

**PROFESSIONAL EXPERIENCE****JUN 1988 - PRESENT****APPLIED THERMAL ENGINEERING, INC.**

Principal of this specialty engineering firm whose forté is identifying and solving complex, intractable problems; industrial power plant engineering; utility generation and distribution; cogeneration; energy conservation and recovery; industrial process improvement; project design and management; forensic engineering and expert witness in the above specialties. Boiler, air conditioning, and pump instructor. Worked as a relief utility operator at a local R&D facility whose equipment includes two 750 HP, 250 PSIG boilers, an ammonia and a carbon dioxide refrigeration system.

**Clients (direct or immediate sub) include:**

- |                            |                              |                                      |
|----------------------------|------------------------------|--------------------------------------|
| • ALCON                    | • Honda America Mfg.         | • Spirax Sarco                       |
| • Anheuser - Busch         | • Johnson Controls           | • State of Arkansas                  |
| • ARCCA, Inc.              | • Level 3 Communications     | • State of Ohio                      |
| • ATT                      | • Mead Paper                 | • Strategic Value Solutions          |
| • Cargill, Inc.            | • Nestlé                     | • The Ohio State University          |
| • Climax Molybdenum        | • NIBCO                      | • Thomson Consumer Elec. (RCA)       |
| • Ford Motor Company       | • Owens - Corning Fiberglass | • US Dept. of Justice, BOP           |
| • General Motors           | • PPG Industries             | • Volcanic Heater                    |
| • Georgia Pacific          | • RIB USCost                 | • Numerous law firms internationally |
| • Graphic Packaging Int'l. | • Ross Laboratories          | • Numerous smaller companies         |

Please see last page for representative projects.

**OCT 1983 - JUN 1988****THE OHIO STATE UNIVERSITY**

Senior Mechanical Engineer:

- Successfully managed a \$7,000,000 steam line expansion project which encompassed 30,000 feet of superheated steam and condensate lines, several major road crossings, a river bridge crossing, and 15 building tie-ins / system upgrades, all on a crowded urban campus. Project management entailed:
  - Oversight of consulting engineers.
  - Review and approval of all plans, specifications, and change orders.
  - Coordination and liaison with all affected University departments.
  - Installation coordination and oversight.
  - Resolving conflicts between this and other ongoing projects.
  - Minimization of disruption to all University operations.
- Spearheaded a \$2,300,000 cogeneration project in McCracken Power Plant. Authored the feasibility study which withstood a peer review by outside consultants; overcame significant technical and political hurdles; supervised design, specification, procurement, and installation of the 3125 KW non-condensing turbine generator, and all associated piping and auxiliary equipment.
- Assisted in the completion and startup of a 125,000 pound per hour coal fired boiler and its associated flue gas scrubber system.
- Assisted in the preliminary needs assessment and scope of work development for a medical waste incinerator.
- Earned the Mechanical Engineering Advanced Professional Degree.

**NOV 1981 - JUN 1983****CUMMINS ENGINE COMPANY**

Facilities project manager for maintenance and engineering at five large buildings. Provided engineering services for an additional twenty-five buildings, totaling over 1,000,000 square feet.

Major accomplishments:

- Converted three boilers to dual fuel capability to minimize fuel costs.
- Analyzed major electric accounts. Through a transformer purchase, brought a major facility into a lower rate structure, saving thousands of dollars annually.

**JUN 1979 - OCT 1981****ALUMINUM CO. OF AMERICA**

Mechanical engineer in charge of energy conservation for a large aluminum extrusion plant. Provided engineering services for the boiler house and billet annealing furnaces.

Major Accomplishments:

- Initiated closing the doors of the homogenizing furnaces between loads to conserve energy and reduce furnace turnaround time. Zero cost, very large annual savings.
- Discovered and engineered a heat recovery project for an aluminum chip dryer.
- Designed and built a new boiler ash handling facility. Performed major equipment enhancements.
- Analyzed the condensate return system in search of a solution to a vexing problem only to find that the difficulty was caused by a faulty control valve diaphragm.

**JUL 1977 - MAY 1979****PURDUE UNIVERSITY**

Project engineering including design and installation of retrofit HVAC systems on campus.

