



JEFF STEIN, P.E.

Jeff Stein is a registered mechanical engineer with over 12 years of HVAC work experience including HVAC and controls design, simulation modeling, measurement and verification, commissioning, energy auditing, policy analysis, program design, and fundamental research. He specializes in detailed lifecycle cost analysis to insure that owners are able to choose the best systems and in commissioning to insure that systems operate as expected.

Mr. Stein has published several articles and design guides, given numerous seminars and taught courses to fellow engineers around the country on topics including advanced variable air volume (VAV) system design and control, underfloor air system design, and chiller plant optimization.

As part of a major research project funded by the California Energy Commission, Mr. Stein developed the Characteristic System Curve Model for predicting the performance of fans. This model is being incorporated into the new DOE EnergyPlus simulation engine. Mr. Stein was the team leader for a research project conducted at the Pacific Energy Center on the stability and accuracy of VAV boxes at low flows. Mr. Stein used the results from this ground-breaking research to develop new California and ASHRAE energy code requirements for VAV controls that are predicted to save about \$0.05/ft²-yr across a wide cross-section of new and existing commercial buildings.

Mr. Stein serves on several ASHRAE committees at the national level. As a member of SSPC 90.1, Mr. Stein has spearheaded recent improvements to ASHRAE's commercial building energy standard in the areas of chiller efficiency, VAV box controls and hydronic system design.

Mr. Stein joined Taylor Engineering in March 2000. Before joining Taylor, Mr. Stein spent two years at Eley Associates, an energy efficiency consulting firm. Mr. Stein has also worked at the Lawrence Berkeley National Laboratory, the U.S. Export Council for Renewable Energy and for ACCO, an HVAC design/build contractor. Mr. Stein holds a bachelors degree in Operations Research and Industrial Engineering from Cornell University and a masters of science in Energy and Resources from U.C. Berkeley.



Taylor Engineering

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JEFF STEIN, P.E.

Education

1997 University of California, Berkeley, M.S. Energy and Resources
1990 Cornell University, B.S. Operations Research and Industrial Engineering, with distinction

Registration

2000 – present State of California: Mechanical Engineer, M31501

Experience

2000 – present Taylor Engineering, Alameda, CA
Principal. HVAC system and control system design; HVAC system commissioning; energy conservation and computerized energy analysis; energy code development; development of HVAC engineering tools including simulation tools and design guides; training other engineers in use of engineering tools.

1998 – 2000 Eley Associates, San Francisco, CA
Energy Engineer. Energy conservation measures and detailed energy and life-cycle cost analysis of mechanical, electrical and architectural design alternatives for all types of new and existing commercial buildings. New construction performance contracting: component and whole building performance targets, performance contracts, collected and analyzed performance data, adjusted performance target, and calculated performance incentive or penalty. Software: software tools for HVAC design engineers. Energy policy/program analysis.

1997 – 1998 Air Conditioning Company Inc., Concord, CA
HVAC Design Engineer. Load calculations; field surveys; HVAC equipment selection; energy code compliance; design team coordination.

1996 – 1997 Lawrence Berkeley National Laboratory, Berkeley, CA
Graduate Student Research Assistant in the Building Energy Analysis Group. Research areas included Home Energy Rating System (HERS) and ground source heat pumps.

1996 – 1997 Alameda Bureau of Electricity, Alameda, CA
Residential Energy Auditor. Energy audits; development of literature on how ratepayers can save electricity.

1993 – 1995 U.S. Export Council for Renewable Energy, Washington, DC
Program Manager. Managed the Renewable Energy and Efficiency Training Institute which conducted training events throughout the US, Latin America and Africa.

1992 – 1993 Bruce Company, Washington, DC
Research Associate in Support of EPA's Global Change Division.

1991 – 1991 Luz Industries Israel, Jerusalem, Israel



Solar Systems Engineer. Simulation of solar thermal electric power plants.

Professional Associations

American Society of Heating, Refrigeration, and Air-conditioning Engineers (ASHRAE)

Member, 2000 – present.

Standard Project Committee 130 (Methods of Testing Air Terminal Units)

Technical Committee 5.3 (Room Air Distribution)

Technical Committee 1.4 (Control Theory and Application)

Standard Project Committee 155P (Method of Testing for Rating Commercial Space Heating Boiler Systems)

Standing Standard Project Committee 90.1 (Energy Standard for Buildings Except Low-Rise Residential Buildings)

Honors and Awards

First Place in New Commercial Buildings Category for Electronic Arts II, ASHRAE, Golden Gate Chapter, Technology Award Program, 2003

First Place in New Commercial Buildings Category for Electronic Arts II, ASHRAE, Region X, Technology Award Program, 2003

Student Travel Grant for Outstanding Student Involvement in HVAC & R, ASHRAE, Golden Gate Chapter, 1997

Energy Foundation Fellowship, 1995-1996.

