[Government]

Anchorage Air Route Traffic Control Center

PROJECT AT A GLANCE

Project Type:
Retrofit of chilled water plant

Location:
Anchorage, Alaska, USA

Number of Buildings:
Small, one-story building

Equipment Installed:
Ground source cooling, chiller replacement, new heat exchangers

Security restrictions precluded the FAA from signing a performance contract for a new cooling system. So Schneider Electric proposed an alternate solution to achieve the desired cost-savings.

The Challenge

The FAA's Air Route Traffic Control Center in Anchorage wanted to replace a 900-ton chilled water plant with a more energy-efficient solution. But carrying out this project would present some unusual challenges.

Although the FAA did not select the controls system vendor to perform this project, administrators wanted to continue using that vendor's controls. That meant whoever headed up the project would have to coordinate construction and installation efforts with subcontractors and the third-party vendor.

Harsh environmental conditions would also confine digging efforts to six months during the year. Pipes would have to be buried 10 feet deep so they were below the frost line. And all new equipment would have to be earthquake-proof.

The FAA put the project out for bid, using design specifications from a government contractor. Schneider Electric won the bid to oversee construction and installation of the new cooling system.

Schneider Electric takes on Alaska's challenging weather conditions – from frigid temperatures to an earthquake – in replacing a chilled water plant for the FAA.

The Solution

Schneider Electric performed a detailed energy audit to identify cost savings after another firm reported that using ground source cooling for the project would not adversely affect the environmental balance of the aquifer beneath the city.

Schneider Electric kept a tight rein on labor costs by sending only one project manager to the site. The project manager then hired local subcontractors to construct and install the new cooling system. He also managed the third-party vendor's installation of 200 additional control points.

The Schneider Electric project manager supervised removal of the old chillers, pumps and controls, as well as excavation of two new 160-foot deep supply wells. (A third well, located within the building but previously abandoned, was connected to the new system.) These three wells access the aquifer's 37° F water supply, enabling the new system to deliver cold water to the heat exchangers and to return water to the ground via two return wells.

The FAA site in Anchorage now uses a groundwater cooling system that helps lower energy consumption, as well as maintenance costs.

Each supply well is capable of producing 600 gallons per minute, and the flow from a single well is sufficient to cool the entire complex. The heat exchangers connect the new chilled water supply with the building's cooling loop.

The Bottom Line

Using a groundwater cooling system has enhanced the environment and improved working conditions for employees by removing ozone-depleting and hazardous substances from the chilling process. In addition, energy consumption has decreased, maintenance costs have dropped and the cooling system's reliability has improved.

The project started on time and finished on time nine months later, with all exterior construction completed in four months. Upon completion of the project, however, the FAA issued a change order to install a bypass loop because the water supply was actually colder and more abundant than originally anticipated.

While the new groundwater system was being installed, Anchorage experienced a 7.9 earthquake. Tremors were felt as far away as Louisiana, and boats docked in Seattle were damaged. But the FAA's new cooling system in Anchorage was unscathed.

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