

**30<sup>th</sup> Annual Secretary of the Army  
Energy and Water Management Award**  
*In Recognition of Accomplishments during Fiscal Year 2007*

**Award Summaries**

**Type Award – Installation**

• **Fort Carson, Colorado** – *Renewable / Alternatives*

(Mr. Vince Guthrie, Mr. Scott Clark, Ms. Stephanie Carter, Ms. Susan Galentine, and Ms. Melanie Reed, Western Area Power Administration (WAPA), Contractor)

**Category – Renewable / Alternatives**

**Energy Savings: \$63,000/ 13,000 MBTU**

This project supports the federal and state renewable energy goals by developing a 2 MW photovoltaic array, procurement of Renewable Energy Certificates (RECs), and the installation of a large transpired solar collector. The photovoltaic array will provide nearly 3 percent of Fort Carson's electrical use while the REC purchase continues to offset nearly 28 percent of electricity generated from fossil fuels. Between the photovoltaic array, RECs and renewable energy procured through the Western Area Power Administration (WAPA) and Colorado Springs Utilities, nearly 40 percent of electrical energy supporting Carson can be classified as renewable. The 2 MW PV array covers nearly 12 acres on top of a former landfill making it the largest solar array at a US Army facility and one of the largest in Colorado. This project is a partnership between SunTechnics Energy Systems, Inc. and 3 Phases Energy Services, LLC for engineering and installation while the financing vehicle is provided by Morgan Stanley. A large transpired solar collector was constructed to preheat intake air for the facility from 12,000 square feet of metal perforated walls on the south side of the facility. This preheated air reduces the amount of natural gas needed to heat the facility. Fort Carson has partnered with eight other government agencies in an agreement with WAPA to purchase 40,000 MWH/year of renewable energy certificates for five years. This is approximately 28% of Fort Carson's annual electrical consumption. The composition of these RECs came as 76% Biomass coming from saw dust and other waste wood products in California and 24% as wind energy from California and Nebraska. These projects provide environmental benefits by reducing consumption on natural gas and coal. The photovoltaic array alone will reduce carbon dioxide emissions from coal usage by over 2,600 tons each year.

• **US Army Garrison Vicenza, Italy** – *Energy Efficiency / Energy Management*

(Mr. David Murr, Mr. Giampaolo Rizzo, and Ms. Linda Eckley)

**Category – Energy Efficiency / Energy Management**

**Energy Savings: \$358,719 /14,271 MBTU**

This project was implemented through Energy Savings Performance Contract (ESPC) to improve the efficiency of heating and cooling systems of the following facilities: multi-purpose Pavilion, Auditorium, two (2) Administrative buildings, Chapel, AAFES, and the

Boiler station. By improving the cooling and heating systems, installing new control system, new energy efficient hot water boilers, and heat recovery system provided improvements to the quality of ventilation, comfort to the occupants, and environmental benefits of reducing air pollution and NOX emission. The Installation of Vicenza was able to reduce fuel consumption by 41,010 gallons per year and electricity savings of approximately 2,500 MWH.

• **US Army Garrison Camp Zama, Japan** – *Energy Efficiency / Energy Management*  
(Mr. Sidney Malone, Mr. Philip Tedpahogo, Mr. Robert Weaver, Mr. Tetsu Tomota, and Mr. Shinji Kato)

**Category – Energy Efficiency / Energy Management**

**Energy Savings: \$912,716 / 60,454 MBTU**

This project includes boiler replacement of over 30 year old oil-burning boilers and window air conditioners in the community housing. It provided innovative ways to reduce fuel oil usage in Camp Zama by reducing boiler plant operating hours, night time and weekend boiler plant operations, reduced heating and cooling hours, and adjusted space temperature set-points. Antiquated radiators and window air conditioners were replaced with energy efficient electric dual heat and AC pump systems while the boilers were replaced with energy efficient burning gas type boilers. The project resulted to a reduction of POL consumption and provided environmental benefits to the Camp Zama community.

