

BRENT EUBANKS

greenengineer@lorax.org • (510) 269-7601

Interdisciplinary Design Integrator

Award-winning mechanical engineer and permaculture designer with two decades of experience. Wants to drive the transition to sustainable civilization by designing regenerative infrastructure to harness natural resource and energy flows.

PE • LEED AP • Certified Permaculture Designer • California Naturalist

*Lateral Thinker • Holistic Analyst • Design-Phase Researcher • Multidisciplinary Communicator
Renewable Energy • Passive Solar • Natural Ventilation • Thermal Mass • Control Systems
Unconventional Solutions That Work*

AWARDS

Winner, Greenbuild Design Slam	Greenbuild Conference and Expo	2006
Professional Engineer	California Board for Professional Engineers	2012
Region X Technology Award, First Place	ASHRAE	2013
Society Technology Award, Hon. Mention	ASHRAE	2014

PUBLICATIONS

"Climate Adapted Design for a California School"	<i>ASHRAE Journal</i>	May 2014
"Control Sequences and Control Programming"	<i>ASHRAE Journal</i>	March 2015
"High Performance HVAC Sequences of Operations"	<i>ASHRAE GPC 36</i>	2015

PROFESSIONAL EXPERIENCE

Taylor Engineering, Alameda, CA **2009-2015**

Engineering Design & Project Management

Responsible for the full range of design and project management activities, from schematic design through construction administration and commissioning, with emphasis on control sequence development and testing. Also responsible for retro-commissioning, including field investigation, control sequence optimization and trend analysis. Performed energy, CFD and comfort analyses for mixed-mode HVAC systems using thermal mass, natural ventilation, ceiling fans and evaporative cooling. Coordinated integration of architectural and daylighting features with mechanical systems. Projects included commercial buildings, academic and industrial laboratories, and data centers.

- Designed and tested a unique thermal-mass-based HVAC system for a new \$75M public school complex. Won ASHRAE Technology Awards at Chapter, Regional and National levels. Project information: <http://goo.gl/4jFYdR>, <http://goo.gl/rjrWXz>
- Authored best-in-class sequences of operations for control of air-side HVAC systems through ASHRAE Research Project 1455. Results are being formally adopted by ASHRAE as Guideline 36.
- Developed software to support VAV fume hood retrofits. This software is now in use throughout the firm. Designed and tested VAV fume hood retrofits for UC Berkeley, California Institute of Technology, and Lawrence Berkeley National Laboratory.
- Wrote and executed functional tests for a 16,000-ton campus chiller plant for the California Department of General Services.
- Participated in ASHRAE committees TC 1.4 and SPC 207, and in California Title 24, to develop standards for automatic fault detection and diagnostics.

Cogent Energy, Concord, CA **2007-2009**

Energy Efficiency Engineering & Commissioning

Performed commissioning of existing and new commercial and institutional buildings and campuses. Responsibilities included peer review, field inspections and testing, trend data analysis, functional testing, and presenting reports to clients.

- Retro-commissioning: UC Davis Bainer Hall (engineering building), UC Davis Chemistry/Chem Annex, UC East Bay Hayward Science Building, UC East Bay Concord central plant.
- New building commissioning: UC Sacramento Broad Athletic Facility (PCL controls), UC Hayward student housing.

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Stantec Consulting, San Francisco, CA

2006-2007

Engineering Design

Provided conceptual and analytical design support to green building projects, including modeling of unconventional HVAC strategies. Also acted as in-house expert for renewable energy technologies, advising colleagues on a variety of projects.

- Analyzed low-carbon energy options, including PV, wind and cogeneration for a large multifamily housing project in San Francisco. Defined design strategy based on operational requirements and cost-effective reduction of carbon.
- Supported design of a rural passive solar healthcare facility, incorporating on-site wastewater treatment and a living pool.
- Analyzed vintage 1970s passive solar house to correct for overheating due to excessive glazing.

Cooperative Community Energy, Sebastopol, CA

2001-2006

Engineering & Business Development

Worked as a self-directed independent contractor for this nonprofit photovoltaic buyers' cooperative. Designed, engineered, and managed installation of large PV systems for residential, municipal, school, and commercial customers. Also responsible for presenting proposals, closing the sale, and providing customer service.

- Created software to predict PV performance and payback, and trained and supported sales force in use of these tools, which were adopted company-wide.
- Sole author of proposal for Solar Sebastopol, an award-winning municipal partnership to promote in-town solar installations.
- Created commercial consulting services group to provide engineering for large scale projects independent of equipment sales.
- Served on Board of Directors 2005 – 2007.

Various Firms, California

1995-2001

Machine Design & Prototype Fabrication

Designed mechanical products, assembly tooling, and test fixtures for several different engineering firms. Responsibilities included design, drafting, specifications, test procedures, prototype fabrication, and manufacturing process development.

- Developed a novel high-pressure rocket engine combustor for the Rotary Rocket Company, a VC-funded space launch startup. Developed, fabricated and test-fired three generations of engine technology in 18 months.
- Designed and tested new high-voltage electrical connector designs for aircraft and trains.
- Designed various sporting equipment, including a boxing robot

EDUCATION

Bachelor of Science, Mech. Eng.	<i>California Institute of Technology (Caltech)</i>	1995
Green Business Development	<i>Institute for Environmental Entrepreneurship</i>	2001
Certified Permaculture Designer	<i>Occidental Arts and Ecology Center</i>	2004
LEED® Accredited Professional	<i>U.S. Green Building Council</i>	2004
California Naturalist	<i>University of California</i>	2013

More than 300 hours of continuing education, including HVAC Equipment (ME x470) and HVAC Energy Management Systems (ME x473) at UC Berkeley, as well as Daylighting Principles, Control Sequence Design, Critical Control Sensors, Solar Thermal and Radiant Heating Systems, Automated Demand Response Strategies, Combined Heat and Power Systems, Sustainable Site Planning and Landscape Design, Energy Auditing, PV Advanced Technical Training, Business Plan Preparation, Finance and Accounting Principles.