



# The Saudi conundrum

DISTRICT COOLING'S TIME HAS ARRIVED IN SAUDI ARABIA. TO REALISE THE POTENTIAL, THOUGH, THE COUNTRY HAS TO ADDRESS KEY ISSUES RELATING TO LAND, WATER AND POWER, CONTENDS MATTHEW H POLAK

**T**here are just a few days left for the International District Energy Association's Symposium in Dubai. While the event is in the UAE, the thoughts of many district cooling executives will be focused a few hundred kilometres to the West, in the Kingdom of Saudi Arabia.

Truly, the district cooling market in Saudi Arabia represents the largest opportunity in the region, perhaps dwarfing even the massive projects underway in the UAE.

While public estimates have quoted Saudi Arabia's market size at five million TR over the next five to seven years, this estimate is

likely a conservative one, as the total current infrastructure and public sector building programmes are valued at over \$100 billion, with still more private sector development planned. At a minimum of \$2,000 per TR, it's easy to see why so many district cooling companies are focused on expanding into Saudi Arabia.

A recent study conducted by CM2 Limited discovered more than 33 projects scheduled for completion within the next two years in Saudi Arabia that are prime candidates for district cooling systems. The study also revealed over 65 other major construction projects suitable for district cooling that have been announced and will be built in the

next five years, with still more to follow.

In Saudi Arabia, the significant economic opportunities that exist come with a unique set of challenges that not all district cooling companies will prove able to address. Those able to adapt their strategies from Dubai and other parts of the UAE to meet the needs of Saudi Arabia will be rewarded as the market develops. Perhaps more importantly, those companies able to learn from others' mistakes will be able to capitalise more quickly and with fewer resources.

The challenges that a successful district cooling company will have to overcome in Saudi Arabia can be grouped into four major areas.

#### FOUR KEYS TO THE KINGDOM

In district cooling, familiarity helps breed success. In order to win contracts, companies in Saudi Arabia will need a positive history of district cooling project execution in the region. While onlookers speculate that this would give Saudi Tabreed an advantage, new participants can remain competitive, overcoming their lack of district cooling project execution experience by forming relationships with companies that do have experience. Saudi Binladin Group has done this with Johnson Controls, and the Arabian District Cooling Company (ADCCO) has done so with The Stellar Group, to give two examples.

Previous successes must be paired with a first-class design and engineering capability. A successful company must have a flexible approach to each opportunity and must take advantage of its excellent design and engineering teams to correctly implement district cooling on a per-project basis. Technical creativity is highly dependent on the expertise of the development team and their ability to present viable and flexible options, both in order to overcome client objections and to maximise efficiency. Newcomers to the market will likely have to partner with a more experienced company to succeed in this area, as well.

Marketing strength and local market presence are also critical and complementary factors for success in Saudi Arabia. A company operating successfully in the UAE will likely fail in Saudi Arabia if it merely replicates its proven business model. The Saudi market's distinctive challenges, coupled with the fact that district cooling is a burgeoning sector, highlight the critical nature of a company's ability to present a complete and compelling cost breakdown to prospective clients that fully demonstrates the benefits of district cooling.

Ultimately, relationships will determine a district cooling company's ability to win contracts in Saudi Arabia. Emaar Properties has leveraged relationships inside Saudi Arabia and has tapped Saudi Binladin Group to install the majority of the infrastructure for its projects. While there is no guarantee that Binladin will also win Emaar's district cooling business, it's noteworthy because Emaar does have an "in-house" district cooling company – Emaar District Cooling – but chose Saudi Binladin's local experience.

In a move to enhance its market position, Saudi Tabreed has also formed strong relationships. The company originally entered the market in Saudi Arabia hoping to capitalise on its successful UAE district cooling strategy. After a year on the ground with moderate success, Saudi Tabreed adjusted its approach to cement relationships with local, Saudi Arabia- ➤

# epsi®

Manufacturers of Industrial Refrigeration & Air Conditioning Equipment



**ESAC**  
Air cooled water chillers with screw compressors from 168 to 1387 kW



**EHDT**  
High static fan coil units from 1000 to 2900 m3/h



**EDA**  
Monoblock air handling units from 1700 to 9400 m3/h



**EAHU**  
Sectional air handling units from 1000 to 57000 m3/h



HEAD OFFICE: INDUSTRIAL PARK (VI.PA) SHISTOU O.T.8 188 63 PERAMA, GREECE  
Tel: +30 210 4311111, Fax: +30 210 4326064 e-mail: info@epsi.gr

SUBSIDIARY OF N.GREECE: 12 Adrianoupoleos str., 55133 Kalamaria, Thessaloniki  
Tel: +30 2310 403795 Fax: +30 2310 403796

TECHNICAL REPRESENTATIVE OFFICE M. EAST & AFRICA:  
189, Orouba St., Heliopolis Cairo Tel: +2 022 672627 Tel & Fax: +2 022 686083  
email: epsi\_me@hol.gr

## IN DISTRICT COOLING, FAMILIARITY HELPS BREED SUCCESS. IN ORDER TO WIN CONTRACTS, COMPANIES IN SAUDI ARABIA WILL NEED A POSITIVE HISTORY OF DISTRICT COOLING PROJECT EXECUTION IN THE REGION.

