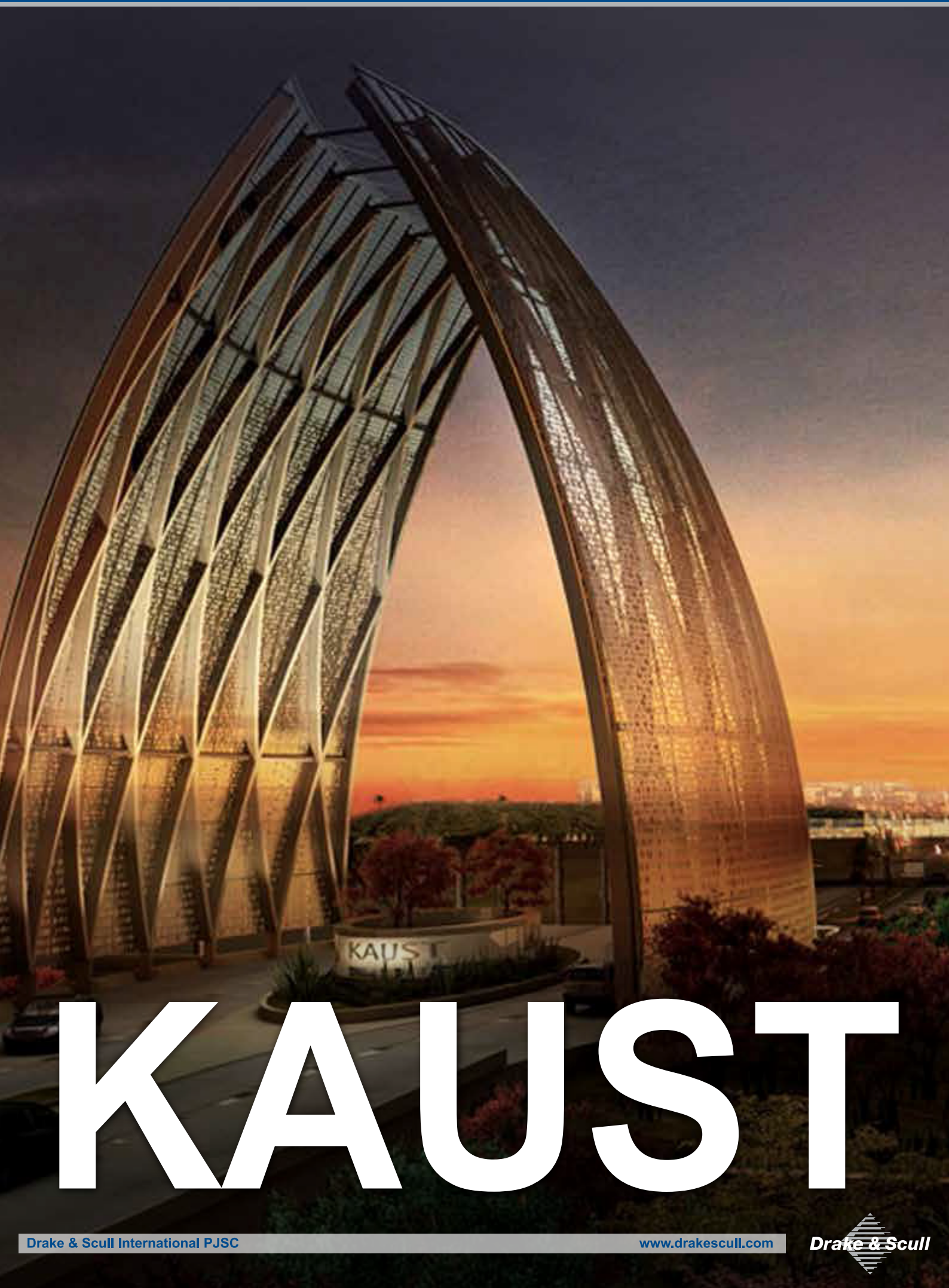
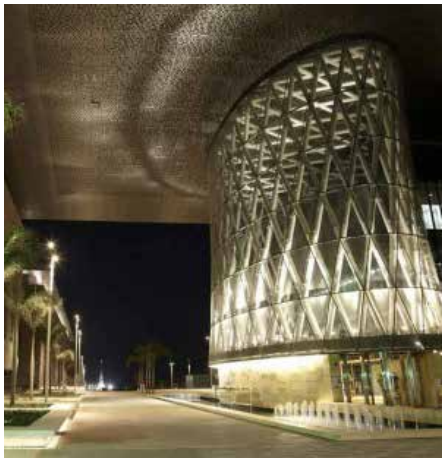


KAUST



The Project

King Abdullah University of Science and Technology (KAUST) in Saudi Arabia is an international, graduate-level research university dedicated to inspiring a new age of scientific achievement in the Kingdom that will also benefit the region and the world. KAUST is the realization of a decades-long vision of the Custodian of the Two Holy Mosques, King Abdullah Bin Abdulaziz Al Saud. The university is governed by an independent, self-perpetuating Board of Trustees and supported by a multi-billion dollar endowment and was established by the government-owned Aramco, the world's largest energy corporation, to drive innovation in science and technology and to support world-class research in areas such as energy and the environment. KAUST's new campus is Saudi Arabia's first LEED-certified project, earning a LEED Platinum certification and is ranked as the largest LEED Platinum project in the world .The university is designed to act as a living laboratory by demonstrating that environmentally-responsible methods of energy use, materials management and water consumption are viable in the Middle East and across the globe.

