
PROJECT EXPERIENCE

Military

U.S. Army Corps of Engineers – Armed Forces Reserve Center Ceiba, Puerto Rico

Mechanical engineering services as a subconsultant to SMRT, Inc. to provide design for a multiple building project that included a Training Center, Vehicle Maintenance Storage Building and unheated storage buildings. Training Center is a 2-story building with an Assembly Hall with adjacent food service kitchen, locker rooms, Recruiting/Retention offices, Physical Readiness program areas, Unit Storage, and Armories for each unit located on the first floor. The second floor has the office spaces (open and enclosed), break room, Training/Classrooms, and Weapon Simulator space. **Project designed to U.S. Green Building Council's LEED Silver rating.**

U.S. Army Corps of Engineers – Directorate of Public Works Ft. Buchanan, Puerto Rico

Mechanical engineering services as a subconsultant to SMRT, Inc. to provide design for a multiple building project that included an Administration Building, combined Shops/Warehouse Building, Entomology Building, and covered Vehicle Storage. Administration Building is primarily an office building that houses multiple divisions and includes small, medium and large conference rooms, large open office areas, enclosed offices, breakrooms, IT rooms, and Fire Pump Room. The Shops/Warehouse Building includes various shops for Carpentry, HVAC Service, Paint, Electrical Service, and Equipment Maintenance with separate POL and Battery Storage Rooms. The Entomology Building houses the site insect control facilities and includes Hazmat Pharmacy, Pesticide Mixing Room, Clean Storage, Vehicle Storage and locker/shower rooms. **Project designed to U.S. Green Building Council's LEED Silver rating.**

PROJECT EXPERIENCE

Military

U.S. Air Force, Office of Space Launch – Eastern Processing Facility

Cape Canaveral Air Force Station, Florida

Mechanical engineering services for large 196,000 s.f. satellite processing facility for the U.S. Air Force. Facility includes three 140-foot tall ISO Class 5 cleanrooms and one 180-foot tall ISO Class 3 cleanroom. Project included the design of high pressure gaseous nitrogen (GN₂) and gaseous helium (GHe) process piping systems, propellant fuel and oxidizer piping systems, fuel incinerator, oxidizer scrubber, mechanical HVAC systems, stainless steel ductwork, desiccant dehumidifier systems, 3300-ton central chilled water plant, 30 million Btu's heating water plant, breathing air systems of high and medium pressures, safety ventilation systems, and a PLC-based (Programmable Logic Control) Facility Automated Management System. Mechanical HVAC systems were computer simulated with computational fluid dynamics modeling to assure systems would meet the cleanliness levels and transient recovery requirements stipulated in the design criteria. Io Engineers completed the design after individual engineer left previous employer to start Io Engineers.



Guardian Manufacturing, Inc. U.S. Air Force, Office of Space Launch – Eastern Processing Facility

Cape Canaveral Air Force Station, Florida

Mechanical engineering services as design and installation support for Facility Automation and Management System (FAMS) controls contractor on the large 196,000 s.f. satellite processing facility for the U.S. Air Force. Facility includes three 140-foot tall ISO Class 5 cleanrooms and one 180-foot tall ISO Class 3 cleanroom. Scope of services includes the sizing and selection of control valves, damper actuators, flow meters, environmental monitoring equipment, and various sensors. Scope also includes the assistance of start-up and commissioning process during the 3.5 year construction project for the Programmable Logic Control systems. Design included the determination of the sequences of operation for the complex facility and systems and the review of the PLC flow charts.

PROJECT EXPERIENCE

Military

U.S. Air Force, Office of Space Launch – Astrotech Facility Expansion

Vandenberg Air Force Base, California

Mechanical engineering technical review for the addition of a single high bay to an existing satellite processing facility operated by Astrotech. Project was for the U.S. Air Force. Project included a 100-foot tall 20,400 s.f. ISO Class 5 cleanroom. Project included the design of high pressure gaseous nitrogen (GN₂) and gaseous helium (GHe) process piping systems, mechanical HVAC systems, desiccant dehumidifier systems, 400-ton central chilled water plant with air-cooled chillers delivering 35 degree F chilled water, Propane-fired heating water plant and a Direct Digital Control-based Building Management System. Io Engineers provided technical review of mechanical systems as expert consultant to USAF.



US Army Corps of Engineers – Weatherize Buildings/ Alter Mechanical System (ECIP)

Nellis Air Force Base, Las Vegas, Nevada

Energy Conservation Improvement Program (ECIP) project consisted of providing design documentation for the installation of radiant heating systems and a radio frequency demand deferment system. Constant air volume HVAC systems with steam or hot water heating coils were replaced with low-intensity gas-fired radiant heating systems in 18 aircraft hangars. Natural gas piping, mains and regulators were replaced and existing boilers were modified. Radio frequency demand deferment system involved the radio control, by duty cycling and scheduling, of compressor operation for residential air conditioner compressors at 85 single family houses on the base.



PROJECT EXPERIENCE

Military

US Army Corps of Engineers – C-130 Corrosion Control Aircraft Hangar

Pope Air Force Base,
Fayetteville, North Carolina



Mechanical troubleshooting services for a 69,500 s.f. two-bay corrosion control facility for the C-130 aircraft. Project included one wash bay and one paint bay with offices and support spaces located between the bays. Mechanical systems include full outside air supply units for the paint bay that filter and heat the air with direct-fired gas heaters, and direct-fired gas unit heaters are provided in the wash bay. Exhaust air fans draw the air through the paint bay in a horizontal “push – pull” arrangement and then through three-stage paint filters located in the walls of the large hangar doors. Troubleshooting was required due to Air Force acceptance testing of the paint bay heating and ventilating system. Pre-testing indicated potential problems, but after tweaking the system, ventilating system passed on the first test witnessed by the Industrial Hygienist for the Air Force Base.