• **Chief Joseph Dam, Washington** – *Innovative/New Technology*  
(Mr. John Skibby, Mr. Lee Sheldon, Mr. Ed Miska, Mr. Alvin Carlson, and Mr. Tom Murphy)

**Category – Innovative / New Technology**

**Energy Savings: \$7.4 Million / 421,437 MBTU**

This project is a team effort from Bonneville Power Administration, the Corps of Engineers Seattle and Portland Districts, Hydroelectric Design Center and the contractor Automated Control Systems, Inc. The team worked on implementing an automated system to optimize generation efficiency at Chief Joseph Dam Powerhouse on the Columbia River in Washington State. The team optimized power generation by developing and installing software that adjusts the various inputs affecting the operation efficiency of the 27 turbine generators. Data collected from performance tests are used to simulate multiple operational scenarios and select those most efficient, resulting in substantial savings as compared to the historical operating modes. The results allowed Chief Joseph Dam Powerhouse to generate more energy with the same amount of water, which also reduces the need for electrical generation from other sources such as fossil fuels. By implementing this project, the Chief Joseph Dam Powerhouse has saved \$7.4 Million or 14.1 MW. In addition, throughout the summer of 2008, the developed software is being installed at other Corps hydropower projects in the Pacific Northwest to realize similar benefits.

• **Fort Campbell, Kentucky** – *Energy Efficiency / Energy Management*  
(Mr. Al Nayadley, Mr. John Wheeler, Mr. William Henson, and Mr. Neal Smith)

**Category – Energy Efficiency/ Energy Management**

**Energy Savings: \$2.2 Million / 247,646 MBTU**

This project was implemented through Utility Energy Services Contracts (UESC) using the Basic Ordering Agreements (BOA) with Tennessee Valley Authority and Pennyryle Rural Electric Corporation, which resulted in three (3) delivery orders: Delivery Order (DO)#1 is the Boiler Decentralization, DO#2 is the Ground Source Heat Pumps (GSHP) for HVAC, and DO#3 is Boiler/Chiller System Improvements.

Delivery Order #1 provided an assessment and identified conservation measures for the central plant. They found the plant to be inefficient with numerous leaks on the distribution system. The solution was to provide efficient modular boilers and improved controls to the twenty (20) buildings served by the plant. This initiative has an energy savings of \$ 904,444 or 129,886 MBTU.

Delivery Order #2 provided the conversion of HVAC in one of the four similar barracks to geothermal heat pump system. This is the first commercial geothermal system in Fort Campbell and supports the renewable energy objectives. This project has an annual energy savings of \$177,149 or 21,396 MBTU.

Delivery Order #3 provided boiler system improvements to the only remaining central plant at Fort Campbell, lighting upgrades to 183 buildings, central UMCS monitoring and control in 88 buildings and chilled water system improvements. With these upgrades, the controls have provided the operators an efficient and reliable system and controlled environment for the barracks through the UMCS.

**Type Award: Small Group**

• **Fort Hood, Knox, Texas** – *Innovative / New Technology*

(Mr. Bobby Lynn, Mr. Dick Strohl, Mr. Tony Estes, Mr. Aaron Fry, and Mr. Bill Mallow)

**Category- Innovative / New Technology**

**Cost Avoidance: \$200,000 / 40,084 MBTU**

This project is an Energy Savings Performance Contract (ESPC). In conjunction with Construction Engineering Research Laboratory (CERL) and Army Corps of Engineers (COE), Fort Hood is the first installation to use web-based system and implement an open communications system using Local Operating Network (LON Works) that will serve as a single operating platform for facilities and utilities management especially in Utility Management and Control System (UMCS) and eliminating proprietary systems. The UMCS will serve as the primary collection point for building utilities metered data that will support the Army Metering Plan for installing advance metering. The meter data will be utilized in various ways for developing energy trends, validating energy

reduction projects or strategies, energy billings, and will motivate competition among organizations for conserving energy. In FY07, the UMCS has generated an energy savings of over \$200,000 and projected that additional savings will be achieved over \$500,000 by adding new facilities to the system. The total cost of project implementation was \$5.65 Million with a simple payback of 10.5 years.

