



# Taylor Engineering<sup>LLC</sup>

1080 Marina Village Parkway, Suite 501 ■ Alameda, CA 94501-6427 ■ (510) 749-9135 ■ Fax (510) 749-9136

## **GLENN FRIEDMAN, P.E.**

Glenn Friedman is a Registered Mechanical Engineer with a BS in Chemical Engineering from the University of California, Berkeley. After graduation, he attended Carrier Corporation's Building Systems Design School in Syracuse, New York. He has over 25-years of commercial and industrial HVAC system design experience as the Principal of a design/build contracting company before joining Taylor Engineering as a Principal in 1999.

Mr. Friedman is considered an authority on the design/build process for HVAC and energy management & control systems. His design/build projects include hospitals, chemical refineries, manufacturing, schools, casinos, municipalities, offices, malls, restaurants, hotels, retail and high-end custom residences throughout the Bay Area.

Mr. Friedman is an experienced air and water balance professional, NEBB certified as an Air and Water Balancing Supervisor from 1986 to 1999, and a LEED® Accredited Professional.

Mr. Friedman is an experienced control system designer. In addition to designing and programming the control systems for the HVAC projects he designed and installed, Mr. Friedman has designed controls for several commercial and industrial projects. He has had factory training and practical experience with a large variety of controls systems including direct digital controls (DDC), electric and pneumatic controls.

As a contractor and a design professional, Mr. Friedman has worked closely with end-users, owners, architects, general contractors and field crews. Combining his knowledge of HVAC system design, control systems, energy conservation, indoor air quality, system service and maintenance, and system balancing along with his practical, hands-on design/build experience, Mr. Friedman brings an exceptional value to any HVAC system project.

Mr. Friedman's industry experience in mechanical systems design, control systems design, energy efficiency work, construction installation, service, maintenance, and test and balance, results in a solid and unique background for commissioning work. Mr. Friedman has been doing commissioning work for his entire career. His commissioning work ranges from high end custom residential to high tech, including creative energy efficiency work, laboratories, data centers, radiant and evaporative cooling systems and many LEED projects.

Mr. Friedman also uses his industry experience combined with his commissioning skills to do construction management and dispute resolution work. He has worked on many jobs by other firms that were at risk of failure or had not meet owner's expectations. Mr. Friedman has been able to work with the existing design and construction teams to achieve successful resolutions and job completion.

Mr. Friedman has been an instructor at the University of California, Berkeley, Extension, teaching the Refrigeration course.

Mr. Friedman does volunteer work in the HVAC industry. Mr. Friedman's involvement in such associations as the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE), the Air Conditioning Contractors of America (ACCA), the Refrigeration Engineers Society (RSES) and the National Environmental Balancing Bureau (NEBB) has spanned his entire career.



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## **GLENN FRIEDMAN, P.E.**

### **Education**

- 1980 University of California, Berkeley, B.S. Chemical Engineering, graduated with High Honors  
1981 Carrier Corporation, Building Systems Design Course

### **Registration, Certification and Accreditation**

- 1984 – present State of California: Mechanical Engineer M-22870  
2002 ACCA Manual J 8 Training Certification for Manual J Trainers  
2002 LEED<sup>®</sup> Accredited Professional

### **Experience**

- 1999 – present Taylor Engineering, Alameda, CA  
Principal. HVAC system and control system design; indoor air quality analysis; HVAC system commissioning; energy conservation and computerized energy analysis.
- 1999 – 2002 Air Conditioning Contractors of America, Arlington, VA  
Interim Technical Manager. Directed the technical department and the association's technical operations.
- 1999 American Mechanical Systems, Richmond, CA, Houston, TX and Memphis, TN  
Vice President Implementation Project Manager. Corporate coordinator of the installation of new accounting and project management computer systems for year 2000 upgrades.
- 1998 – 1999 American Mechanical Systems, Richmond, CA, Houston, TX and Memphis, TN  
Vice President Market Development. Involved with corporate mergers and acquisitions of HVAC, electrical and plumbing contractors.
- 1997 American Mechanical Systems, Richmond, CA, Houston, TX and Memphis, TN  
Area Vice President. Responsible for operations, sales and marketing of design/build projects at the Richmond, CA branch.
- 1981 – 1997 Engineered Air Systems, Inc., Richmond, CA  
President and majority stockholder. Project managed complete design/build HVAC projects, specializing in unusual, complicated, retrofit projects. Trained technical personnel. Managed business operations.

