International Energy Agency (IEA), Residential Energy Services Network (RESNET), and others -- 1992 to present.
- Florida Solar Energy Center, for adapting building energy simulation software tests to ASHRAE Standard 140 – 2008 to 2009.
- Electricité de France (EDF), for development of a building energy simulation software empirical validation data set – 1999 to 2005.

Current Project activities:

- Co-PI for ETNA thermal fabric model empirical validation test specification; project includes supervision of simulation trials by industry software developers
- Lead data analysis for NREL “iUnit” empirical validation test suite
- Lead: Air-side HVAC Equipment Model tests, Volume 2, test specification.
- Promulgation of software test procedures as standard methods of test in ANSI/ASHRAE Standard 140, in collaboration with Argonne and ASHRAE.
- Consulting with other code authorities on referencing of Standard 140 and other test procedures developed by Argonne, NREL, and JNA.

Previous Project Lead or Principal Investigator activities included (partial listing):

- Update of Standard 140, Section 7 (thermal fabric test suite)
- Std 140 adaptation: ASHRAE research to test air-side HVAC equipment models (Vol. 1)
- Empirical Data-Based test method for residential energy modeling tools
- Building Energy Simulation Test for Existing Buildings (BESTEST-EX)
- Empirical validation test development (ETNA BESTEST), including supervision of Electricité de France personnel responsible for data acquisition and test cell configuration
- Development of procedures to test unitary space cooling mechanical equipment models (HVAC BESTEST Volume 1 and Volume 2)
- Develop BESTEST procedure for ground-coupled slab-on-grade heat transfer models.

Simulation software and programming experience:

- EnergyPlus, DOE-2, and previously BLAST, SERIRES, TRNSYS, FORTRAN, GW-Basic.

1982 - **Prior Positions**

- 1992
- Independent engineering consultant, Denver, Colorado; clients included Rocky Mountain Institute/E-Source, Electric Power Research Institute, ERG Intl., NREL; 1989-1992.
 - Research Associate, Rocky Mountain Institute/E-Source; 1988-1989.
 - Grad Student RA and TA, Colorado State University, Fort Collins, Colorado; 1985-1987.
 - Assistant Construction Engineer, Sargent & Lundy, Chicago, Illinois; 1982-1984.

PROFESSIONAL ACTIVITIES

Member: American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) since 1997; **Past Chair** (2014 – 2023) of ASHRAE SSPC 140 (project committee for ANSI/ASHRAE Standard 140 "Method of Test for Evaluating Building Performance Simulation Software"), SSPC 140 Vice Chair (1999-2014); **Contributor**, 2017, 2013 & 2005 *ASHRAE Handbook of Fundamentals*; ASHRAE TC 4.7 ("Energy Calculations"). **Standards Subcommittee Chair** (since 2001) and **Voting Member** (2000-2004, 2007-2011, 2017-2021)

Member: International Building Performance Simulation Association (IBPSA), since 1991; **Scientific Committee Member:** IBPSA, since 2001; **Organizing Committee Member:** IBPSA Denver Chapter, since 2017.

PROFESSIONAL REGISTRATION

Registered Professional Engineer in Colorado, No. 29865.

PUBLICATIONS

Lead author or co-author of: 15 major research reports, 6 journal articles, and 20 conference papers. Six of the publications translated by others into Dutch, German, or Japanese. Partial listing follows:

Neymark, J.; Judkoff, R.; Kummert, M.; Muehleisen, R.; with Allison, J.; An, J.; Glazer, J.; Henninger, R.; Hiller, M.; Jiang, Y.; Johannsen, A.; Kruis, N.; McDowell, T.; Ono, E.; Strachan, P.; Witte, M.; Yan, D.; Yoshida, H. (2021). "Update of ASHRAE Standard 140/BESTEST thermal fabric test cases". Building Simulation 2021, Bruges, Belgium. September 1-3, 2021. Eindhoven, The Netherlands: International Building Performance Simulation Association (IBPSA). 2021.