PROJECT EXPERIENCE

Military

US Air National Guard F-15 Corrosion Control Aircraft Hangar Jacksonville, Florida

Mechanical engineering services for a 10,600 s.f. single-bay corrosion control facility for the F-15 aircraft at the Jacksonville International Airport. Project included one wash bay, paint room with a prefabricated paint booth, offices, and support spaces. Mechanical systems include full outside air ventilating units for the high bay, heat is provided by a high temperature water boiler, wash water is heated by the same boiler through a heat exchanger, compressed air and breathing air provided by an oil-free reciprocating air compressor, office areas are provided air conditioning from a dedicated packaged heat pump. Plumbing systems include trench drains in the high bay that drain to an existing oil/water separator and emergency shower/eyewash stations located throughout the facility. Fire protection is provided with fire sprinkler system and a high expansion foam system for the high bay.



US Air Force – Renovation of Various Facilities Andersen Air Force Base, US Territory of Guam

Project Manager for projects which consisted of the complete architectural, electrical and mechanical renovation of existing facilities. Design included tropical island criteria consideration in material and equipment selection. Facilities included Base Chapel 1 and Chapel 2 (classrooms, offices, banquet rooms, and sanctuaries), Third Air Division Headquarters (offices, security facilities and secured conference rooms), Passenger Air Terminal (ticketing areas, passenger waiting areas, administrative offices, security facilities baggage claim, and baggage storage), Squadron Operations Facility (offices, sleeping quarters, briefing rooms, and security facilities).



US Air Force
Headquarters, Europe
Energy Engineering
Analysis Program
(EEAP) Study
Ramstein Air Force Base,
Kaiserslautern, Germany

Mechanical engineering services for a comprehensive energy study performed on all 2,900 buildings on Ramstein AFB having a total building area of 26 million s.f. Buildings included offices, mission support facilities, aircraft hangars, maintenance facilities, central plants, dormitories, residential facilities, commissaries, medical facilities, and recreation facilities. The purpose of the study was to evaluate all buildings, utility systems, energy distribution systems, and central plants. Computer simulations performed using the hour-by-hour method with DOE 2.1. Recommendations

were presented for cost-effective energy conservation measures. Areas investigated for energy conservation opportunities were: Building envelopes, utilities and energy distribution systems, building HVAC and lighting systems, central energy

monitoring and control systems (EMCS) and improvements to existing controls, centralization of heating plants, cogeneration or district heating, operation and maintenance procedures and practices.



PROJECT EXPERIENCE

Military

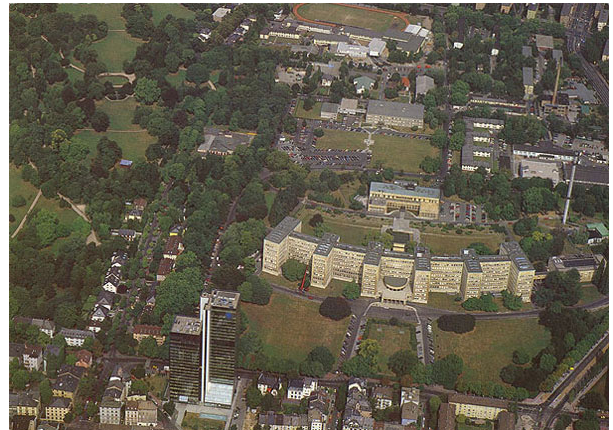
US Air Force Headquarters, Europe Vogelweh Community Physical Security Design

Ramstein Air Force Base,
Kaiserslautern, Germany

Engineering services for the U.S. military housing and recreation area in the western portion of Kaiserslautern, Germany. The community consists of multifamily housing complexes, schools, administration offices, fire stations, commissary, base exchange, medical clinics, officer clubs, bowling alleys, restaurants, movie theaters, skating rink, etc. The project included the design of security fencing, concrete barriers, security gates, and checkpoint stations enclosing the entire community.

US Army Corps of Engineers, Army Headquarters, Europe Energy Vulnerability Assessment, Europe Heidelberg, Germany

Project Manager and Mechanical Engineer for assessment of energy systems and sources supplying U.S. Army facilities throughout Europe. Evaluated the vulnerability of these systems to supply disruptions or reductions during peacetime operation. Evaluation included an assessment of physical vulnerability of both on-base and off-base energy supply and distribution systems, consequences of energy disruptions on mission accomplishment, identification of procedures to lessen the impacts of energy disruption, and remedial measures to correct energy vulnerability deficiencies.



PROJECT EXPERIENCE

Military

US Navy, Naval
Facilities Pacific and
Western Divisions
NAVFAC – ACT-UP
Studies

Subic Bay, Philippines
Pearl Harbor, Hawaii and
San Bruno, California

Mechanical Engineer for air conditioning tune-up (ACT-UP) and energy conservation study of 40 buildings and energy using equipment located on the base. Project consisted of data gathering, site observations, computer analyses, and recommendations for modifications to HVAC systems to reduce energy consumption and improve system reliabilities. Computer simulations performed using the hour-by-hour method with BLAST 3.0.