Career-Defining Projects

Selected assignments distinguished by technical complexity, institutional significance and direct design responsibility.

PROJECT 1 — WRITING REGULATIONS FOR DESIGNING AND CONSTRUCTING MILITARY AND POLICE ENFORCEMENT FACILITIES AGAINST EXPLOSION — MECHANICAL PORTION

Authored the mechanical-services provisions of proposed blast-resilient design criteria for military and law-enforcement facilities, commissioned by Türkiye's Ministry of Environment, Urbanization and Climate Change. The completed multidisciplinary framework was submitted to the Ministry for review and formal adoption. As soon as the reviews and documentation are finished by the authorities, the regulation will be published for all future design efforts in Türkiye.

(Completed 2025)

PROJECT 2 — AIRFIELD FIRE / CRASH RESCUE STATION, INCIRLIK AIR BASE — USACE

"Incirlik Air Base Fire Crash Rescue Station" was evaluated by the US Army Corps of Engineers Project Management and Control as one of the 6 most important projects constructed worldwide in 2024." – FORMAL REFERENCE

Bugra Ertok is the designer of all mechanical and firefighting systems in this project. (Mechanical DOR)

Mechanical part covers HVAC, plumbing, compressed air, breathable air, and vehicle exhaust systems in the building.

The firefighting (fire sprinkler) system designed by Bugra Ertok had been reviewed and stamped by his partner Rhett Hesprich (US Licensed FPE).

(Completed 2024)

PROJECT 3 — UPDATE MASTER SPECIFICATIONS, INCIRLIK AIR BASE — AFCEC

As a trained Master Specifications Editor through CSI (Construction Specifications Institute), using SpecIntact software, tailored the entire mechanical Master Specifications database for use in Europe and the Middle East — converting standards and regulations from US to European norms, and editing differing sections of the specifications for use in military projects across all European and Middle East contracts.

This project took more than a year, using SpecIntact's specialized algorithm to tailor almost 10,000 pages of raw specifications.

(Completed 2022)

PROJECT 4 — O&M GUIDE FOR DOMESTIC AND WASTEWATER SYSTEMS OF INCIRLIK AIR BASE — AFCEC

Incirlik AB, one of the biggest NATO bases in the Middle East and Europe, has a capacity of up to 10,000 people. The air base has water wells, special filtering systems, an RO system, several storage tanks, and a redundant Bernoulli filter, in addition to several pump stations spread around the base for pressurization. The base also has a wastewater treatment system with large process pools for aeration, digestion, etc., and chlorination before using the product as grey water.

This highly demanding project totaled above 4,000 pages across two manuals, including details of all systems and components down to valves, scenarios, equipment schedules, manufacturer lists (for contact), and automation details — serving the purpose that a technical person using these manuals can completely operate both systems with all necessary data.

Beyond design, the project required months of detailed data collection and coordination with technicians and responsible engineers. Bugra Ertok personally led the surveys, system verification, stakeholder coordination, and preparation of both manuals.

(Completed 2025)

PROJECT 5 — RENOVATION OF AIRCRAFT HANGARS NO. 345–346, INCIRLIK AB — AFCEC

Although the scope called for 2 Type-A aircraft hangars to be designed with fire protection systems (fire sprinkler + high-expansion foam), the project timing coincided with the old ETLs (Engineering Technical Letters, ETL 98-8) about to expire, while AFCEC was developing UFC 4-211-01 (Aircraft Hangars). With the project fully coordinated with AFCEC, a draft version of the new UFC was provided (not yet publicly distributed, as AFCEC's FPEs were still finalizing it), and Bugra Ertok, during the 6-month design stage, provided feedback through calculations, foam-release simulations, and other analysis — working closely with AFCEC. This became one of the first hangar projects designed to this UFC's requirements, with the publicly released version of the UFC being published during the final submittal stage. Being indirectly part of a UFC's development process, working directly with AFCEC's FPEs and providing feedback for revisions, was a uniquely challenging and rewarding design experience.

(Completed 2017)

PROJECT 6 — UPGRADES TO INCIRLIK MEDICAL CLINIC, BLDG 865 — USACE

Incirlik Hospital is one of only two military hospitals in the world designed with a button-up war/attack system, in which part of the building isolates itself, all HVAC systems shift their operating scenarios for different zone pressurizations and system settings, and even the generators must supply not only electricity but also hot water, among several other functional changes in the building.

This major project — covering the complete replacement of all AHUs, chillers, and other HVAC system modifications — was especially challenging due to two different operating scenarios acting through the BAS on the same systems, making it a challenging experience for a mechanical designer.

