

IN
THE

AIR

SAVING ENERGY. SAVING MONEY.

TESTING HIS METAL

Massachusetts General Hospital is reaping the benefits of switching from steel to aluminum air handling units.



Beating tough
environmental
conditions

Retrofitting
challenging sites

 **AIRENTERPRISES**
Quality...not compromises



A new vantage point

Business success is driven by the leadership, culture, best practices and, most of all, the responsibility to do right by those associated with your company or institution.

When you visit a company’s manufacturing plant, you learn a lot about how the company works and how its people care. You look in the eyes of the associates and you can see passion and commitment — or discontent and boredom. These visits can ensure you are choosing the right partner for your future.

Over the years, Air Enterprises has been fortunate to work with facilities directors at major hospitals, universities and corporations across the country. Our client relationships have given us a unique perspective into the market, which organizations are gaining momentum and what solutions they are using.

We have always been a manufacturer that is driven by what is right for our clients and figuring out how we can make the air handling and air delivery portion of a particular business better. And although the things that our clients are concerned about are all over the map, we’ve found that they all have at least one thing in common: They all want to do the right thing.

To help, we decided to share our unique market perspective and in-depth industry knowledge through the pages of this magazine.

Welcome to In the Air, a publication that provides advice, best practices and industry examples to help facilities directors make better decisions. The magazine will showcase the best practices driving successful outcomes for businesses, while providing insightful articles about trends and issues in the air handling industry.

In this issue, we feature Teerachai Srisirikul, Director of Engineering for Massachusetts General Hospital in Boston, consistently ranked as one of the top three hospitals in the nation by U.S. News & World Report’s America’s Best Hospitals list. We spoke with him about his approach to his job and best practices. We also highlight best practices, trends and advice that other facilities directors are using to drive their organizations to success.

This publication is ultimately dedicated to our clients in the hope it will move all of us closer to excellence. Our goal is to provide not only the highest-quality equipment but to partner with you in your journey to excellence so you can do what’s right for you and your own facilities. We hope that In the Air — as its name implies — will help propel your organization to new heights, while offering a glimpse into what’s ahead.

Sincerely,

Tom Elmore, Air Enterprises



IN THE AIR

SAVING ENERGY. SAVING MONEY.

VOL 1 ▲ 2ND EDITION

Based in Akron, Ohio, Air Enterprises engineers and manufactures custom air handling solutions to meet the most demanding system configurations and requirements.

With over 50 years of application experience and a focus on energy savings and sustainability, Air Enterprises partners with the client to deliver the most efficient solutions at the lowest total cost.

Air Enterprises is the leader in proving that the best quality air handling units... deliver the lowest total costs.

Quality that lasts and outperforms everything else in the market.



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We are proud to announce that the Air Enterprises Quality Management System used in the design and manufacturing of Custom Air Handling Units at the Facility in Akron, Ohio has been assessed and approved by Smithers Quality Assessments, Inc. to the quality management system standards and requirements of "ISO 9001:2008 with Design"



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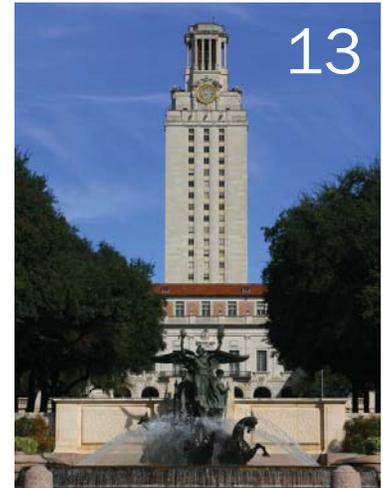
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LONG-TERM SAVINGS



A big concern for companies making large purchases is usually cost. But it isn't always the initial cost that is the greatest concern; instead, companies today are often more worried about return on investment and future energy savings.

When evaluating the cost savings of air handling units, one of the major points to consider is aluminum versus steel. When a custom higher-quality type unit is considered, the actual cost difference between an aluminum versus steel type AHU is minimal. Aluminum materials become the obvious choice, it lasts longer because it does not rust or corrode leading to future indoor air quality issues, says Glenn Swartz, Vice President for Air Enterprises.

"With steel units, within about five years, the unit starts to degrade, and after 15 or 20 years, you have to replace the unit or spend large amounts of facility maintenance dollars to keep it in operation," he says. "But you don't need to replace aluminum units, as they'll often outlast the life of the building."

