

Taking the heat out of Fawley power station

When Fawley Power Station needed to replace its chillers, Tricool Thermal designed a cost-effective solution for the ecologically sensitive site.

Fawley Power Station has installed a state-of-the-art cooling system designed by Tricool Thermal to improve cooling cycle times and address environmental issues. The chiller is an essential part of the infrastructure that enables Fawley to generate extra electricity for the National Grid when demand outstrips supply.

Located on the shore of Southampton Water, Fawley owned by RWE npower is one of the UK's largest oil-fired power stations. It is capable of generating up to 1,000MW of electricity for the National Grid system – enough to meet the needs of one million people.

Emergency supply

It is important that Fawley maintains a constant state of readiness for generating electricity. Typically this occurs in the winter months and during the summer when the country's other power stations are taken out of service for maintenance. Fawley also has two operational gas turbines for emergency operation.

At the heart of the complex is a futuristic doughnut shaped building. Inside this circular space-age structure is Fawley's control room. The semicircular room is lined with banks of equipment controlling the power generation. The building also houses lecture rooms, administrative offices, laboratories, computer rooms and a plant room below ground level.



Tricool Thermal offer a cost-effective solution to Fawley power station



Temperatures throughout the building are 21°C and maintained by relying on standard heating system, natural ventilation as a direct result of its siting on an exposed shore overlooking Southampton Water, partial air conditioning.

The latter is limited to the main control room, computing facilities and lecture/conference facilities. The computer rooms are equipped with an ever-expanding bank of equipment that creates vast amounts of heat. Preventing build up of high heat loads is a major priority to optimise performance and minimise the risks of heat related malfunctions that could lead to a major power outage.

Cooling requirements

Two large chillers (one originally supplied by Tricool Thermal) had met the sites' requirements for a number of years and were regularly serviced and maintained under a preventative programme by Tricool Thermal. But, earlier last

year it was decided that replacements were needed. Age and exposure to a harsh salt-laden environment had taken its toll.

The chillers and much of the pipework had corroded. Environmental issues were also a concern. Water was being removed from the sea to supply the chillers and then discharged directly back into the Solent a few degrees warmer. Fawley saw this as an opportunity to replace and improve the efficiency of its cooling system.

Requirement for Tricool Thermal

Tricool Thermal was asked to design a cost-effective solution that also took into account visual impact and noise.

The unusual architecture and its exposed location presented a number of hurdles in relation to pipe runs and siting of condensers. The condensers couldn't be placed outside in such an aggressive environment and if placed internally, heat build up would be a major issue.



The solution

Tricool Thermal engineered a solution based on the ejection of heat to air instead of into (sea) water. A chiller was custom built to the power plant's own specifications and included an aircooled condenser and dedicated air blast cooler to disperse heat into the atmosphere. The air blast coolers were weathered using high quality powder coating, all pipework was plastic and the fans were fitted with speed controllers to reduce noise levels.

The entire unit was positioned at the front of the building, immediately above the plant room to minimise pipe runs. The whole area was then landscaped with

a bed of cobbles to further deflect noise. Copper pipes and fins were used for the condensers and the chiller was also specially coated.

The project was completed over the summer months and temporary air conditioning had to be used to maintain temperatures in the computer and central control rooms.

Visit our website www.tricool.com for more information, or contact us on **0800 977 5709** or at info@icstemp.com.