



UPSTREAM PROFESSIONAL DEVELOPMENT CENTER



Concept & Main Features

Saudi ARAMCO is one of the world's biggest petrochemical companies, with a large multinational workforce operating in the world's biggest oil producing nation. The company has established a strong learning and development programme that offers stellar hands on training to meet the needs of the oil industry. The company faced increasing training and development needs that required allocation of a dedicated space to purely serve the training needs. With this objective in mind, the company decided to create the **UPSTREAM PROFESSIONAL DEVELOPMENT CENTER (UPDC)**, located within the core area of Saudi Aramco's headquarters in Dhahran, Saudi Arabia.

This four story building was designed to offer a state-of-the-art classroom and training facility to foster collaborative learning along with high-tech drilling, virtual-reality, and hyper-dimensional simulators that enabled young Saudi Aramco professionals to equip themselves with the necessary knowledge to efficiently meet the needs of ARAMCO's network of clients and partners.

To undertake the complex tasks involved in the construction of such a massive and prestigious projects, the clients decided to entrust the Civil works of the UPDC to Drake & Scull Construction's Saudi Arabian Subsidiary International Centre for Civil Contracting (ICC), based on their prior expertise and experience with large scale education and petrochemical projects.

Salient Features of World Class Training FacilitiesThe industry leading UPDC facility houses collaborative environments and

high-tech classrooms designed to enhance, accelerate, and increase the efficiency of upstream training. ICC constructed the following areas for the UPDC:

High-Tech Classrooms: The centre is equipped with 18 modern classrooms that incorporate large wall-to-wall viewing screens, LCD touch screens, and 3D capability. The classrooms are located on the second and third floors of the building, together with eight breakout rooms that are used for group activities and project based applications.

Collaborative Learning Environment Centre: This facility is designed to promote interaction and collaboration, with mobile furniture, portable technology, and open common areas, which allows flexibility to meet the objectives of courses, seminars, or team-based development activities. The lobby on the first floor also provides additional space for collaboration and teamwork.

Drilling Simulator: The Drilling Simulator consists of a driller and assistant driller stations, 4 large screens (5m x 3.75m), a "dog house" and an observation platform. It also has an instructor station to control simulation sessions. Users are able to practice with a Blow-Out Preventer (BOP) panel, choke control panel, standpipe manifold and choke manifold.

From the driller stations, participants are able to perform various rig operations, complex well controls; and predict, mitigate, and resolve down-hole problems. Four high-tech projectors and large screens are used to visualize the rig floor, pipe handling,



building stands, and tripping. A viewing gallery is located above the simulator where other participants can witness the operation.

Cave Automated Virtual Environment (CAVE): The CAVE is a four-sided immersive virtual-reality display that allows UPDC students to experience the locations, equipment, and concepts of upstream oil and gas operations and processes. Students experience environments such as virtual rock outcrops/field visits, virtual well site visits, vertical seismic profile (VSP) simulation, reservoir simulation scenarios and modelling, well logging, and seismic acquisition. They also learn to visualize complex concepts like borehole environment, multiphase fluid flow, acoustic wave propagation, neutron thermalization, reservoir management, and geophysical scales.

Upstream Information Centre: The Upstream Information Centre (UIC), is a valued source for Upstream professionals to access resources and information relevant to Upstream activities.

Library: Located on the first floor of the UPDC building is the Library, which accommodates a large print collection of industry specific books and journals. It has a dedicated study area on the mezzanine level; armchair alcoves for quiet and uninterrupted professional reading; an audio-visual room for viewing discipline-specific recordings; and a study room for group sessions and seminars.

Main Works Undertaken

ICC's original contract scope required the construction and furnishing of the UPDC building. By design, the building was to facilitate the training of more than 550 upstream employees every day. ICC also had to undertake the civil works for 21 lecture

theatres and Program Rooms, one Business Centre, eight team rooms, two display rooms, a library, 60 office spaces for staff, 94 cubicles for PDP's, two conference rooms, and one computer room. ICC's work was later expanded to also cover the Civil, Communication, Electrical and Mechanical works to complete the works on site.

At peak activity, more than 700 ICC personnel worked nonstop on site to help achieve the deadlines. ICC employed innovative techniques and technology during the construction and fitting phase. For e.g. ICC used precast concrete for the structural framing (columns, beams, and slabs), and glass and aluminium cladding for the façade, as well as membrane waterproofing for the roof, gypsum boards, ceramic tiles, granite tiles, carpets and paints for the interior finishes.

The team also held regular weekly coordination meetings between the client management team and the contractors to achieve co-ordinated progress on site.

ICC was able to handle the complex requirements of the facilities and succeeded in completing all necessary civil works well within time, which allowed the UPDC to be launched on target. The UPDC has proved to be a major success, having delivered a total of 297 course sessions, training 4,000 participants from eight upstream areas, including geology, geophysics, petro physics, reservoir, production, drilling and facilities engineering, and upstream computing. The UPDC is a major milestone in ICC and DSC's KSA history and a proof of their stellar project management skills.