

# Gas Chillers solve power shortage at London's Embassy Gardens

What do you do on site when you're faced with a shortage of electrical power? And when the cost of providing the power you need is prohibitive?

That's the situation that faced Ballymore at London's Embassy Gardens, the landmark development in Nine Elms. The solution was to install 128 Robur gas-powered chillers. These provide comfort cooling to six residential apartment buildings. More than 2.3MW of cooling has now been provided across three phases of the residential build.

Embassy Gardens is a 17 acre site in the heart of the Nine Elms regeneration area which will deliver nearly 2,000 new homes, stunning landscaped gardens, vibrant new bars and restaurants providing a variety of al fresco spaces and 130,000ft<sup>2</sup> of shopping. It is one of Europe's most significant regeneration projects, comprising thousands of luxury homes, workspaces and amenities as well as the new US Embassy, Battersea Power Station and New Covent Garden market.

The apartments at Embassy Gardens are a 10 minute walk from Vauxhall Station and connectivity will be further improved with the forthcoming extension of the Northern Line, creating two new stations at Nine Elms and Battersea Power Station. Future home to the Sky Pool, Embassy Gardens is a landmark development that will establish a totally new community within central London, wrapped around the new US Embassy.

The Robur chillers, supplied by UK distributor ESS, are mounted on factory-assembled skids, pre-wired and pre-piped, each of which has a 90kW output but requires just a 30 Amp single phase power supply. The integrated controls automatically 'cascade' the chiller modules and share the load evenly between each of them.

Kevin Pacey, Managing Director of ESS Ltd., said: "The Robur gas powered chillers provide a truly modular solution. The direct digital controls ensure shared workload and, in the event of a mechanical failure or service downtime, less than 7% of output is lost."

Robur gas chillers and heat pumps use natural refrigerant, Ammonia R414, in a factory sealed circuit and are not subject to F-Gas regulation. Global Warming Potential (GWP) and Ozone Depletion Potential (ODP) are both zero, earning credits for BREEAM.

Without the presence of compressors, sound levels are lower than equivalent electric chillers: 54dB(A) at 10 metres for a single chiller module. By varying the factory refrigerant charge, models can be supplied to operate in a wide range of ambient temperatures, from -15°C to 50°C, as well as to generate a wide range of chilled water temperatures for cooling in industrial process applications. A heat recovery 'HR' model produces up to 25kW of free hot water at 75°C.

## HEAT PUMP RANGE

In addition to the chillers, Robur produces heat pumps (GAHP-A) from 40-200kW which run on mains gas or LPG and offer efficiencies up to 165% and water up to 65°C for heating and/or hot water production. Compared with a modern condensing boiler this can improve running cost and carbon savings up to 40%. Robur heat pumps have now been installed in more than 100 UK sites in the past five years, often where there is high hot water demand such as in care homes, hotels or schools and to satisfy the requirements of Part L building regulations. The high delivery temperature means the heat pumps are easily integrated with either Robur's own or with third party boilers to reduce the capital cost whilst still benefiting from high efficiency. Simply installing one or more heat pumps can often reduce the number of solar PV panels required, and locating heat pumps externally along with integrated boilers can free up internal plantroom space for the client.

A reversible 'AR' model can switch between heating and cooling. This model is best suited to winter heating with the added benefit of summer comfort cooling and has, for example, been installed in schools where the main requirement



is for heating, but separate chilled water fan coils can be served in the school hall to provide cooling in the hall. If frequent switching between modes is required, then independent hot water and chilled water buffers can be utilised to overcome inertia.

The absence of compressors or inverters significantly reduces long term parts replacement costs and increases the life expectancy of the chillers. Moreover, thanks to an almost static refrigeration cycle, the performance levels remain unchanged over time.