● **US Army Garrison Bamberg, Germany – Energy Efficiency / Energy Management**  
(Mr. Juergen Engeter, Mr. Dieter Gerber, and Mr. Reinhold Schiller)  
**Category- Energy Efficiency / Energy Management**  
**Cost Avoidance: \$450,000 / 19,000 MBTU**

This project implemented the following to achieve the installation's energy goals:

- a. Developed management procedures on unoccupied buildings by controlling the temperatures, set points, and use of night setback.
- b. Optimized the three major parameters of the heating systems such as set points, controllers, and use of high efficiency pumps for the hot water application.

These initiatives saved the installation \$450,000 or 19,000 MBTU.

● **Fort Knox, Kentucky – Water Conservation**  
(Mr. Warren Clifford, Mr. Mardis Lynch, Mr. Clyde Hill, and Mr. Randy Moore)  
**Category- Water Conservation**  
**Cost Avoidance: \$36,000 / 30 Million Gallons**

This project was initiated due to increasing cost of potable water for the care of golf course grass and to fix drainage problems. From 2000 to 2005, Fort Knox had experienced increasing costs of purchasing 15 to 20 million gallons of treated water and frequent reseeding of \$10,000 per year for the repair of greens erosion. With the support of Civil Engineering, a picturesque lake, drainage holding ponds, and wireless centralized irrigation control system were designed and installed. The added features of a 3 acre lake and another 1 ½ acres twin lake with a connecting bridge have enhanced the aesthetic appearance of the golf course. This project has enhanced water conservation efforts by utilizing high production ground water supply wells and capturing of the run-off into a water shed.

● **Radford Army Ammunition Plant, Virginia – Energy Efficiency / Energy Management**  
(Mr. Randolph Evans, Mr. Donald Clark, Mr. Douglas Messner, Mr. Donald Yee, and Mr. Donald Moore)  
**Category- Energy Efficiency / Energy Management**  
**Cost Avoidance: \$1.2 Million / 202,489 MBTU / 28,036 KGALS**

This project is a team effort of PM Joint Services at Picatinny Arsenal, ACO Staff, Operations, and Engineering Staff of the operating contractor – Alliant Techsystems to reduce steam demand, optimize the operation of coal fired boilers, and determine the source of a 16% rate of steam leakage along the 57 miles steam distribution systems. The techniques of infrared aerial imaging provided immediate innovation in identifying

the “hot spots” of the steam plant distribution system while the global positioning system (GPS) with computerized maintenance management system (CMMS) provided fast track on mapping and steam trap database tracking for future repairs. By implementing this project, the installation has saved approximately \$ 1.2 Million or 3,638 MBTU of electric, 44 MBTU of Distillate Fuel, 198,807 MBTU of Coal and 28,036 KGals of water. Overall, the installation has saved 202,489 MBTU. The environmental benefits include the reduction of coal fly ash disposal by 700 tons, an estimated reduction of air emissions of sulfur dioxide of 229 tons, nitrogen dioxide by 89 tons, and particulate matter by 5 tons. A tremendous benefit to the environment!

### **Type Award: Individual**

#### **• Fort Gordon, Georgia – *Energy Efficiency / Energy Management***

(Mr. Glenn Stubblefield)

#### **Category- Energy Efficiency / Energy Management**

**Cost Avoidance: \$266,362 /108,659 MBTU**

This project installed energy efficient boilers and storage capacity at the sixty-eight supporting facilities to provide domestic hot water and allowed summer shutdown of the boilers at the central plants. Each of the boilers was integrated into the existing Utility Monitoring & Control System (UMCS) to properly supervise and manage the required 110 degrees domestic hot water requirements in consistent with AR 420-1, Army Facilities Management guidance. Fort Gordon was approved for an Energy Conservation Investment Program (ECIP) project on the boiler replacement and combined with lighting replacement for the full project implementation under Utility Energy Services Contract (UESC) to obtain additional savings. Fort Gordon has partnered with Atlanta Gas Light to complete the installation of energy efficient boilers, integration to the UMCS, and the upgrade of lighting system.