

Congratulations

Service Recognition

47 Years	Barry Lienhart
34 Years	Mitch Miller
5 Years	Dave Wilson Linda Hyer

Revit Training Certification

The individuals listed below have successfully completed the required Revit training and passed their proficiency exam. They are now competent to provide Revit design services for future projects.

Andy Wendt
Chris Schockley
Dan McKinney
Dave Wilson
Eric Gleaves
Erich Schmoll
Greg Neuhaus
Mary Elizabeth Baker-Smith

CCHMC's Celestial Ball



*Eric & Molly Erpenbeck, Tracy Holbert,
Joel Grubbs, Linda & Jim Pretz*

Fosdick & Hilmer helped celebrate Kindervelt's 40 years of service at the annual Cincinnati Children's Hospital Celestial Ball. Kindervelt has helped to raise \$15 million over the last 40 years in support of the children and families served by the medical center. The black-tie event helped to raise \$500,000 for the medical center.

Infrastructure Improvements Keep CCHMC Cool Throughout a Hot Summer

Jim Pretz

Following a difficult summer of 2011, during which equipment deterioration and failures created too many anxious moments in the cooling plants at Cincinnati Children's Hospital Medical Center (CCHMC), the hospital embarked upon a multi-pronged approach to upgrading chillers, cooling towers, and air handling equipment. F&H developed and engineered a two year upgrade plan and commissioned the first phases of upgrades just before the start of this year's cooling season.

Work accomplished last autumn and winter included the replacement and capacity upgrade of the Research Plant cooling towers and the replacement of four of the six cooling tower cells serving the Hospital Plant. The total tower capacity replaced was nearly 13,000 Tons. In addition, an older steam absorption chiller was removed from the Research Plant and replaced by a highly efficient electric centrifugal chiller with almost twice the capacity. Three new 500 ton air cooled chillers were installed to replace two smaller air cooled units that serve the Outpatient Clinics and Education Center. Finally, centrifugal supply air fans that move over 300,000 cu. ft. per minute of air through the Critical Care Tower were replaced with compact and efficient fan wall units, increasing capacity, improving reliability, and lowering operating cost. F&H engineered all system upgrades such that they could be accomplished with no service interruptions to the buildings. Included in the engineering scope of work were electrical power improvements to serve the new equipment and complete integration of the automatic controls systems that operate and monitor the air conditioning systems. F&H also applied for and received, on the

Hospital's behalf, over \$100,000 worth of energy conservation rebates from Duke Energy Co.

The Phase I cooling plant upgrades came on line just in time for this year's cooling season, and they have enabled CCHMC to keep their buildings cool and comfortable through the recent period of 100+ degree daily high temperatures. The final phase of upgrades will be accomplished during the autumn and winter of 2012 – 2013, when two large steam absorption chillers and one old electric centrifugal machine will be removed from the Hospital Plant and replaced by three new, efficient 1,400 ton electric centrifugal chillers. New electric unit substations are being installed in a protected outdoor area between the Location A and Location B hospital buildings to furnish electrical energy to the new chillers.

In total, the chillers being removed have a total nameplate capacity of 4,000 Tons, but, due to deterioration, they were able to produce less than 3,000 Tons of cooling. The new chillers have a combined capacity of almost 5,500 tons, almost doubling the capacity of the replaced machines. This will not only enable CCHMC to maintain comfort conditions in all of its buildings on Cincinnati's hottest days; it will also provide adequate back-up capacity to maintain cooling in the event of a mechanical failure, and it will enable plant operators to improve operating efficiencies by choosing among chillers, cooling tower cells, and chilled water storage strategies best suited to any set of outdoor air conditions and building loads.

Ohio Cogeneration Revival

Jamie Landers

We left the meeting room and walked down the stairwell to the operating floor of the powerhouse at the University of Cincinnati. As we neared the bottom of the stairs heat radiated off the walls of the nearby HRSG and warmed our faces, as a constant reminder to us of the bottled up energy confined directly behind the insulated walls. We paused briefly to distribute ear plugs and received a final warning not to use any flash photography because it could trigger the fire protection system.