» based companies. To that end, it partnered with A Abunayyan. For new market entrants, relationships will prove equally important and can be forged on numerous levels. Examining the interrelationships between property developers, contractors, consultants and architects will help a hopeful entrant identify the most advantageous route to market.

### SCARCITY OF RESOURCES: WATER, ELECTRICITY AND LAND

In Dubai, most successful district cooling providers have access to water, a critical element in any efficient district cooling scheme. Indeed, in Dubai, whether a district cooling plant's make-up water is fresh, grey or salt, access to this resource is virtually uninhibited. This allows district cooling plant operators to maintain operational efficiencies and profitably supply chilled water.

This is not the case in Saudi Arabia, where access to water is a major concern. In most regions in Saudi Arabia, water supplies will be limited and district cooling companies will need a variety of strategies to secure water for their systems, be it brackish water, sea water, or deep well water. This tight water supply will have an impact on the overall cost of running the district cooling plant and could also determine a particular plant's viability.

For example, in Riyadh, far from either coast, fresh water is simply not available in the volume (or at the cost) that would make a district

cooling plant economically viable. Options for securing the required water in these situations are few.

Closer to the sea, in cities like Jeddah, water may be an issue that is easier to address. District cooling plants utilising salt water – though a comparatively expensive solution – can profitably provide chilled water to the region. This sea water solution will allow Jeddah and other coastal areas to adopt district cooling systems with less cost and complications than Riyadh and other inland cities.

While the Government of Saudi Arabia plans to invest \$40 billion to improve Saudi Arabia's water infrastructure over the coming decade, district cooling companies can also take measures to stabilise supply by creating relationships with major water companies. Saudi Tabreed has joined forces with A A Abunayyan, one of Saudi Arabia's premier water companies, for example.

Sourcing water is not the only challenge a district cooling company faces in Saudi Arabia. Power requirements for cooling have been a key driver behind the significant increases in peak power loads in the region. For example, peak power loads in Saudi Arabia have increased by over 60% since 1990. Electricity demand is expected to increase to over 60 GW by 2020, pushed by growing residential and commercial use and by a continuing population boom.

The growing demand for electricity continues to pressure district cooling providers throughout the Middle East to develop more efficient systems. In Saudi Arabia, district cooling will require innovative designs to reduce electricity use, such as thermal energy storage. Other designs are now incorporating the use of diesel generators, which reduce peak demand costs and protect against the Kingdom's frequent power shortages. Moreover, diesel fuel is subsidised by the Government and costs less than \$0.24 per gallon. In the future, some district cooling companies may consider solar energy-powered absorption chillers in conjunction with electric chillers, if ample land resources are available, as the technology requires in excess of 10 m<sup>2</sup> of solar panel for every tonne of cooling. With over 20 different solar thermal projects completed in Saudi Arabia over the last 15 years, and with over 3,000 sunshine hours per year in the country, it's easy to see, though, why this technology is an attractive alternative.

The Government is also doing its part to help district cooling companies meet the challenges posed by the lack of electricity. It must be noted, however, that district cooling companies providing chilled water to major projects in Saudi Arabia must obtain an industrial license from the Ministry of Electricity and Water in order

## Get Connected!

### Access information on 12,000+ GCC Projects

Download LINX for free access to projects, products, companies, events, design & engineering tools, product catalogues, product specification guides & construction news.

Visit [www.bncnetwork.net](http://www.bncnetwork.net) or

call +971 6 5573138 for more information.



# feature

to qualify for the industrial rate of \$0.032 per kWh. Without the license, district cooling companies will pay a commercial rate as high as \$0.07 per kWh. As of date, none of the district cooling companies has succeeded in securing industrial rates, despite serious attempts and follow-ups.

Acquiring real estate is another unique challenge for entrants in the district cooling market in Saudi Arabia. In Dubai, for example, land is often furnished to district cooling providers at little or no cost. In Saudi Arabia, though, district cooling companies must purchase property on which to build their plants, often competing against other interested developers. According to Rene Malek, Managing Director of ADCCO, the cost of "purchasing land could increase the cost by as much as \$10-\$20 per TR". While it's likely that this cost could be passed directly to the customer, this is simply another in the series of challenges that make entry into the district cooling market in the country a puzzle that can only be solved by those companies possessing superior technical skills and strong relationships.

