



## Partnering builds successful project

The Mead & Hunt, Rockwell Automation team



Partnerships and teamwork are effective tools that allow businesses to accomplish more than ever before. Partnering benefits both the client and engineer by improving communication and providing a variety of perspectives. Mead & Hunt partnered with Rockwell Automation to solve a complex and challenging project with their heating and cooling system.

Heating and cooling costs are a big expense. Old systems become inefficient and expensive to operate. Rockwell Automation, a manufacturer of industrial controls and automation systems, faced a similar challenge. An energy analysis indicated inefficiencies of their chilled water plant and distribution network. Thus, they decided to upgrade the chilled water systems serving their corporate headquarters operation in Milwaukee, Wisconsin.

The first step was to identify Rockwell Automation's goals for a new system. After closely examining the situation, the project team discovered that there were several design and construction challenges. The design team was faced with schedule and budget constraints; site restrictions; safety, maintenance, and equipment concerns; pipe routing; and minimizing downtime during change over from the current chilled water production systems to the new central plant. The same challenges that many companies face.



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Rockwell Automation wanted the project completed within one year of the onset of the design process. Mead & Hunt immediately set into motion to meet the client's ambitious goals.

At Mead & Hunt's suggestion, separate bid packages were issued to reduce schedule concerns and to save money on contractor equipment markup. Rockwell Automation directly purchased all major system components, and the equipment was ordered early due to long lead times. Careful schedule coordination allowed for a just-in-time delivery method for the construction phase of the project so that pre-purchased equipment arrived and was installed precisely when needed. The partnering approach was essential to the project's success.



"Without first listening to the client's needs, we would never have been able to make this project successful," said Mead & Hunt Project Manager, Terry Kennedy. "In this project, timing was everything. By working together as a team, both staffs were able to coordinate arrival of the equipment to reduce down time."

Shipping and loading docks needed to remain open and operational throughout construction. With careful planning, Mead & Hunt also prevented the rerouting of traffic from a busy street which the new secondary chilled water supply and return piping were programmed to cross. Installing distribution piping from the new central plant to existing facilities was coordinated with Rockwell Automation.

Safety is critical when dealing with potentially harmful refrigerants. A refrigerant monitoring system was installed with sensors at each chiller. If a refrigerant leak is detected by a sensor, automatic air flushing of the central plant begins, and visual and audible alarms within the central plant are activated. Remote alarm systems in

and audible alarms within the central plant are activated. Remote alarm systems in the security and maintenance departments were also designed.

"It was key to us that this building provide the highest standard of safety," said Kennedy. "We studied this area intensely to make sure the system we designed was flawless."

Another goal was to design a user-friendly building. Pivotal concerns were identified by Allen-Bradley. "The maintenance staff use the plant every day – they know the problems better than anyone. By asking them to identify vital concerns, we're able to design a better facility. It is important to us that they are happy with the new surroundings," said Kennedy.

A plan was then formulated to help meet the staff's needs and ease maintenance. One addition included the installation of overhead doors at each end of service aisles to allow for drive-through accessibility. Now, the chillers and pumps can be accessed, serviced and removed from the service aisle. The chiller bundles were also specified to allow easy access for tube bundle maintenance. Each chiller is piped to a permanent refrigerant pump-out unit to eliminate release of harmful refrigerants during chiller maintenance.

Redundancy was another critical design issue. Rockwell Automation wanted the full-load capacity to be maintained, even in the event of losing one chiller or cooling tower to maintenance. Mead & Hunt incorporated allowances into the design for the addition of a chiller, cooling tower, and a free cooling heat exchanger to ease future expansion.

State-of-the-art equipment was used throughout the project to showcase the client's electronic products. The chillers were selected based on their full-load and part-load efficiencies and ease of maintenance. Rockwell Automation's latest line offering of chiller starters is featured in the new plant, and at the time of construction, had not yet been marketed. Allen-Bradley (a brand of Rockwell Automation) PLC's were installed and smoothly interfaced with the chiller manufacturer's controls.



The new controls automatically measure temperature, pressure, and flow at multiple points within the various systems and provide automatic reset so that the equipment runs at optimal efficiency. To ease the transition between the two systems, Mead & Hunt specified control sequences with Rockwell Automation personnel writing the control logic.

By adopting a client-focused approach, both the engineer and client worked together to discuss options and solve problems.

"The project would not have been successful without the communication and partnership established from the start," said Kennedy. "With careful planning, research, input, and innovative thinking we were able to provide our client with a central plant to be proud of. If we had gone in there with an 'engineer knows best' attitude, the results would not have been the same."

Rockwell Automation is using the new central chiller plant as a show room for Allen-Bradley starters and controls for potential clients.