



PumpLines

Innovation...Technology...Leadership

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Goulds Pumps Keeping Chicago Cool

By **Brian Verdehem**, Sales Engineer

Exelon Thermal Technologies operates the world's largest chilled water production system. The system is made up of five plants within the loop district of downtown Chicago. The 5 plants are connected via a closed loop piping system within the street tunnels. The cooling capacity of the entire system is 80,000 tons. That's a bunch of refrigeration. Consider the normal residential requirement of one ton for every 1,000 square feet. The Exelon system currently serves as the primary cooling system for 92 buildings within the downtown commercial area. Most of the Exelon facilities within this system are using pumps from Goulds Pumps, ITT Industries. The Goulds Pumps population in the system consists of (10) 3415 S, (11) 3410 L (8) 3409 M, (2) 3420 LDS pumps. All these models are high flow, high head horizontal splitcase pumps.

The concept of this district cooling system is very simple. During the evening and early morning hours when energy rates are low, Exelon is making tons of ice via massive chillers. At 8 AM when the energy rates increase the ice making system is shut down,



Exelon plant #1 in downtown Chicago can produce and store over 5 million pounds of ice daily.

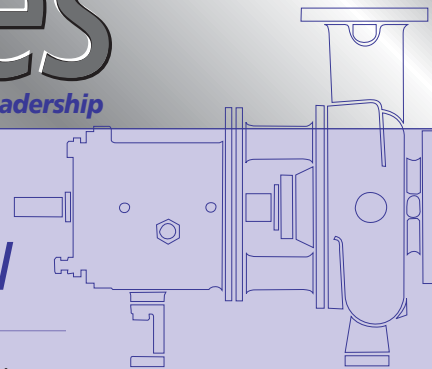
and they begin to melt down the ice and pump the 33°F water to the 92 customers within the downtown Chicago loop district. Some of Exelon's customers are the Amoco building, The Chicago Board of Trade and The Merchandise Mart. An on-line building will exchange the BTU's from its air conditioning system, directly into the cold water coming from the Exelon Thermal system. Having the cold water from Exelon eliminates the high rise buildings requirements for costly cooling towers. With large buildings, eliminating the cooling tower eliminates tower maintenance problems with ozone depleting refrigerants, and frees up floor space for tenants.

Exelon Plant #1 is located at the corner of State and Adams streets in downtown Chicago (photo 1). Plant #1 is a 25,000 ton, chilled water generation plant consisting of three 5,000 ton electric motor driven centrifugal chillers and 5,500,000 pounds of ice storage. This plant has the highest cooling capacity of the 5 five plants. Plant #1, is the only plant out of the 5 that is above street level. The other four plants are at a lower level, or have been retrofitted into the basements of existing buildings with the downtown area. During the summer of 2000, Exelon noticed that the return pressure to the plant #1 was getting below acceptable levels during peak cooling periods. This was a result of a combination of two factors. The increasing number of customers coming on-line, and Plant #1's distance above ground. The friction losses within the system were increasing as more customers tied in. This started to starve the plant. The lower inlet pressure of plant #1 was effecting the plants ability to keep up with the cooling requirements within the system.

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Goulds Model 3420 ships early to beat the summer heat to Chicago.



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Exelon...

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In January of 2001 Exelon Thermal and ESD Engineering (a major Chicago Engineering firm) turned to Goulds Pumps for assistance. Plant #1 was sick and needed to be cured before the next summer heat wave arrived. With a plant flow capacity of 30,000 GPM they needed to boost the pressure by 28 PSI to remedy the situation. Due to space restrictions within the plant they needed one pump to solve the problem. The Goulds model 3420 30 x 30-31 was the best selection for the job. Rated for 30,000 GPM at 65FT the pump was a great fit at 87% efficiency. The unit required a 600 HP 600RPM motor.

This was a great solution, but how in the world would we ever fit a pump, motor and base this large into a building this small? Not to mention the fact that the building was located in the busiest district of America's 3rd largest city. There wasn't even a door in the plant big enough to get the bare pump into the building. The only way that this could be achieved would be to move the pump into the building in pieces and build the bare pump, and unit on site. This is when we got ITT Pro Services' Center in Chicago involved. With their involvement, we could ship the pump, base and motor direct from SFO to Chicago Pro. Then the pump pieces would be moved downtown and assembled in the building by Chicago Pro veteran mechanics Dave Joslyn and Mike Staley.

When we came to this point we had 12 weeks to go before the warm season would arrive. Could Goulds build a large 3420 30 x 30-31 pump with a 600 HP ODP Motor and deliver it



ITT PRO Services personnel prepare to unload the lower casing half.

to Chicago in 10 weeks? Could we fabricate a 17 Ft long base? You bet! So with the addition of Chicago Pro Services, we offered a turn key installation to Exelon Thermal. Goulds won the job!

Within 10 weeks we were installing the pump at Plant #1. Soon after start-up, a heat wave hit the Chicago area and Exelon's system was in high demand. The 3420 went into action and proved to be the remedy that Plant #1 needed. The hot summer of 2001 was no problem with the addition of the new pump. Dale McCracken, the plant operator at Plant #1 said, "We would have never been able to keep up with our customer contracts without the addition of this pump. The effect that this pump has had on our system is phenomenal. The efficiency of our entire system was improved with the addition of this pump."



The casing is lifted to the second floor of plant #1.

John Shinter is the President of Exelon Thermal. John realized that his system in Chicago could not function at high demand without this pump. So in January of 2002, John came to Goulds with a purchase order for a second identical pump system. The second pump would be used as a back-up to the first. With the removal of some old refrigerant tanks at P-1 they found a home for the second pump. Therefore, we duplicated our project this spring and installed a second pump at Exelon plant 1. This time we are able to ship the pump a week early! This resulted in a domino effect to the project and we bettered the project due date by 3 weeks. Exelon Thermal was delighted once again with our abilities as a company.

Exelon is operating the new pump. They now have a working back-up to this critical pump. John Shinter and Exelon Thermal Technologies, are very satisfied with the products and services of Goulds Pumps and PRO Services. Not only were we able to offer them the products to solve their problem, but we were also able to supply them with the services to implement the solution. One stop shopping at its best! ■

Pagano Named President of ITT Industrial Products Group

Robert J. Pagano Jr. has been appointed President of the Industrial Products Group of ITT Industries. The ITT Industrial Products Group (IPG) manufacturers and markets products globally under the Goulds Pumps®, A-C Pump®, PumpSmart®, and PRO Services™ brands. IPG has 10 manufacturing plants, 14 service facilities and 30 sales offices worldwide with over 2000 employees.

Bob Pagano began his career with KPMG Peat Marwick in Syracuse, New York. After five years with KPMG, Pagano returned to Goulds Pumps / ITT Industries where he had been an Accounting Intern during college. He has since accepted and succeeded in a variety of management assignments including; Auditing Services, Cost Accounting Manager, Assistant

Controller, Ashland Operations Controller, IPG Group Controller, and most recently, VP of Finance and Group Controller of ITT Fluid Technology.

Bob received his Bachelor's Degree in Accounting from the State University of New York at Oswego graduating Magna cum Laude. He has attended post-graduate courses at Syracuse University. Bob is a Certified Public Accountant and is also a Certified Management Accountant.

In making the announcement, Robert Ayers, President & CEO of ITT Fluid Technology stated, "Bob has been a key leader and contributor to our Fluid Technology Management Team. His well founded experience in operating environments, coupled with his strategic planning skills, will enable him to focus and lead the IPG organization to meet and exceed our business expectations." ■



Robert J. Pagano Jr., President, Industrial Products Group