An aluminum base is also important because it ensures the foundation of the unit doesn't rust or corrode, either. In addition, a fully welded base prevents moisture from getting underneath the unit. A base structure that uses screws and caulk to form the water seal is prone to leakage over time. These manufacturing techniques (screws and caulks) pose a large risk to the owner in terms of moisture, mold and safety issues.

Seals should also be considered when evaluating cost savings. Traditionally, air-handling units are sealed with caulk, which shrinks, dries and cracks. These seals over time typically allow leakage of about 6 to 10 percent. Seals that don't use caulk, such as double-knife-edge seals that are custom designed into the unit, are much more effective, resulting in leakage of less than 0.5 percent during the life of the equipment.

Companies can also save money in the transportation of air handling units. Units that are prebuilt and transported to a site often require costly cranes to lift them or that walls be torn down and replaced. To save on these costs, businesses should find a company that will work with them to either build the unit onsite or transport it in crates that will easily fit in elevators and construction spaces.

Another cost-saving measure is utilizing a Thermowheel®, often called a rotary heat exchanger, heat wheel or energy recovery wheel. The wheel uses existing air streams to either preheat or precool the air that cycles through the unit. These wheels can create a high amount of energy recovery, up to 90 percent, says Krister Eriksson, founder of Thermotech Enterprises, an independent business unit of Air Enterprises.

"Savings are approximately \$1 to \$1.50 per CFM per year, which is about the same as the cost of a unit, i.e., a 40,000 CFM wheel costs about \$40,000 installed and will average about \$40,000 in energy savings per year," he says. "Mechanical reliability that eliminates costly breakdowns and repairs during the wheel's useful life cycle produces continuous savings. This is especially important in critical applications such as laboratories and hospitals, where any interruption in the air supply can be costly or even life threatening." ▲

COST-SAVING SUMMARY

While aluminum air handling units are typically less than 10% more expensive than steel units, the additional cost pays off in the end.

Custom all-aluminum unit:	\$180,000
Typical custom steel unit:	\$165,000
Difference:	\$15,000

When considering air leakage, the aluminum units provide immense energy savings that result in a substantial annual return on investment.

Air leakage savings:	\$11,282
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An investment of \$15,000 that returns \$11,282 in energy savings per year takes 1.3 years to fully return your investment.

After that initial ROI, total energy savings of \$11,282 per year continues. Over 40 years, that translates to:

Energy savings:	\$451,280
No replacement cost savings:	\$420,000
Total 40-year savings:	\$871,280*

Air Enterprises' Thermowheel® also provides significant energy savings.

Annual energy cost without Thermowheel®:	\$30,511
Annual energy cost with Thermowheel®:	\$9,996
Annual energy savings:	\$20,515

Typical wheel cost for 10,000 CFM of OA:	\$15,000
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An investment of \$15,000 returns \$20,515 annual energy savings, taking 9.5 months to fully return your investment.