## STAYING IN THEIR SPHERE

Currently, the list of district cooling players in Saudi Arabia includes Saudi Binladin, Al Rajhi's City Cool, Dalkia and Energy Central Company. The last two are actively providing their services from either Bahrain or the UAE.

With such enormous market potential, it is curious that local players like Saudi Binladin and City Cool are primarily focused on their internal projects. In the case of Saudi Binladin, their efforts are centered on completing the infrastructure for Emaar's planned district cooling projects at King Abdullah Economic City (KAEC), as well as Binladin's internal projects. While it does have larger ambitions, City Cool is focused on its own projects, such as Al Rajhi's headquarters in Riyadh. One simple explanation for this introverted market view, at least in the case of Saudi Binladin, is the sheer scale of the projects. KAEC represents the largest individual district cooling opportunity being undertaken by Binladin, and this is not the only project that it is considering.

An alternative explanation is the lack of technical district cooling expertise in Saudi Arabia. Finding seasoned executives with district cooling experience is a challenge.

ADCCO decided to address the technical gap that Saudi Arabia-based district cooling companies face by leveraging the experience of its parent company (Riyadh-based Al Gihaz Company) as a utility and contracting company and blending it with the technical expertise available from Dubai-based Stellar.

## DISTRICT COOLING IN SAUDI ARABIA: TODAY AND TOMORROW

District cooling's time has come in Saudi Arabia. To capitalise on its arrival, companies with strong technical capability, good relationships and creative solutions to Saudi Arabia's complex resource issues will emerge in the marketplace. As technologies improve, plants will become more efficient and customers will adopt district cooling as the preferred method for cooling their structures. ■

The writer is a Managing Partner of CM2 Limited, a Washington, DC-based Strategic M&A Advisory and Competitive Intelligence firm that has completed a number of projects focused on district cooling in the Middle East. He may be contacted at [mpolak@cm2limited.com](mailto:mpolak@cm2limited.com).



يونى الخليج للتنمية (ش.ذ.م.م.)  
UNIGULF DEVELOPMENT L.L.C.

**A ISO 9001 : 2000 REGISTERED FIRM**



**L'Isolante K-Flex**  
Closed Cell Elastomeric Foam Insulation



**POLY GLASS FIBRE (M) BHD.**  
Fibre Glass Insulation



**Bductal**  
Preinsulated ducts system



**Gulf Duct Industries**  
GI Ducts & Fittings



**ATCO RUBBER PRODUCTS, INC**  
Flexible Duct Systems



**HARDCAST CARLISLE**  
Duct Sealants, Vapour Barriers,  
Adhesives & Duct Hardware



**STREAMLINE MUELLER INDUSTRIES INC.**  
Copper Coils, Pipes & Fittings



**EMERSON Climate Technologies**  
Filter Driers, Sight Glass & Shut of Valve



**nordic metalblok**  
Fastening Systems



**VentureTape**  
Insulation Tapes & Cladding



**ruck ventilatoren GmbH**  
Fans & Ventilating Systems



**DYN/AIR**  
Flexible Duct Connectors, Insulation  
Fasteners & Duct Hardware



**RECON**  
PRE-INSULATED PIPE



**J.W.HARRIS**  
Soldering & Brazing Products



**HARP REFRIGERANTS**



**REFCO**  
Refrigeration Service Products &  
Components



**DE.NA Srl**  
Refrigeration Components



**PM**  
Refrigeration Tools &  
Accessories



**Imperial**  
Refrigeration Service,  
Products, Tools & Accessories



**EASY**  
Airconditioning & Refrigeration Products



**Arnoflex**  
Rubber Pipe Insulation

HEAD OFFICE	: P.O. Box 2328	Tel: +971-4-2862100	Fax: +971-4-2858001
Dubai Showroom	: P.O. Box 2328	Tel: +971-4-2223697/2282940	Fax: +971-4-2281435
Abu Dhabi Showroom:	P.O. Box 47356	Tel: +971-2-6338748	Fax: +971-2-6338749
Sharjah Showroom	: P.O. Box 27358	Tel: +971-6-5397099	Fax: +971-6-5397088
Doha Showroom		Tel: +974-4369458	Fax: +974-4373805

E-mail: [info@unigulf.ae](mailto:info@unigulf.ae) | Website: [www.unigulfdevelopment.ae](http://www.unigulfdevelopment.ae)