**JUL 1976 - JUL 1977****ARMOUR - DIAL, INC.**

Project engineer, then maintenance supervisor at a large soap manufacturing plant.

**LICENSES**

PROFESSIONAL ENGINEER: Ohio

STATIONARY ENGINEER, 3rd CLASS: Ohio

UNIVERSAL REFRIGERATION TECHNICIAN: USEPA

STEAM SYSTEM SPECIALIST: USDOE

QUALIFIED AS AN EXPERT IN U.S. AND CANADIAN COURTS

**MILITARY SERVICE**

OCT 1968 - AUG 1972

UNITED STATES MARINE CORPS

Parris Island - 1968. Completed Officer's Candidate School at Quantico in 1969. Volunteered for and actively participated in Viet Nam as an artillery forward observer.

**EDUCATION**

OHIO STATE UNIVERSITY: Mech. Engineering Professional Degree, 1988.

PURDUE UNIVERSITY: BSME, 1976. Member - Pi Tau Sigma.

**PROFESSIONAL AFFILIATIONS**

MEMBER - American Society of Mechanical Engineers

**PUBLIC SERVICE WORK**

MEMBER - Columbus District Heating Task Force, 1984 - 1986

MEMBER & PAST COMMANDER - American Legion Post #115, Delaware, OH

**COMPUTER EXPERTISE**

Proficient in all Microsoft Office applications as well as AutoCAD. Have received extensive training in the use and integration of all these products. Can learn any other package as required.

## **REPRESENTATIVE ENGINEERING PROJECTS**

- Corrected excessive gas consumption in an asphalt drying plant.
- Performed a gas line capacity and cathodic protection study for a glass blowing plant.
- Performed boiler house, steam, and condensate studies at various plants.
- Performed engineering design reviews and assisted with depreciation studies.
- Performed project engineering for an energy center upgrade.
- Performed cogeneration studies for a major university and a major auto manufacturer.
- Wrote standard air compressor specifications for a major food products company.
- Designed a steam reducing station for a large paper drying machine.
- Resolved HVAC problems in a paper mill machine room air conditioning system.
- Performed a cooling tower study for a large brewery.
- Re-engineered the heating system for a bottle washing tank at a large brewery.
- Confirmed the sizing of refrigerant and steam piping.
- Walked down and re-drew the chilled water piping at a large auto assembly facility.
- Walked down and re-drew the ammonia PID's for a large food R&D facility.
- Performed a compressed air study at a large steel mill.
- Performed a cooling study for a large natural gas pipeline compressor.
- Performed a boiler safety audit at a large food R&D facility.
- Perform Coast Guard / ASME design review and certification for thermal fluid heater manufacturers. Developed a complex, interactive Excel based program to perform the calculations.
- Have assisted in value engineering studies for the VA and the City of New York.

## **TRAINING EXPERIENCE**

- Have taught hundreds of boiler, HVAC, and pump classes for American Trainco, Applied Thermal Engineering, Lewellyn, NTT, and Versa-Tech in the US, Canada, and the Caribbean.
- University of Wisconsin - Engineering Extension, Industrial Boiler Controls Course Presenter.
- Taught ME 625, a dual level course in Power Plant Engineering, while at Ohio State University.

## **REPRESENTATIVE FORENSIC / EXPERT WITNESS PROJECTS**

- Steam line failures and explosions.
- Pressure vessel explosions.
- Boiler explosions, both fire side and water side.
- Boiler failures – non explosion.
- Pump and valve failure analysis.
- Coal supply issues.
- Cogeneration system failure.
- Atmosphere oven explosions.
- Carbon monoxide accidents and fatalities.
- Water meter failure.
- HVAC compressor failures.
- Hydro testing explosion.
- Large diesel engine cooling system failure.
- Boiler refractory failures.
- Investigate cooling tower freeze failure.
- Hot water burns / scalds.

## **PUBLISHED ARTICLES**

- “Winter Storm Warning, NBBI *Bulletin*, Winter 2012, Volume 67, Number 1.
- “75-Ton Bottle Rocket Case Study”, NBBI *Bulletin*, Fall 2012, Volume 67, Number 3.