



TOWNSEND ENGINEERING



TOWNSEND ENGINEERING, INC. provides its clientele with multiple engineering disciplines of mechanical, electrical, plumbing and fire protection. Designs include all facets of commercial, institutional and industrial facilities. We have been in business since 1987; some of our partners have experience in design and installation of mechanical systems spanning forty years.



Townsend Engineering's areas of experience in engineering design include:

- HVAC and plumbing systems
- Ground source heat pump systems
- High and low temperature thermal systems
- High and low voltage power distribution systems
- Conventional and alternative fuels power generation systems
- General power and lighting systems
- Instrumentation and control systems
- Energy Conservation studies
- Single-source project management
- Site inspections and facility/equipment start-up and check-out

Solutions to some industrial problems have required the development of computer software, incorporation of programmable logic controllers and custom computer hardware design and construction in order to produce acceptable cost effective results. We have assisted clients in designing cost-effective, high quality buildings by utilizing new and emerging technologies tied together with tried and true systems.

Coupled with the energy conservation emphasis, the direct and indirect impact of the built environment is another facet our design services address.

Townsend Engineering's most valuable resource is our "select group of professionals" who are eager to work with and for our valued clients. Their dedication exemplifies the firm's commitment to excellence in design. In order to maintain and augment our professional expertise, we are actively involved in various professional societies, from local to national levels, that support our respective areas of expertise.

MARSHALL HOUSE

Building Design Challenge : retrofit a 125 year old building with HVAC, plumbing and fire protection systems while maintaining its historic integrity

Several HVAC systems were considered before deciding that a water source heat pump system with cooling tower and



boiler would best serve this historic hotel; portions of which had been unoccupied for 25 years. Extremely limited space for mechanical systems and ductwork and a requirement to minimize the impact on both the interior and exterior of the building for these new systems required close coordination with the architect and contractors. The remodeled building is now an award winning hotel in the center of Savannah's historic district.

CATOOSA COUNTY SCHOOLS

Building Design Challenge : provide high quality conditioned space while reducing energy costs of new and retrofit school construction

In the mid 90's, Catoosa County Schools, Ringgold, Georgia committed to finding a better way to condition their schools. Townsend Engineering worked closely with the school officials to determine the priorities for the schools; good air quality, utility costs, installed cost and maintenance were all high on the list of essential components. Teachers also wanted the ability to control the temperature of their classrooms. Life cycle cost studies were done for several different mechanical systems; ground source heat pumps were the best fit for their requirements. Catoosa County has now built several schools using ground source heat pumps; these buildings operate at



one-quarter to one half of the energy cost of other buildings using conventional mechanical systems.



Calypso Resort and Towers—Panama City Beach, Florida

MULTI-USE BUILDINGS

Building Design Challenge : design for multi-use buildings containing residential, office and retail space

Many building owners are incorporating residential condominiums, office space, retail areas and recreational pools in one facility to offer owners a comprehensive living, working and play environment. Buildings containing such a diverse usage require flexible mechanical systems. Townsend Engineering considers how each portion of the building will operate, and engineers a system to handle the specific needs of the space. Dehumidification, space conditioning, outside air requirements and building pressurization are all carefully considered in the design process.

SMALL BUSINESS ENERGY AUDITS

Building Design Challenge : small business owners facing growing utility bills

We have conducted hundreds of building energy audits on restaurants, schools, civic centers, manufacturing and office space. Our knowledge of building and system design has allowed us to find savings opportunities in lighting, insulation and building envelope, mechanical systems and manufacturing processes for these facilities. Owners have made modifications that have paybacks of one to two years in electrical, fuel and water consumption costs.

FLORIDA DEPARTMENT OF CORRECTIONS

Building Design Challenge : dehumidification for secure housing units, space conditioning for front and rear support buildings

A growing inmate population with a corresponding need to construct more housing space led the Florida Department of Corrections to look outside the box on ways to condition buildings economically. Typical support buildings run 50,000 square feet and heavy cooling loads were driving utility bills higher. Utilizing the Floridian Aquifer, we designed a system to pump water up through a heat exchanger and back into the aquifer. The heat exchanger protected the ground water while circulating water to multiple buildings on the site. Each building uses multiple water source heat pumps for comfort conditioning.



TERRY E. TOWNSEND, P.E., FASHRAE

EDUCATION: 1971 - BSME, TENN. TECH. UNIVERSITY

1973 - MSME, TENN. TECH. UNIVERSITY

1978 - PhD. ME CANDIDATE, TENN. TECH. UNIVERSITY

P.E. REGISTRATIONS: AL, AK, CO, DE, FL, GA, IL, IN, KY, MD, MA, MI, MS, NC, NJ, OH, PA, SC, TN, TX, VA, NCEE CERT. 6439

PROFESSIONAL ASSOCIATIONS: CHATTANOOGA ENGINEERS CLUB

Society President 2006-2007, AMERICAN SOCIETY OF HEATING,
REFRIGERATING & AIR CONDITIONING ENGINEERS
(ASHRAE)

Numerous Society Committees and Councils

Member, Society Technical Committees

AMERICAN SOCIETY OF MECHANICAL ENG. (ASME),

AMERICAN SOCIETY OF PLUMBING ENGINEERS (ASPE),

CONSULTING ENGINEERS OF TENNESSEE

AMERICAN CONSULTING ENGINEERING COUNCIL

CLEVELAND STATE (CSCC) &

CHATTANOOGA STATE (CSTCC) TECH. ADVISORY BOARDS

Chairman, CHATTANOOGA REGIONAL SCIENCE AND

ENGINEERING FAIR BOARD OF DIRECTORS

The breadth of mechanical engineering experience has been centered in the applications of thermal science and energy transport phenomena. During graduate study, the opportunity to work on projects for industry produced developments and results that were patented by the respective companies funding the research projects. Following graduate school, entry into the Nuclear Power Component allowed a continuation of working the state-of-the-art system designs and advanced project development on an international basis with German and French companies. The "Energy Crisis" and the emerging solar energy application technology caused a change in career direction with 'Energy Conservation' and efficient components and system designs now being the way of the future. With both State and Federal monies available for clients, the recommended Energy Conservation Measures (ECM) have produced an average 35% measurable reduction in energy consumption while obtaining an average of 30% of available monies for the various clients. The design of systems integrating efficient components in both new and remodeled facilities has been an ongoing and ever-changing challenge that is being met with innovative and cost effective engineering applications. This was so judged by engineering peers who awarded Mr. Townsend with Engineer of the Year honors for his accomplishments.

Mr. Townsend served as ASHRAE Society President in 2006-2007, where he has chose "A Sustainable Future" for his Presidential Theme.

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