Sample of Publications

Advanced Variable Air Volume System Design Guide, www.energydesignresources.com, March 2007

Stability and Accuracy of VAV Terminal Units at Low Flow, co-authored with Darryl Dickerhoff,

PG&E Emerging Technologies Program, May 2007, http://www.etcc-ca.com/database/download/ETCC_Report_371.pdf

Specifying VAV Boxes, HPAC Magazine, November 2005

It's in the Details: Engineering for Low Cost and High Efficiency, co-authored with Steven T. Taylor, ASHRAE Journal, October 2005

Sizing VAV Boxes, co-authored with Steve Taylor, ASHRAE Journal, March 2004

Development and Testing of the Characteristic Curve Fan Model, co-authored with Mark Hydeman, ASHRAE Transactions, January 2004

Advanced Variable Air Volume System Design Guide, co-authored with Mark Hydeman and Steve Taylor, California Energy Commission publication number P500-03-082-A-11, October 2003.

http://www.energy.ca.gov/reports/2003-11-17_500-03-082_A-11.PDF

A Fresh Look at Fans, co-authored with Mark Hydeman, HPAC Magazine, May 2003

Balancing Variable Flow Hydronic Systems, co-authored with Steve Taylor, ASHRAE Journal, October 2002

The Jury is (Halfway) In: New Building Performance Contracting Results, co-authored with A. Raychoudhury, C. Eley, proceedings of the ACEEE 2000 Summer Study on Energy Efficiency in Building. Washington, D.C.: American Council for an Energy Efficient Economy, June 2000

Sample of Presentations and Seminars

Lessons Learned in the Design and Control of Underfloor Systems, seminar, ASHRAE Summer Meeting, Quebec, 2006

UFAD Field Performance Data, seminar, UC Berkeley CBE Meeting, 2006

Selecting and Controlling VAV Boxes, seminar, ASHRAE Winter Meeting, Chicago, 2006



Development and Testing of the Characteristic Curve Fan Model, symposium, ASHRAE Winter Meeting, Anaheim, 2004

Optimizing Variable Air Volume Systems, full-day seminar covering all aspects of VAV systems, presented to ASHRAE chapters in Salt Lake City (2003), Burlington, VT (2003), Sacramento (2004), San Jose (2006), and the Sacramento Municipal Utility District (2004).

Representative Projects

388 Market Street	San Francisco, CA, 220,000 ft ²
ACM Aviation Facility	San Jose Int'l Airport, CA, energy and design analysis
Alameda County Courthouse Square	Hayward, CA, 30,000 ft ²
Apple Newark Data Center	Newark, CA, expansion project feasibility study
CalPERS Headquarters	Sacramento, CA, 600,000 ft ² , LEED NC Gold
CalPERS Hydronic Study Phase II	Sacramento, CA, energy analysis and preliminary design
Capitol Area East End Complex	Sacramento, CA, 480,000 ft ² , LEED NC Gold
CASE Initiatives 2005	Codes and standards enhancement studies, Title 24 review
Contemporary Art Museum Presidio	San Francisco, CA, 50,000 ft ²
DiCon Fiberoptics, Inc	Richmond, CA, 203,000 ft ²
EDR Guidelines	Production of design guides for PG&E Energy Design Resources Non-Residential New Construction Program
Electronic Arts Headquarters	Redwood City, CA, 350,000 ft ²
Growers Square	Walnut Creek, CA, 200,000 ft ²
Letterman Digital Arts Center	San Francisco, CA, 900,000 ft ² , LEED Gold
Morgan Hill Recreation Center	Morgan Hill, CA, 70,000 ft ²
Oracle Headquarters	Redwood Shores, CA, 2,000,000 ft ²
Oracle Pleasanton Building/Garage	Pleasanton, CA, 510,000 ft ²
Peralta College Computer Room Upgrade	Alameda/Oakland, CA
PG&E Chiller Analysis Program	San Francisco, CA, designed engineering service program to evaluate, develop cost demand reduction measures for existing chilled water plants
PG&E VAV Box Research	San Francisco, CA, tested variable air volume box stability and accuracy at low air flows
PIER-sponsored VAV research	3-year research project on optimization of design airside VAV systems, developed new simulation tools, energy code requirements, standards for testing VAV boxers and design guide
Sonoma State University Central Plant	Rohnert Park, CA
Symantec HQ Culver City	Culver City, CA, 550,000 ft ² , LEED NC Gold
Symantec Tucson Data Center	Tucson, AZ, 20,000 ft ² , LEED NC
The Gap San Bruno Phase II	San Bruno, CA, 670,000 ft ²
Vista (Berkeley City) College	Berkeley, CA, 160,000 ft ² , LEED NC Silver