Bugra Ertok was the DOR (Designer of Record) on this USACE project, leading the electrical and mechanical design groups with the authority to coordinate and sign the design/submittal packages.

(Completed 2022)

Selected Detailed Project Experience

OBO, USACE, AFCEC and private-sector assignments — scope, role and delivery context.

PROJECT 1 — HVAC Modifications, U.S. Consulate General, Hong Kong

Project covers replacement of chillers, chilled water pumps, AHU replacements c/w piping modification, valves, accessories and system components on chilled water systems on main embassy building (COB) and Embassy residential facilities (CGR and Townhouses). Pan Engineering serves as the multidisciplinary design partner and design coordinator to the prime A/E/contractor, leading and coordinating the mechanical, electrical, and structural design contributors. Project had modifications to replace BAS system for VAV system in CGR (Embassy-resident), complete with TAB efforts. Design is completed. It is under construction as of July 2026.

PROJECT 2 — Chiller & HVAC Modifications, U.S. Embassy, Tbilisi

Project covers replacement of chillers, chilled water pumps, dry cooler, boilers, 60+ fans, VAV boxes and several other equipment replacement c/w piping modification, valves, accessories and system components on chilled water and heating water systems on main embassy building (NOB) and other facilities in the Embassy. Pan Engineering serves as the multidisciplinary design partner and design coordinator to the prime A/E/contractor, leading and coordinating the mechanical, electrical, and structural design contributors. Design is at 100% stage as of July 2026.

PROJECT 3 — HVAC Modifications, U.S. Embassy, Dhaka

Project covers replacement of chillers, chilled water pumps, replacement of 12 rooftop units c/w piping modification, valves, accessories and system components on chilled water systems on main embassy building (COB) and other facilities in the Embassy. Pan Engineering serves as the multidisciplinary design partner and design coordinator to the prime A/E/contractor, leading and coordinating the mechanical, electrical, and structural design contributors. Design is at 100% stage as of July 2026.

PROJECT 4 — Afghan National Army Corps, TO-81 Phase IV Construction, Kandahar Airfield — USACE

This project covers designing more than 10 buildings in a new base in Afghanistan, as part of a USACE contract.

Bugra Ertok designed HVAC, plumbing, and fire protection systems for all buildings, including barracks, dining facility, headquarters, warehouses, etc. Completed in 2013.

PROJECT 5 — Prishtina Airport — Mechanical Design Coordination, Kosovo — Private

In this important project, Bugra Ertok was part of a multidisciplinary team serving as the mechanical consultant acting on behalf of the contractor — reviewing and value-engineering the complete design packages from a third-party design team. (2011-2012)

PROJECT 6 — Energy Audit Survey (27 Buildings), Incirlik Air Base — AFCEC

In 2009, as green buildings, LEED, BREEAM, and the Green Building Council were becoming increasingly important in project design, Bugra Ertok and another senior engineer, Mr. Murat Taşar, performed an energy audit of 27 buildings. Mr. Taşar collected data on site and supported the report-writing effort, while Bugra Ertok simulated/modeled all buildings using EnergyPlus software. A total of 2,000 pages of reporting was submitted, covering not only the simulation results but also sustainability recommendations for these buildings. Following this project, Bugra Ertok also served as a local energy expert on EBRD-funded projects in Turkey. (2009–2010)

PROJECT 7 — Mission & Life Support Facilities, Forward Operating Site (Site K), Kurecik — USACE / European Phased Adaptive Approach (EPAA), Phase 1, Kurecik — USACE (Two Projects)

Site K was a new radar base (US-NATO); mainly in two projects, almost all buildings — including barracks, warehouses with cold rooms, dining facilities, a headquarters building, and a power station with several generators — were designed and constructed by two different contractors over a 5 year period. On this critical USACE project, all mechanical scopes — HVAC-R, plumbing, compressed air, and fire protection systems (fire sprinkler, fire hydrants) were designed by Bugra Ertok.

PROJECT 8 — Design of PV Dorms, Incirlik Air Base — USACE

A 35% design package, complete with a full RFP package, was prepared as part of a USACE A/E contract. This is an over $30M project awaiting funding to be awarded to a design-build contractor — an 11,000 sqm dormitory with several other functions inside, such as laundry, café, etc. Complete mechanical design and the RFP package were prepared by Bugra Ertok.

PROJECT 9 — Gaziantep Shopping Mall — Mechanical & Electrical Design — Private

One of the major mechanical design experiences of his early career: a 65,000 sqm shopping mall including franchises such as Real, Praktiker, and Adler, completed in 1999. Bugra Ertok was the designer for the HVAC, plumbing, and fire protection systems.