Our guide opened the double doors leading into the turbine room. Our group filed into the cavernous room and proceeded to the enclosure containing combustion turbine 1. Our guide swung the access door open. The squealing noise made a noticeable step change and heat radiated out from the enclosure. Directly in front of us was the operating combustion turbine.

It was difficult to hear our guide talk, but it wasn't necessary to hear his words to understand the pride he had in his plant. The other members of the tour group, (our Clients) had excitement in their eyes as they considered the possibility that they could be operating one of these magnificent turbines in their own plant in the near future.

This scenario has played out multiple times in the past six months as F&H utilities group continues to receive inquiries about new cogeneration (cogen) projects. F&H was active in cogen design during the

early 2000's culminating in our signature cogen project, the Kent State power house. However, by the mid 2000's the interest in cogen waned and no new projects came into the office for several years. What factors have led to the skyrocketing interest in cogen over the past six months?

Cogen plants capture gas turbine generator waste exhaust heat through the use of a Heat Recovery Steam Generator (HRSG) and utilize it to supply steam to other plant processes. This results in a significant gain in overall plant efficiency. The plants are fueled by natural gas or fuel oil and on a limited basis by solid fuel gasification. Natural gas is the favored fuel due to its low emissions, domestic abundance, and low cost. Natural gas has long been praised for its emissions characteristics. However, domestic abundance and low cost are a development of the past 2 years.

In 1999-2000 natural gas prices hovered around \$2.10 per MMBTU. Electric deregulation and low gas prices spurred construction of gas turbine plants across the country. With increased demand from the new plants gas prices started to rise rapidly. By 2005, gas prices were as high as \$15.00 per MMBTU and projected to go higher. Industry conferences focused on the looming natural gas shortage and the need to import liquefied natural gas from the Middle East to support domestic gas needs, so by 2006, new gas turbine project development

ground to a halt.

In 2008, the domestic natural gas picture started to change. New drilling methods made it possible to extract trapped shale gas. Soon record numbers of wells were being drilled and the price of natural gas began to plummet. Today the industry claims 200 years of gas reserves and the price of natural gas is hovering at \$2.50 per MMBTU. At current prices coal's advantage over natural gas has all but disappeared.

Finally, the state of Ohio is encouraging development of cogen through the recently signed SB 315. This new law calls for accelerated review of waste heat recovery permit applications and extends the payback period from 15 to 20 years for state buildings using cogen technology.

F&H is actively participating in the Ohio cogen revival. Our experienced team is currently developing or performing feasibility studies on five different cogen projects and by the end of the year we expect to be released to design 2-3 of these projects.

F&H Quick Facts

309 Vine Street, the current residence of F&H's Cincinnati office, will be undergoing a \$15 million renovation in 2012. These renovations will include replacement of all windows and HVAC units. The building management will also be pursuing LEED certification.

New Faces Around the Office

As The Christ Hospital and Cincinnati Children's Hospital and Medical Center tower projects ramp up, F&H has called upon some new faces to help get the job done. Whether they are permanent employees or contractors from VT Design, F&H's MBE partner, they will make a huge impact on our future work. Find out a little more about them below.



David Hammitt

Role: Mechanical Intern
Junior at Purdue University

Currently updating the Christ Hospital master drawing set.



O'Neil Shen

Role: VT Mechanical Design
Prior Experience: 15 years

Currently working on small projects at CCHMC.



Tina Schweizer

Role: Mechanical PE
Prior Experience: 11 years

Developing engineering solutions for CCHMC, TCH, & University Hospital.



Tye Scott

Role: Controls Designer
Prior Experience: 5 years

Currently working on CCHMC controls and commissioning projects.



Sean Duffy

Role: VT Mechanical PE
Prior Experience: 15 years

Currently dividing his time between CCHMC & TCH projects.



Vicki Irvine

Role: VT Plumbing Designer
Prior Experience: 18 years

Currently working on CCHMC Location T.