J. Neymark, R. Judkoff, M. Kummert; R. Muehleisen; with A. Johannsen, N. Kruis, J. Glazer, R. Henninger, M. Witte, E. Ono, H. Yoshida, Y. Jiang, X. Zhou, T. McDowell, M. Hiller, J. An, D Yan, J. Allison, and P. Strachan. (2020). *Update of ASHRAE Standard 140 Section 5.2 and Related Sections (BESTEST Building Thermal Fabric Test Cases)* Lemont IL: Argonne National Laboratory; Golden CO: National Renewable Energy Laboratory. ANL-20/26. July 2020. (Also adapted as Addendum a to ANSI/ASHRAE Standard 140-2017.)

J. Neymark, M. Kennedy, R. Judkoff, J. Gall, R. Henninger, T. Hong, D. Knebel, T. McDowell, M. Witte, D. Yan, X. Zhou. (2016). *Airside HVAC BESTEST: Adaptation of ASHRAE RP-865 Airside HVAC Equipment Modeling Test Cases for ASHRAE Standard 140, Volume 1: Cases AE101 – AE445*. NREL/TP-5500-66000. Golden CO: NREL. March 2016.

R. Judkoff, J. Neymark, B. Polly, M. Bianchi. (2010). *Building Energy Simulation Test for Existing Homes (BESTEST-EX)*. NREL/TP-550-47427. Golden, Colorado: NREL.

J. Neymark, R. Judkoff, I. Beausoleil-Morrison, M. Crowley, M. Deru, R. Henninger, A. Nakhi, H. Ribberink, J. Thornton, A. Wijsman, M. Witte. (2008). *IEA BESTEST In-Depth Diagnostic Cases for Ground Coupled Heat Transfer Related to Slab-On-Grade Construction*. NREL/TP-550-43388. Golden, Colorado: NREL.

R. Judkoff and J. Neymark. (2006). "Model Validation and Testing: The Methodological Foundation of ASHRAE Standard 140". *Proceedings of American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Annual Meeting, Quebec City, Quebec, Canada*, June 25-28, 2006. ASHRAE Transactions, Volume 112, Part 2. [Summarizes material by the authors added to the 2005 *ASHRAE Handbook of Fundamentals*.]

J. Neymark, P. Girault, G. Guyon, R. Judkoff, R. LeBerre, J. Ojalvo, P. Reimer. (2005). "The 'ETNA BESTEST' Empirical Validation Data Set". Building Simulation 2005, 15-18 August, 2005; Montreal, Canada. IBPSA.

J. Neymark and R. Judkoff. (2002, 2004). "International Energy Agency Building Energy Simulation Test and Diagnostic Method for Heating, Ventilating, and Air-Conditioning Equipment Models (HVAC BESTEST), Volume 1: Cases E100-E200 and Volume 2: Cases E300-E545". Golden, CO: NREL. NREL/TP-550-30152 (Jan 2002) and NREL/TP-550-36754 (Dec 2004).

R. Judkoff and J. Neymark. (1995). "Home Energy Rating System Building Energy Simulation Test (HERS BESTEST) Tier 1 and Tier 2 Tests", NREL/TP-472-7332, Golden, CO: NREL, November 1995.

R. Judkoff and J. Neymark. (1995). "International Energy Agency Building Energy Simulation Test (BESTEST) and Diagnostic Method", NREL/TP-472-6231, Golden, CO: NREL, February 1995.

ASHRAE Standard 140-2023. (2023). "Method of Test for Evaluating Building Performance Simulation Software". Atlanta, GA: American Society of Heating, Refrigerating, and Air-Conditioning Engineers. SSPC members at time of publication: J. Neymark (Chair), T. McDowell (Vice Chair), B. Bhandari, B. Brannon, D. Crawley, J. Glazer, K. Gowri, K. Haddad, S. Horowitz, P. Im, R. Judkoff, M. Karpman, N. Kruis, M. Kummert, M. Leach, J. Lutz, J. McNeill, R. Muehleisen, J. Pegues, A. Roth, P. Strachan, M. Tosh, M. Witte, D. Yan, X. Zhou.