



DHAHRAN TECHNO VALLEY BUILDING



Concept & Location

The King Fahd University of Petroleum & Minerals (KFUPM) is one of the most prestigious and respected educational institutions in Saudi Arabia. Specialising in the oil and gas sector, the KFUPM focuses on educating Saudi Arabian nationals for service in the petrochemical industry, as well as encourage research for the same.

The Dhahran Technology-Valley (DTV) is a pet project initiated by KFUPM. The Techno Valley project is conceptualised to share space with the King Fahd University of Petroleum & Minerals (KFUPM) main campus, integrating it closely with the university. The techno valley will become a focused research-and-development bridge combining the university's expertise with that of national oil giant Saudi Aramco and the world's leading technology companies.

An area measuring 13,422 m² was set aside to house the 15.0m tall, three-story structure which also includes a loading unloading facility in the building basement. Besides the central structure, the Techno Valley Building area spans around 20,247 m² in total. Another major aspect of the building would be the aesthetic interior landscape design area measuring 6,484 m².

The 55-hectare site is intended to create an infrastructure to enhance cooperation and providing development, production and marketing support services. Innovation originating from academic research will be combined with industrial expertise to satisfy the needs of the Kingdom's substantial presence as

the global hub for the oil, gas and petrochemical industries.

The Dhahran Techno Valley project encompasses six major entities including King Abdullah Science Park (KASP); Sultan bin Abdul Aziz Science and Technology Center (SciTech); Innovation Center; Business Incubator; Liaison Office and Consultancy Services Center.

With backing from the Saudi royal family, the Ministry of Higher Education, Saudi Aramco as well as world-leading oilfield equipment providers and suppliers, the DTV project has already established itself as a world leader in research into areas like petrophysics, drilling, geomechanics, fluids and production technology. Some of the major companies that will be housed at the DTV site include Schlumberger, Yokogawa and Baker Hughes, Honeywell, Halliburton, Sipchem, Amiantit, Weatherford, Rosen and General Electric

To undertake the civil portion of construction for such a major development, the KFUPM trusted Drake & Scull Construction's KSA subsidiary, International Centre for Civil Contracting (ICC) with the task of brining the DTV to life. ICC's significant local expertise and sizeable manpower played a key role in the progress of the project. Guided by Drake & Scull Construction's experience project management approach, the project has become a major milestone for the Dhahran region.



Scope of Work & Innovation

ICC undertook the Lump sum Turn Key scope of works at the central building site.

The basement of the building was equipped with big loading and unloading areas, equipment storage rooms, server racks and control rooms etc. ICC also elevated the ground floor of the building to 1.35m from the walkway at ground zero level. The massive ground floor area consists of an elegant lobby (leading to offices of directors), an auditorium, a VIP lounge, business meeting rooms and a dining area with restaurants.

On the first floor, ICC constructed 12 dry labs, 88 offices, large business Incubator (to house technical and IT start-ups), mechanical, communication and electrical rooms. On the second floor, ICC constructed 19 IT labs, 3 wet labs, a Fitness centre and a VIP dining hall overlooking the atrium. ICC installed 6 passenger elevators, 2 freight Elevators, 2 service elevators and 8 staircases to connect all three floors seamlessly.

Besides the main building, ICC also worked on the construction of a utility building located close to the yard next to the project site, serving the electrical, mechanical, HVAC, and fire fighting needs of the building.

Challenges

One of the major challenges during the construction was the shape of the main building. The building was designed like a triangular prism, but with different levels and large landscape areas which flowed from inside the building to the exterior.

ICC constructed the building employing a mix of RCC walls, Concrete Masonry Unit and Structural glazing. The entrance façade was built 14m high using structural glazing and articulated by a row of stainless steel columns.

For the exterior finishing, ICC used various techniques like sandblasting, stainless steel tubing with stainless steel, and reflected tempered glass on the exterior, vertical ribbed concrete wall with exposed aggregate finish among others. The Interior finish was achieved using terrazzo flooring for common areas and passages, black marble flooring for meeting rooms, vinyl flooring for offices, carpet for prayer rooms and auditorium, ceramic tile for toilets and epoxy paint for service rooms. For the wall finish, ICC used ceramic tiles, wood panels, acoustic wall panels, oil base paints and low high partition for cubicles, depending on the usage of space. For the Ceiling finish, ICC used powder coated steel tiles, gypsum boards, decorative aluminium ceilings, acoustic tiles and the 14m tall Interior columns were topped by stainless steel.

Around 400 ICC personnel worked nonstop for 32 months, to compensate for later design revisions as well as client suggestions and feedback.

ICC's skills and management provided a major boost to the realization of the Dhahran Techno Valley project, which made a significant impact on the oil and gas industry after its launch.