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Carleton College Science Complex
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Project Facts

- The museum hosts 1.6 million guests annually
- Over 60,000 air and space artifacts on display
- \$3.5 million total project cost
- Four-phased project to minimize central plant outages
- Installed three new 1,400-ton towers, a 250-ton air cooled chiller and six new ice building tanks
- Performed the work on an eight-month schedule in 3.5 months

National Air and Space Museum Steven F. Udvar-Hazy Center Upgrade Chiller Plant



The newly upgraded ice farm on top of the Steven F. Udvar-Hazy Center.

Home of National Air and Space History Receives Upgrade

Facing the challenge of preserving sensitive historical artifacts, RM Thornton, a division of Harris Companies, provided work for the Steven F. Udvar-Hazy Center at the National Air and Space Museum in Chantilly, Virginia. Built in 2003 and located near the Washington Dulles International Airport, this Smithsonian museum attracts millions of guests every year with its two massive hangars filled with aviation and space artifacts – including the Space Shuttle Discovery and the Lockheed SR-71 Blackbird.

Adding Value While Facing Complexity

This chiller plant upgrade project was designed to replace three existing 1,200-ton cooling towers that had reached maximum capacity, with 1,400-ton towers for the central chilled water plant, provide a 250-ton air cooled chiller for the supplemental load, and to add six new ice building tanks to the building's 24 existing tanks.

Working with general contractor HSU Development Company, the project was divided into four phases to minimize central plant outages, and had the additional challenge of a fast track schedule. RM Thornton modeled the piping to plan, design and prefabricate the main headers for the 18" condenser water supply and return which allowed the team to save time on a rigid schedule and ensure the central utility plant (CUP) was fully operational

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The Space Shuttle Discovery is currently on display at the museum.

A MESSAGE FROM GREG HOSCH, CEO



In March, I discussed the transition of our brand from one of separate local businesses bonded by common ownership to a consistent unified brand across all geographies.

While this change is certainly meant to send a signal to the marketplace at large, it also has meaning within the organization.

Inherent in presenting a unified brand for the company is the expectation of a customer experience that consistently exceeds expectations. Interpreting this message can be done in two ways, and both are correct. The first is that we strive to consistently exceed customer expectations. Second is that we want to be consistent in how we do this.

This is where our external initiatives for the year cross paths with, and reinforce, the internal.

Embedded in our strategic plan are five key Strategic Imperatives. Talent and Culture, Technology, Growth and Diversification, Relationships, and Operational Discipline. Imperative meaning necessary to our success.

Despite our brand change being focused on relationship development and mostly external, and our Operational Discipline Imperative being mostly internal, there is still a high degree of synergy and overlap between the two. In 2017, within our Operational Discipline Strategic Imperative, we have three primary goals. One is to develop a consistent estimating platform across every geography where we work, second is to refine and implement best practice in how we purchase, and third to share, develop and

implement best practice in how we track and project hours on our projects.

At first these initiatives seem inwardly focused, and to be fair a strong component of each is. But when you consider that consistency in estimating dramatically affects our interaction with common customers across geographies, how we manage our purchasing processes impacts how we present ourselves to our subcontractors and suppliers, and that how we manage our installation on the jobsite fundamentally affects our customer's perceptions of our work, it's easy to see how these are not simply internal initiatives.

A well-crafted strategic plan is not simply a depository for a variety of dis-jointed initiatives from the list of things that "we need to get done." A well-crafted plan will consist of complementary and overlapping imperatives designed to deliver a specific vision in the future.



DIVISION SPOTLIGHT Superior Air Handling

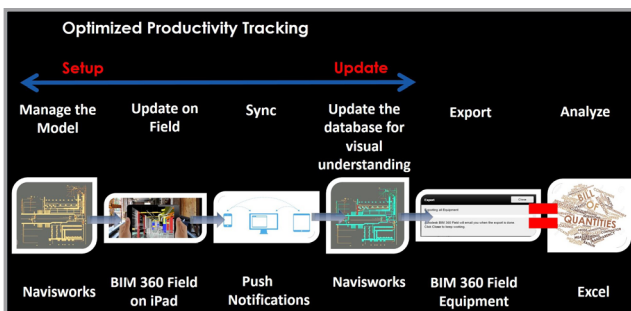
Productivity tracking has remained virtually unchanged for years. It is typically done with paper, highlighters and pencils, and entered manually. Some companies have traded paper for a tablet, but the process is the same. Our desire for accurate data in real-time inspired us to find a new way to track productivity.

We found that the information we needed has always been in the 3D model – the challenge was how to extract the information and present it in a way that was useful and understandable. By using

Navis and Autodesk BIM 360 technology together, we can load the 3D model on to iPads, which allows us to track and update the production status on the model, simply by touching the model objects. The model is then updated via the cloud and the new status is shown on the model. For a better visual, these status updates are represented by a change of color on the model. Finally, to calculate productivity, extracted data from the updated model is compared to the time that is charged for the week.

Accurately tracking productivity by removing paper eliminates the potential for human error and gives us the advantage of predicting trends on a job and the ability to remedy potential problems. This process also allows us to better utilize historical data which gives us a competitive edge in the bidding process.

The updated productivity process incorporates Navisworks and BIM 360 to increase efficiency.