### **Professional Associations**

- Air Conditioning Contractors of America (ACCA)  
National President, 1996  
Executive Committee, 1994 – 1999



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Board of Directors, 1990 – 1999  
Advisory Council, 1996 – present, Chairman 1997  
Technical Committee, 1991 – 2007, Chairman 1997 – 2003, 1999 – 2002 Interim Technical  
Manager of the Association's Technical Department  
Codes Committee, 2004 – 2007  
Commercial Load Calculation MN Review Committee, 2006 – 2007  
Quality Contractor/Quality Installation Specification Review Committee, 2005 – 2006  
Residential Quality Installation Manual S Review Committee, 2005 – 2006  
Residential Extended Care ECR Manual Review Committee, 2005 – 2006  
Duct Manual D Review Committee, 2005 – 2006  
Residential Load Calculation MJ8 Review Committee, 2002 – 2006  
Industrial Relations Committee, 1994 – 1996  
Information Systems Committee, 1997 – 1998  
American Society of Heating, Refrigerating, and Air- Conditioning Engineers (ASHRAE)  
National ASHRAE Member 1981 – 1991; Member 1991 – present  
National ASHRAE Technical Committee TC9.5 Residential and Small Buildings (RSBA)  
Applications Chairman 2003 – 2005  
National ASHRAE Technical Committee TC4.1 Load Calculations Program and Standards Chair  
2002 – present  
National Special Project Committee SPC-183P Peak Cooling and Heating Load Calculations in  
Buildings Except Low-Rise Residential Buildings, 2005 – 2007  
National Special Project Committee T-STDS-SPC 193 Method of Test for Determining the Air-  
Leakage Rate of HVAC Equipment, 2007 to present  
National Special Project Committee SPC 100, Energy Conservation in Existing Building, 2009 to  
present  
Golden Gate Chapter Board of Directors 2002 – present, Chapter Treasurer 2003 – 2004, Secretary  
2004 – 2005, President-Elect 2005 – 2006, President 2006 – 2007  
Golden Gate Chapter Technical, Energy and Government Activities Chairman 2001 – 2002  
Golden Gate Chapter Student Activities Chairman 2000 – 2001  
Golden Gate Chapter Refrigeration Committee, Chairman 1999 – 2000  
California Commissioning Collaborative  
Advisory Committee, 2005 – 2006  
Air Conditioning Contractors of America – California State Chapter (Cal ACCA)  
Board of Directors, 1988 – 1991 and 2002 – 2006  
One of the Association's founders, 1988  
President for three terms, 1988 – 1991  
International Building Performance Simulation Association (IBPSA)  
Member, 2002 – 2005  
National Environmental Balancing Bureau (NEBB)  
Certified Air and Water Balancing Supervisor, 1986 – 1999  
Nominations Committee, 1998 – 1999  
Refrigeration Service Engineers Society (RSES)  
Member, 1992 – 2000

### Awards

ASHRAE Technology Award for the University of California, Merced, Sierra Terraces Dormitories,  
2009 Golden Gate Chapter ASHRAE First Place, 2010 ASHRAE Society Technology Awards  
Regional X First Place, and 2010 Society Technology Awards Honorable Mention  
ASHRAE Technology Award for the Orinda City Offices Building, 2009 Golden Gate Chapter  
ASHRAE First Place and 2010 ASHRAE Society Technology Awards Regional X Honorable  
Mention



