



# ZAYED UNIVERSITY



## Concept & Location

Zayed University was conceived as the UAE's largest education centre dedicated to women. The university was a high priority project for the Education ministry, with strict MEP requirements and criteria, and required a high level of finesse with MEP systems and specialist equipment and installation.

The university featured a total built-up area of 106,000 m<sup>2</sup>, capable of accommodating around 5000 students, and the campus was split into six main wings in the form of the Administration building, Library building, Dining & Activities building, Gymnasium building and the Conference building.

Drake & Scull were invited to undertake the complete supply, installation, testing and commissioning of MEP systems at the University. Designed to accommodate 5000 students at the Zayed University's new premises based in Dubai's Academic city at Al-Ruwaiyah area, DSE were responsible for the complete MEP works of the new facilitated premises, given the opportunity to students to pursue their dreams in the UAE establishment of higher education.

## Scope of Work & Innovation

DSE installed the following systems on site:

- District Cooling System/Chillers
- Chilled Water Pumps, Condensate Pumps and Sewage Lifting Station
- Medium Voltage Switch Gear & Transformers

- L.V Switch gear & Control panels
- Cooling Towers, Booster Pumps / Water systems
- AHU, FAHU, FCU and VAV systems
- LPG System
- Lighting, Emergency Lighting and Lighting Control Systems
- Earthing & Lightning Systems
- Central battery System, Access Control System and Dimming System
- Fire Alarm System/Voice evacuation system
- Fire fighting pumps & Fire fighting system (featuring FM-200 fire fighting system)
- Public Address, SCADA and Building Management (BMS) Systems
- UPS and Generator back emergency power supply system

The design for HVAC system for Zayed University was modern and sophisticated for its time, and would minimize operational costs, by using latest technology (at the time of construction) like district cooling and variable frequency drive for all AHU's & FCU's motors & Variable Air volume (VAV's). The entire system was integrated with the BMS via a huge network of control cable & DDC distributed in the premises. This allowed for centralised monitoring and control of the cooling operations.

The Zayed University campus also housed a district cooling



plant which was a landmark feature for large scale university projects in UAE. The plant had a total capacity of 4800 TR produced by water cool chillers to serve the cooling load. The chilled water was distributed to all buildings through huggled buried piping (CHW Piping) network with total length of 6 km. The District Cooling Plant, housed 4 water cool chillers, (with a capacity 1200 tonnes each) and three secondary pumps & 4 primary pumps and 4 condenser pumps serving four cooling towers. This DCP was connected to 82 Air Handling units and 13 Fresh Air Handling Units and 55 Fan Coil Units through the external buried chilled water pipes network. The plant is controlled by the SCADA control system delivers the best efficiency at minimal cost.

From the electrical perspective, the premises were served by five feeder 11 KV cables from DEWA supply. The substations were located at vital points to supply the campus with the required power. 6 substations were installed for the Academic colleges (with each substation housing a 1500 KVA transformer), and one substation each for the remaining wings. A separate substation was installed at the heart of the campus, which was connected to three feeders (out of the total five feeders on site). All Buildings in the Campus were protected by the Fire Alarm/Voice evacuation system & Fire fighting system. The Fire alarm system was installed in each building individually and all buildings were linked centrally to the main control station in the control room which was monitored by BMS system. The central control room monitored & controlled all systems & Low Current Systems via a high speed network using a complete back-bone

network using TCP-IP Ethernet communication facility.

DSE also installed Low Current System featuring modern technology like Emergency Central Battery System, Lighting Control System, Access Control System, Dimming System in the Lecture Theatre Hall, Public Address System in the Dining Building. One LPG Central Gas System was also provided to serve the kitchen area in the Dining Building and the laboratories in the Lab area in Academic colleges via huge underground buried pipes and protected by a cathodic protection system. A central storage tank of 20,000 litres capacity was also installed by the DSI team.

The highlight of DSE's work on the campus was the atrium air conditioning. The Atrium was a 25 meter open area, housed in an area of 500m<sup>2</sup>, covered by tent. Delivering adequate cooling to an open area was a challenge, and DSE ensured that both floors and high levels of this area are used to provide Air conditioning in the atrium. DSE installed 8 AHU that supplied cooled air via concrete underground ducts and treated air in the high levels near the tent top to avoid mixing the cold treated air & external hot environment via the tent sheet.

DSE's MEP skills proved vital to realising the successful launch of the Zayed University on target, and remain one of the best MEP projects in UAE's education sector.