

SEMINARS AND TRAINING

As a part of **ERA**'s regular consulting activities, the firm has taken on numerous assignments in the training field, ranging from impromptu presentations to formal multi-day seminars provided to private industry, professional associations, government agencies and utility companies. A sampling of these assignments includes:

- **SEMINAR: *Management, Measurement and Verification for Performance Contracts***. This seminar was developed by **ERA** but is taught under the auspices of the Association of Energy Engineers (AEE) nationwide. The seminar deals with how to manage a performance contract (selecting an ESCo, managing the audit, managing the project design and managing the construction) as well as the all-important proof of performance, measurement and verification. Besides being presented to the public, the seminar has been taught in-house to DOE Super-ESPC program managers at the Oak Ridge National Laboratory. The seminar has been so successful that The Fairmont Press has contracted for the transformation of the seminar into a text on the subject, to be published first quarter of 2003.
- **SEMINAR: *Computerized Building Energy Simulation***. This seminar was developed by **ERA** and has also been taught under the auspices of the Association of Energy Engineers (AEE) nationwide. The seminar deals with how to create an accurate simulation model of an existing building, including the field survey, data gathering and interpretation, preliminary energy balance, data entry, output critique and model calibration and simulation of retrofit measures. In its two-day form, it included a one-day class exercise in which the attendees create and calibrate a model of an actual building. Besides being presented to the public, the seminar has been taught in-house to the Performance Contracting Division of a national digital controls and building automation manufacturer. The seminar was so successful that The Fairmont Press has published a text on the subject in 2000 by the same name.
- **UNIVERSITY COURSE: *HVAC Design: Equipment and Distribution Systems***. This course was developed by **ERA** and taught through the University of California, Berkeley, Extension. The 10-week course is a somewhat advanced course in HVAC system design and includes a quick review of fundamentals, air-side system types and applications, hydronic system design including cascade pumping, air distribution design from equipment to ducts and terminal devices, ventilation and indoor air quality, central plant equipment and system auxiliaries. The entire content of the course is oriented towards practical application and real-world insights more than theoretical considerations.
- **UNIVERSITY COURSE: *Energy Information: Energy Audits of the Future***. This course was developed by **ERA** and taught through the University of California, Berkeley, Extension. The 10-week course is a “cooks tour” of energy auditing, from instrumented field survey, to building

simulation, to performance contracting and energy conservation measure development and analysis. Sessions included a hands-on instrumentation demo, energy accounting and building simulation software demo's and a class exercise involving a real building survey, analysis, simulation and ECM identification.

- **SEMINAR: *Preliminary Energy Audits***. This seminar was developed by **ERA** and taught under the auspices of Pacific Gas and Electric Company at their Pacific Energy Center in San Francisco. The seminar deals with planning and performing preliminary energy audits, and included a field exercise to survey a nearby commercial office building to identify likely energy conservation measures.
- **SEMINAR: *Energy Audits - An Introduction***. This seminar was developed by **ERA** and taught under the auspices of Pacific Gas and Electric Company at their Pacific Energy Center in San Francisco. The seminar deals with planning and performing energy audits of buildings, including field surveys, data gathering and interpretation, a preliminary energy balance class exercise and brief treatment of building simulation and measurement and verification.
- **SEMINAR: *Basic HVAC***. This seminar was developed by **ERA** and was taught to Pacific Gas and Electric Company energy auditors. The course was a survey of the fundamentals of HVAC systems, including a survey of the various hardware system types. The course also included site work consisting of touring and examining the (very) numerous different types of HVAC systems and equipment at PG&E's San Ramon training center (split systems, rooftop units, built-up systems and thermal energy storage).
- **OTHERS**. Besides the seminars mentioned above, other training assignments have included:
 - Hospital Energy Efficiency Seminar Pacific Gas and Electric Company
 - Energy Services Seminar Pacific Gas and Electric Company
 - Retrofit Express Rebate Auditor Training Pacific Gas and Electric Company
 - Pacific Bell Energy Retrofit Auditor Training Pacific Gas and Electric Company
 - Performance Contracting Tech Talk State of California, Office of Energy Assessments
 - HVAC Fundamentals Johnson Controls, Inc.
 - Performance Contracting Sales and Technical Training Johnson Controls, Inc.
 - Digital Control System Operations and Programming John Muir Medical Center
 - Fundamentals of Performance Contracting Scott Company Mechanical Contractors