- ASHRAE 2001 Milton W. Garland Refrigeration Award, in recognition of the most outstanding work promoting the science of refrigeration during 1990 – 2000
- ASHRAE Region X 1999 – 2000 R. Alex Anderson Award for Exemplary Performance in Fulfilling the Duties of Chapter Refrigeration Chair
- First Place Quality Home Comfort Award, Contracting Business Magazine, 1994, for the energy efficient residential retrofit of problem homes in Fairfield California
- First Place Commercial Design/Build Award, Contracting Business Magazine, 1991, for the energy efficient Oaks Club Card Room heat-recovery, smoking-area ventilation system

### **Teaching Experience**

- “X472 HVAC System Design Considerations,” instructor, HVAC Continuing Education for Engineers, University of California Extension, San Francisco, CA, 2008 to present
- “X471 Refrigeration,” instructor, HVAC Continuing Education for Engineers, University of California Extension, Redwood City, CA, 2002
- “Manual J Version 8 Residential Heating and Cooling Load Calculations Training,” instructor, Air Conditioning Contractors of America Course, Downey, CA, 2002

### **Publications**

- Energy-Saving Dorms*, ASHRAE Journal, May 2010
- ASHRAE/ACCA Standard Peak Cooling and Heating Load Calculations in Buildings Except Low-Rise Residential Buildings, ASHRAE/ACCA, 2007
- Taking Controls In-House*, Contracting Business, September 2005
- Too Hot/Too Cold: Diagnosing Occupant Complaints*, ASHRAE Journal, January 2004
- Good HVAC Practices for Residential and Commercial Buildings, ACCA, 2003
- Residential Duct Diagnostics and Repair, ACCA, 2003
- Residential Load Calculation, Manual J Eighth Edition, ACCA, 2002
- Comfort, Air Quality, and Efficiency by Design, Manual RS, ACCA, 1997
- Residential Equipment Selection, Manual S, ACCA, 1995
- Residential Duct Systems, Manual D, ACCA, 1995
- Commercial Applications, Systems and Equipment, Manual CS, ACCA, 1993

### **Representative Design and Commissioning Projects**

2020 Milvia	Berkeley, CA, 42,000 ft <sup>2</sup> , LEED NC
733 Front St.	San Francisco, CA, 110,000 ft <sup>2</sup>
Alameda Assessor/Treasurer Offices	Oakland, CA, 30,000 ft <sup>2</sup>
Alameda County Counsel Offices	Oakland, CA, 10,000 ft <sup>2</sup>
Alameda County Data Center	Alameda, CA, 7,000 ft <sup>2</sup>
Alameda County Master Plan	Alameda, CA, retrofit analysis
Alameda County Public Works Bldg.	Hayward, CA, 45,000 ft <sup>2</sup>
Alameda County Waste Management	Alameda, CA, 15,000 ft <sup>2</sup> , LEED NC Platinum
Alameda Free Library	Alameda, CA, 46,000 ft <sup>2</sup> , LEED NC
Caltech Linde + Robinson Lab	Pasadena, CA, 45,000 ft <sup>2</sup> , LEED NC
Caltech Campus Retrocommissioning	Pasadena, CA, Phase 1, 4 buildings, 380,000 ft <sup>2</sup>
Chartwell School	Seaside, CA, 20,000 ft <sup>2</sup> , LEED NC Platinum
Chevron Refinery Control Room	Richmond, CA, 2,000 ft <sup>2</sup>
Chevron USA	Richmond, CA, plant HVAC/control system retrofits
City College SF, New Mission Campus	San Francisco, CA, 230,000 ft <sup>2</sup>
City of El Cerrito City Hall	El Cerrito, CA, 17,000 ft <sup>2</sup> , LEED NC
City of Orinda City Offices	Orinda, CA, 12,000 ft <sup>2</sup> , LEED NC Gold
Dahlin Group Office Building	Pleasanton, CA, 27,000 ft <sup>2</sup> , LEED CI Silver



