

**Building Type**

Breeding farm with associated facilities

**Size:**

220 hectares

**Estimated Construction Cost**

US \$ 30,000,000 (AED 110 million)

**Project Highlights**

- 4 water cooled screw chillers total 2800 KW
- 4 cell counter flow cooling towers
- Primary/secondary chilled water distribution in 4 Kms network
- Primary/secondary hot water distribution in 4 kms network
- 86 AHUs; with dual coils
- 5 fresh air AHUs with heat recovery (total enthalpy heat wheel with run-around heat pipes)
- 13 air to air energy recovery AHUs with dual fans
- 18 FCU's with dual coil
- 3 hot water generators, dual fuel HSD/#2 oil, total 4800 KW
- 2 freezers, 4 cold rooms, 2 chillers for kitchens, egg rooms, etc.
- VAV/CAV air distribution in offices, hospital and accommodation
- Heat exchangers for recovery of generator waste heat for domestic HW supply heating
- Incoming bore hole water treatment & disinfection facility.
- Waste water treatment plant using CMF technology
- Sewage (black) water treatment using extended aeration
- Bore hole water treatment with multimedia filtration
- Compressed air system for workshops
- Diesel tank farm with dispenser. On site storage for 15 days of fuel in 2 x 7 day configuration
- Fire fighting system with hydrants, ring mains, sprinklers (except houbara farming unit) etc.
- Fuel farm piping, dispensing and pumping to feed generators, fire pumps, etc.
- 3+1 generators, prime duty, 11KV output, capacity 2 MVA each with sophisticated load control panel.
- Site transformation 11KV / 0.4 KV
- BMS for fully monitoring and control.

**Client :**

Emirates Center for the Conservation of Houbara, Dubai



Mario Associates, acting as the lead consultant provided the complete engineering design for heating; air conditioning; ventilation; power generation; waste water collection, treatment and reuse; water treatment of borehole water (boreholes in excess of 2 kms from site) and after treatment distribution – all for the support staff manning the research facility plus the houbara facilities. Local architects provided the civil & architectural elements, directly under Client.

The site is a greenfield site located in Navoli district between Tashkent and Bukhara and has a desert like environment with yearly extremes of heat (+40°C) and cold (-20°C). The site was totally remote and required total sourcing for water and power with minimal disturbance to the environment. The only source of energy was from diesel fuel trucked in from Navoli & water piped in from boreholes located over 2 kms from site. A full time staff contingent of upto 100 people to live and work in this facility with western style/grade of accommodation and facilities including communication with outside world.

As the project had to be totally self-reliant, only external input was HSD/#2 oil (depending upon availability) with energy & water conservation a very high priority. Gray water was reused, after treatment by CMF for W.C. flushing etc. After further extended aeration in a STP the black water provided the TSE used for irrigation (Alfalfa growing for houbara use).

The generators waste heat was used for reheat, heating and domestic hot water heating.

Ventilation requirements were all via air-to-air total enthalpy recovery devices for minimizing year round high ventilation loads. UV used for achieving bacteria kill rate of 99.99% requirements where needed.

Cleaning of all exhausts, from generators, biological labs etc. was mandatory required, and provided in compliance to international regulations.

Redundancy on basis of n+1 for all MEP equipment. Fully automated facility with BMS monitoring capable of transmitting data, via communication link, to any part of the world.

