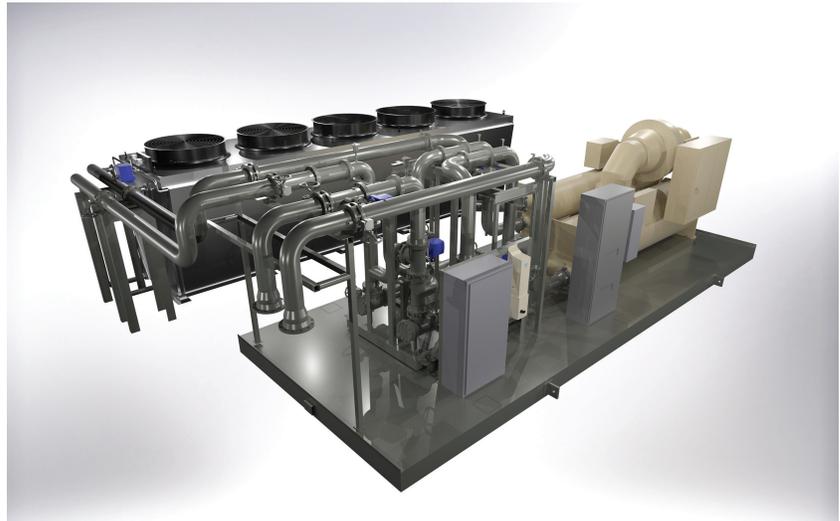
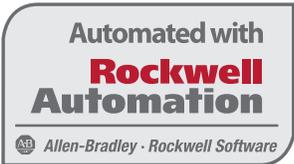


Solutions in Action



The CritiChill indirect evaporative cooling system features a supplemental chiller that can be bypassed as weather conditions dictate.



Allen-Bradley CompactLogix 5370 Controllers

As digital assets have become increasingly important to modern businesses, so too have data centers. Companies that build and maintain these facilities face industry expectations for “five-nines” (99.999%) reliability – and unique environmental challenges.

“Data centers are filled with servers that must be kept cool,” said Stu Barrick, vice president, Systecon. “But the computers and other electronic equipment produce considerable heat, so data centers have a continuous heat load.”

To maintain a consistent temperature, data centers typically rely on computer room air conditioning (CRAC) units or computer room air handlers (CRAHs) and associated chiller systems. To help manage heat loads in data centers, Systecon, a leading manufacturer of custom modular utility solutions, recently introduced the CritiChill® indirect evaporative cooling system.

The patented CritiChill system includes a supplemental chiller that can be bypassed as weather conditions dictate. In addition to data centers, the CritiChill system is ideal for other buildings with overhead sensible cooling devices that have warm water delivery.



"For data centers, our equipment is considered mission critical," Barrick explained. "The CritiChill system is a pre-built, modular solution that delivers chilled water to CRACs or CRAHs as needed in an environmentally friendly and efficient way."

Before CritiChill, there were two cooling options – a water-cooled chiller plant, which is extremely energy-efficient or an air-cooled chiller plant, which uses less water and chemical treatment.

"Water-cooled chiller plants rely on cooling towers, which use a large quantity of water that is open to the environment – and pollen, dirt and other particles," Barrick said. "To help prevent algae growth and other developments, the water is chemically treated."

On the other hand, an air-cooled plant does not have a cooling tower, but relies on energy-intensive condenser fans often running at 100 percent capacity.

The CritiChill system combines the best of both options – and achieves efficient cooling with minimal water usage. With an adiabatic cooler, the system uses only 20 percent of the water normally required by a traditional cooling tower.

Adiabatic cooling takes advantage of the ambient temperature of outside air and uses no water in cold weather. The supplemental chiller is engaged only when environmental conditions are unfavorable for natural cooling. In addition, any water used in the system circulates between the condenser and evaporator in a closed loop. Therefore, the water is not exposed to the atmosphere and no chemical treatments are required.

"We're taking advantage of adiabatic cooling and closed loop control," Barrick explained. "This approach helps customers meet water usage restrictions, like those mandated by California Title 24, and other environmental regulations."

To reduce energy usage, the CritiChill system runs in three different modes – mechanical cooling, integrated precooling and free cooling, which leverages cool ambient temperatures.

"The different modes allow us to correlate motor capacity to load demand," Barrick said. "As a result, CritiChill is about 30 percent more energy efficient than an air-cooled system."

The CritiChill solution runs on a Rockwell Automation® control platform featuring Allen-Bradley® CompactLogix™ 5370 controllers. The equipment is integrated on an EtherNet/IP™ network and includes a building management system (BMS) gateway that allows CritiChill data to be collected and monitored by the central building control system.

"We standardized on a Rockwell Automation platform about 20 years ago, and one of the key advantages has been our ability to easily reuse code," Barrick said. "Even though we customize every solution we deliver, we recognize there are pieces of code that can be repurposed from project to project."

Within the Rockwell Automation Studio 5000® programming environment, system designers can create libraries of reusable code. And then generate modular objects with customizable configuration parameters, including associated visualization, historical and alarming elements.

Ultimately, reusable code helps standardize programming – and speed customized solutions to market.

"Oftentimes, our data center customers must expand their facilities quickly to meet additional demand," Barrick said. "Thanks to the modularity of our solutions – and our ability to minimize control system development time – we can meet their aggressive timelines."

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