ZEROING IN ON SAFETY

Children and grandchildren of Harris employees took part in our annual Kids Safety Poster Contest. Here are the first place winners from each category:



Kaitlyn, age 7



Grace, age 13



Madie, age 11



Betsy, age 9

STORY BRIEFS

HiMEC CONVEYORS

Food Manufacturer

Two conveyor projects are underway for a large food processing facility in Gaffney, South Carolina. This plant manufactures frozen prepared meals. The first project is an infeed conveyor for their new case packers, and the second is a divert conveyor for their freezer. HiMEC is designing, fabricating and installing these projects as well as providing controls to integrate the conveyors with existing equipment. Excellent communication and superior quality, has led to our fourth and fifth projects with this plant with more to come not only in this plant but also in other plants throughout the country.

HiMEC MECHANICAL & HARRIS MECHANICAL

Carleton College Science Complex

HiMEC Mechanical, in partnership with Harris Mechanical, was awarded the mechanical construction contract for the new science building complex along with a central energy plant as part of a campus wide master plan. Our team is working alongside McGough Construction in a design-assist role and helping with transition plan work as campus staff is temporarily relocated to facilitate construction starting in late Fall. The new state-of-the-art science building will also be one of the first buildings fed by the new campuswide geothermal system.

HARRIS MECHANICAL

Great Wolf Resort

Harris Mechanical is currently working with Adolfsen & Peterson Construction on a design-assist prospect for the renovation of Great Wolf Resort (previously known as Water Park of America) in Bloomington, Minnesota. Harris is providing the plumbing, HVAC and temperature controls for the renovated hotel and water park. Having worked on the original construction of this project, Harris was able to bring first-hand knowledge of the existing construction to assist with conversions and new additions, making it easy to meet project schedules and deadlines.

HARRIS MECHANICAL INTERMOUNTAIN & WASATCH CONTROLS

Innovation Pointe

Harris Mechanical Intermountain, teaming with Wasatch Controls, was selected by Layton Construction and Argent Group for the mechanical and plumbing work on the new Innovation Pointe development. Innovation Pointe consists of a 40-acre master planned campus with 600,000 sq. ft. of development. The design-build project will begin with a five-story, 140,000 sq. ft. office building with supporting parking structure.



The Innovation Pointe Office Building poses a modern, progressive architecture with efficient, open floor plates.

DID YOU KNOW?



Becoming One Brand

Did you know that Harris has 19 companies across the country under its umbrella? This also means 19 different logos! Later this year, **our company will become one brand.** We are transitioning all of our divisions to a shared business name, logo and branding strategy.

Collaborative Charity Event

This summer, Harris Companies St. Paul and our neighbors – NCCO, EMC Publishing, Summit Brewing – joined together to sponsor a Red Cross Blood Drive. The event included grilling hot dogs over lunch since National Hot Dog Day was days away.

Over \$450 and approximately 33 pints of blood were donated to the American Red Cross.

Grand Opening Celebration

The Minnesota State Capitol celebrated its grand opening in August. The restoration project was a \$310 million, four-year restoration, renovation and repair initiative. Harris Mechanical provided the demolition and replacement of all existing plumbing, HVAC piping, sheet metal and temperature control systems for the restoration of the 100-year-old plus historic building.

Delivering value.

Pursuing excellence.

Employee Spotlight

Christine Leonard, ASQ-CQE
Project Manager, Superior Air Handling



Christine after swimming 1.5 miles from Alcatraz.

Christine didn't begin her career in the industry.

In fact, it was her desire to travel the world and work with her hands that inspired her to leave her desk job as an art director and

graphic designer and join the Union. She developed a love for welding in 2005 after being hired at her first industry job at a sheet metal and iron shop in Oklahoma City.

Christine joined the Superior Air Handling team in 2010. Since then, she has embraced our core values every day by doing what it takes to deliver on-time performance that exceeds our client's expectations, which is evident by the success of the Stanford, Lucile Packard Children's Hospital (LPCH) in Palo Alto, California.

Currently, Christine is a project manager for the design-assist job at LPCH. The team has been adding value to the 521,000-sq. ft. project by utilizing their expertise in BIM to effectively communicate with the general contractor, and creativity to solve installation and engineering issues. Because of their performance on LPCH, Superior has already been awarded future work with the hospital.

When Christine is not leading her project team, she is avidly seeking her next adventure. In 2011, she hiked 2,181 miles on the Appalachian trail, which extends from Georgia to Maine and took six months to complete. She recently began open water swimming and has completed two swims from Alcatraz to San Francisco, and swam the length of the Golden Gate Bridge this past July!



Christine at the summit of Mount Rainier.



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Superior Air Fabrication



Temporary piping at the National Air and Space Museum.

National Air and Space Museum Continued...

throughout construction. Piping for the new chiller was also prefabricated. Prefabrication saved time and accelerated the schedule for both project tasks.

Minimal Disruption

Phase One required the plant to temporarily run on one of the new cooling towers, which was placed in a temporary position with temporary

pipework, pump and controls, along with a new air-cooled chiller and additional ice building tanks to supplement the CUP load from the existing cooling towers.

With the plant running on its temporary cooling tower, RM Thornton could begin Phase Two, which was to demolish and remove the existing cooling towers and the structure they were set on.

With the help the BIM model made before setting the new towers, Phase Three began in RM Thornton's prefabrication shop where they prefabricated the condenser water piping header for the supply, return and equalizer for the three new towers. New structural steel supports were set, and two of the new towers were placed and connected to the newly installed condenser piping that connects to the existing plant. The towers were then used for the plant operation.

Finally, Phase Four called for the demolition of the temporary condenser piping and dismantling and moving the temporary cooling tower to its permanent home next to the two newly installed towers.

RM Thornton completed the project this summer.

If you have comments, suggestions or if you would like to be removed from our mailing list, please email marketing@hmcc.com.