Dublin Senior Center	Dublin, CA, HVAC feasibility study
East Palo Alto YMCA	Palo Alto, CA, 32,000 ft <sup>2</sup> , LEED NC Gold
Ford Motor Distribution Center Offices	Richmond, CA, 20,000 ft <sup>2</sup>
Freight & Salvage Coffee House	Berkeley, CA, 18,000 ft <sup>2</sup> , LEED NC
Fremont Fire Station	Fremont, CA, 45,000 ft <sup>2</sup>
Fremont Fire Stations	Fremont, CA, HVAC program and feasibility study
Golden Gate Fields Race Track	Albany, CA, HVAC system and control system retrofits
Holiday Inn Hotels	San Francisco, CA, various hotel HVAC/control system retrofits
Il Fornaio Restaurants	Throughout CA, HVAC system/control system designs
Informatica Office and Data Center	San Mateo, CA, 160,000 ft <sup>2</sup>
Int'l House Chevron Auditorium	Berkeley, CA, 5,000 ft <sup>2</sup>
John Muir Memorial Hospital	Walnut Creek, CA, facility HVAC/control system retrofits
Joyce Ellington Branch Library	San Jose, CA, 13,000 ft <sup>2</sup>
Kenilworth Jr. High School	Petaluma, CA, HVAC energy efficiency consulting
Marin Academy Theatre Expansion	San Rafael, CA, 13,600 ft <sup>2</sup>
Marin Country Club	Novato, CA, HVAC design criterion, peer review
METHOD-637 Commercial Street	San Francisco, CA, 21,000 ft <sup>2</sup> , LEED CI certified
Morgan Hill Recreation Center	Morgan Hill, CA, 51,000 ft <sup>2</sup>
Neiman Marcus Remodel	San Francisco, CA, 230,000 ft <sup>2</sup>
Oaks Club Casino/Card Room	Emeryville, CA, 45,000 ft <sup>2</sup>
Park Day School	Oakland, CA, Master plan MP consulting services
Peralta College Computer Rooms	Alameda/Oakland, CA
PG&E Conference Center	San Ramon, CA, 240,000 ft <sup>2</sup>
PG&E Technical/Ecological Services	San Ramon, CA, 56,000 ft <sup>2</sup>
Pleasanton Veterans Memorial Bldg	Pleasanton, CA, 9,200 ft <sup>2</sup>
Ratna Ling Wellness Center	Cazadero, CA, 14,000 ft <sup>2</sup> , LEED NC
Rhone Chemical Control Room	Martinez, CA, 2,000 ft <sup>2</sup>
Richmond Plunge	Richmond, CA, Remodel schematic design
Ritz Carlton Resort	Half Moon Bay, CA, peer review, value engineering design
San Leandro City Hall	San Leandro, CA, 40,000 ft <sup>2</sup>
San Leandro Public Safety Bldg.	San Leandro, CA, 23,000 ft <sup>2</sup>
Santa Clara Community Center	Santa Clara, CA, 34,000 ft <sup>2</sup>
St. Anthony's Foundation	San Francisco, CA, 47,000 ft <sup>2</sup> , LEED NC Gold
San Francisco County Jail #3	San Bruno, CA, HVAC systems litigation consulting
Stanford Braun Music Center	Stanford, CA, Air Conditioning system retrofit
Stanford Business School	Stanford, CA, building HVAC/control system retrofits
Stanford Escondido Village	Stanford, CA, building hydronic system retrofits
Stanford Center for Educational Research	Stanford, CA, 66,000 ft <sup>2</sup>
Stauffer Chemical	Richmond, CA, plant HVAC/control system retrofits
Sullivan Square	Las Vegas, NV, 1,100,000 ft <sup>2</sup> , LEED NC
Tehiyah School Phases I & 2	El Cerrito, CA, classroom/gym HVAC services
The Towers on Capitol Mall	Sacramento, CA, 1,700,000 ft <sup>2</sup>
UC Berkeley Doe Library Remodel	Berkeley, CA, 5,600 ft <sup>2</sup>
UC Berkeley Fong Library Remodel	Berkeley, CA, 5,200 ft <sup>2</sup>
UC Berkeley Stanley Hall	Berkeley, CA, 285,000 ft <sup>2</sup>
UC Merced	Merced, CA, 400,000 ft <sup>2</sup> , LEED Silver
UC Merced Sierra Terraces Dorm	Merced, CA, 84,000 ft <sup>2</sup> , LEED NC Gold
UC Davis Briggs Hall	Davis, CA, HVAC retrofit, energy upgrade analysis
UC Davis Phys-Geo	Davis, CA, monitoring based commissioning project
UC Merced MEP	Merced, CA, MEP master specification development
United States Post Office	Bay Area, CA, facility HVAC/control system retrofits
University of CA Extension	San Francisco, CA, Steam system alterations