The Developer

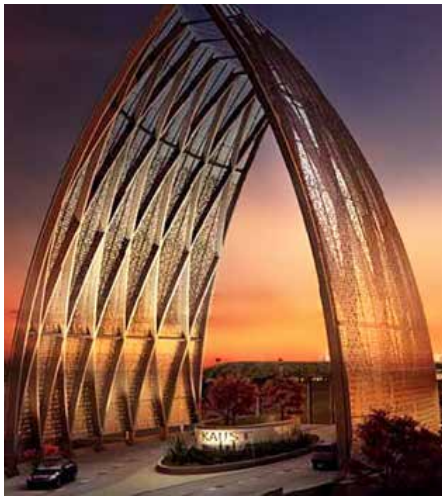
The King Abdullah University of Science and Technology was the realisation of a long standing dream of Saudi Oil Giant Aramco, who envisioned the construction of a world class graduate research university, in Thuwal near Rabigh on the Red Sea coast. Saudi Aramco, officially the Saudi Arabian Oil Company, is the state-owned national oil company of Saudi Arabia and is among the world's most valuable companies.

Saudi Aramco has a strong history of funding community projects in the Kingdom, with several large "high-tech" hospitals and fire stations, both industrial and residential to being borne out of their funding. Saudi Aramco has been a vocal supporter of local education and strong proponent of national development programs. The KAUST project was a cornerstone of Saudi Aramco's national development efforts and the University has seen strong enrolment and today accommodates nearly 700 students with a large participation in Post Graduate and Doctoral Programs.

Working in tandem with main contractors Saudi Oger, a plan was outlined to establish a 36 sq. Km campus with multiple gym facilities, libraries, and coffee shops. The campus would also integrate modern state of the art laboratories focusing on High Speed Computing, Nanotechnology, bioengineering and Coastal Resources.

Business Challenges

The client wanted to create an international community of scholars that embodies the highest international standards of scholarship, research, education, and learning dedicated to advanced science. The key driver of the project was to make KAUST become a major centre for global hi-tech research, housing some of the most advanced research equipment and facilities in the world and aimed to be one of the most sustainable largest LEED Platinum projects in the world.



DSE Solutions

The engineering office of DSE operated of Saudi Oger's engineering offices in Paris - France to ensure that the designs were being drafted and finalised as per the DSE team's input and technical requirements. From inception, the campus was designed to be environment-friendly. DSE's use of innovative engineering techniques and products significantly enhanced the sustainability of the project and facilitated for KAUST to attain the LEED Platinum certificate. In order to assure that KAUST was awarded the LEED Platinum level, DSE altered conventionally used designs and installations and employed several innovative engineering techniques and products including designing a system to sustain a lifecycle of 100 years, maximising efficiency of installed systems and using specific special construction materials for the laboratory buildings, adopting photovoltaic cells for generating power, installing solar towers and solar water heaters, using low-emission sealants in addition to minimising construction waste and using recyclable materials wherever possible.

To optimize the impact of renewable energy the company installed 900,000 square metres of solar energy panels which provide 100% of all campus energy needs and make the university carbon neutral. To create a passive pressure difference and continuous breeze along the shaded courtyards, DSE installed two fans, each extracting 95 cubic metres per second through 3.0 metre diameter axial blades power fuelled of solar power and prevailing winds. The company's highly-efficient mechanical, electrical and plumbing systems was designed to reduce the overall power demand of the campus through the adoption of advanced technological equipments such as chilled beams and under-floor air distribution incorporated into early designs to achieve energy cost-savings of 24.5%.

A total of 1,152 units of solar thermal panels with a 4,134 square metre area for hot water production was installed on the monumental roof to produce approximately 50 Gegajoules per day. Also the company's installation of a total of 16,567 square metres of photovoltaic arrays on the monumental roof was designed to produce 4 Megawatts of renewable energy, offsetting 5.7% of the total campus energy demand. The use of variable speed drives to run all the major equipment such as air-handling units, chilled water pumps and different types of fans also contributed to reducing overall power consumption rates. The proficiency and prevalent experience of DSE in addition to its successful integration with all project teams allowed KAUST to be announced as one of the winners of the American Institute of Architects' Top 10 Green Buildings awards for 2010 and to be classified as the 'Most Sustainable Project of the Year' in the 2009 MEP Awards.