### Representative Residential Projects

Atherton Home	New construction of 8,000 ft <sup>2</sup> single family home
Atherton Home	Diagnose and repair of 30,000 ft <sup>2</sup> new construction single family home with remote heating and cooling plant, energy recovery pool heat rejection, multizone air handling unit and sophisticated controls
Belvedere Home	Retrofit of 5,000 ft <sup>2</sup> single family home heating system with separate in-law suite with independent heating system
Berkeley Home	Retrofit of 2,500 ft <sup>2</sup> single family home with multi-zone system with four zone temperature controls
Berkeley Home	Retrofit of 3,000 ft <sup>2</sup> single family home heating system
Berkeley Home	Retrofit of 3,000 ft <sup>2</sup> single family home heating system
Berkeley Home	Retrofit 3,000 ft <sup>2</sup> single family home HVAC system
El Cerrito Home	Retrofit of 2,800 ft <sup>2</sup> single family home heating system including the addition of whole house humidification
Fairfield Track Homes Retrofit	Award winning retrofit of 2,500 ft <sup>2</sup> newly installed single family homes with temperature control and zoning issues
Lafayette Home	New construction of 20,000 ft <sup>2</sup> single family home including valuable custom artwork and artifacts with remote hot and chilled water plant, radiant floor heating, kitchen exhaust with make up and refrigerated wine room
Los Altos New Home	New construction of 25,000 ft <sup>2</sup> single family home with remote hot and chilled water plant
Oakland Home	Custom ventilation of 60 ft long by 9 ft wide half round skylight to remove heat
Piedmont Home	Retrofit of 4,500 ft <sup>2</sup> single family home with combined domestic and hydronic heating including reuse of existing radiators and new fan coils
Piedmont Home	Retrofit of 4,000 ft <sup>2</sup> single family home with multi-zone system with four zone temperature controls
Point Richmond Home	New construction of 4,000 ft <sup>2</sup> single family home
Portola Valley Home	Retrofit of DDC (direct digital controls) for a water source heat pump system on an existing 12,000 ft <sup>2</sup> single family home
Richmond Home	Retrofit of 2,500 ft <sup>2</sup> single family home
Sacramento Home	New construction of 12,400 ft <sup>2</sup> single family home
San Francisco Home	Remodel of 4,500 ft <sup>2</sup> single family home
San Francisco Home	New construction of 5,000 ft <sup>2</sup> single family home
San Francisco Home	Remodel of 8,000 ft <sup>2</sup> single family home with museum
San Rafael Home	Remodel of 5,000 ft <sup>2</sup> single family home
Sankofa House, Berkeley	New construction for 4,500 ft <sup>2</sup> multi-family housing for homeless including high efficiency air filtration and house pressurization
Tiburon Home	Retrofit of 5,500 ft <sup>2</sup> single family home with art studio to add air conditioning to the existing system and ventilate the art studio
Woodside Home	Retrofit of 8,000 ft <sup>2</sup> single family home with failed ground source HVAC system including new hot and chilled water systems