*All figures based on a typical 30,000 CFM air handling unit

TESTING HIS METAL

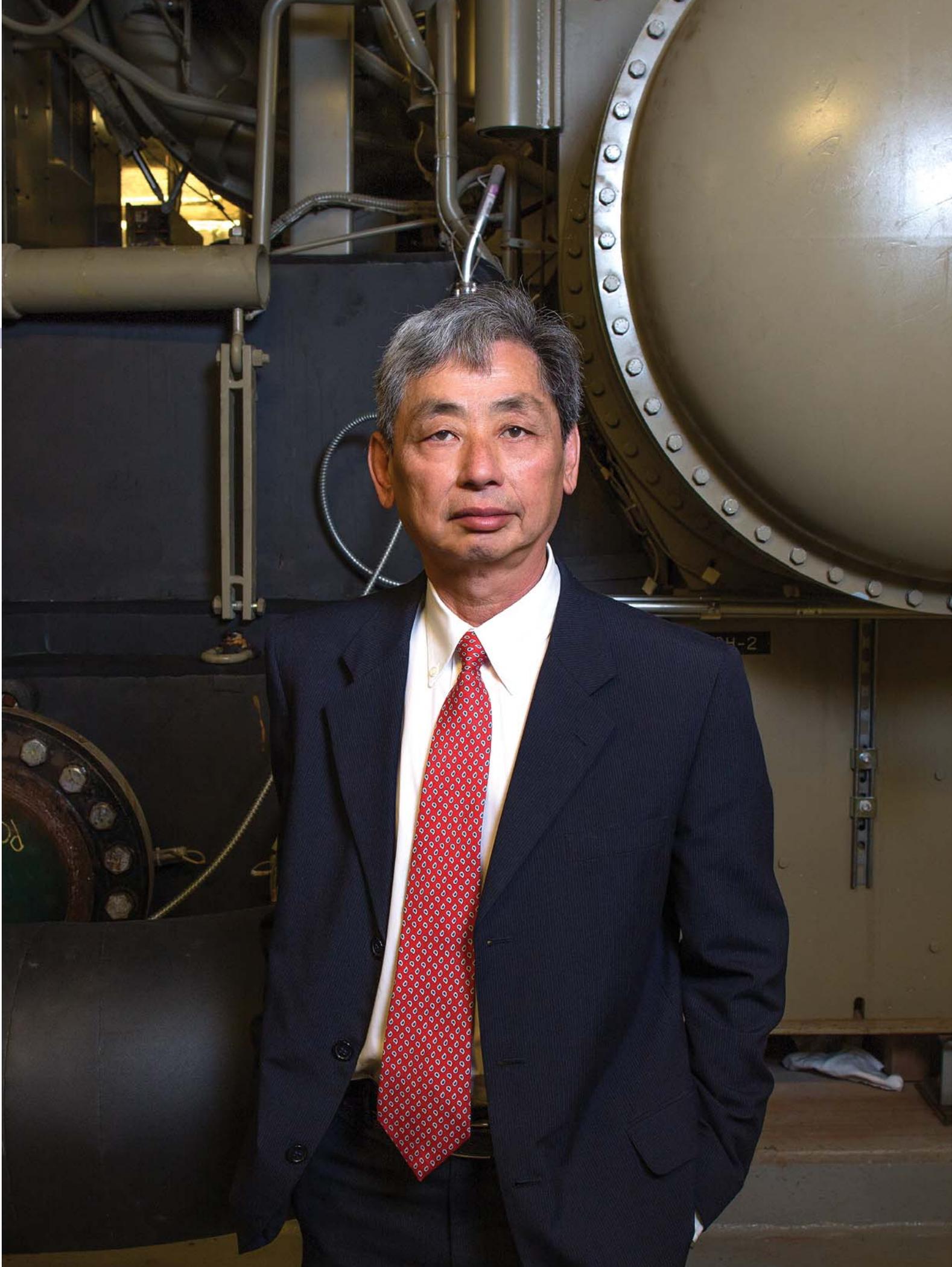
MASSACHUSETTS GENERAL HOSPITAL SWITCHED TO ALUMINUM AIR HANDLING UNITS FOR ALL OF ITS PROJECTS. DIRECTOR OF ENGINEERING TEERACHAI “CHAI” SRISIRIKUL EXPLAINS WHY.

Steel and water are not a good combination, as any facilities manager who has dealt with steel air-handling units knows.

In the summer, the units draw in warm air from the outside. The warm air is passed through cooling coils, which drop the air’s temperature to very near its saturation point –the dew point. That’s because, much like morning dew on grass, the saturated air leaves a layer of condensation on the internal mechanisms of the air-handling unit. If the unit is made of a metal that oxidizes, such as steel, rust will eat away at it over time, shortening its usable life. In northern climates, during winter, snow and wind batter external portions of the units, causing the same long-term rusting problems.

That’s what Teerachai “Chai” Srisirikul, Director of Engineering, faced at Partners HealthCare — a Boston-based health care system founded, in part, by Brigham and Women’s Hospital and Massachusetts General Hospital. The massive health care system has approximately 450 air handlers providing conditioned air 24 hours a day, every day of the year, to all of the system’s buildings. In some cases, replacing a unit can cost well over \$1 million, so Srisirikul is invested in installing units that have a long usable life and a minimal need to be shut down for repair.

“As far as we’re concerned, we’re in health care, so we’re a 24/7 operation,” Srisirikul says. “We can’t afford to have any equipment shut down for repair. That’s why we started taking a look at other equipment that would provide a



MASSACHUSETTS GENERAL HOSPITAL



longer-term solution. Steel components will typically start to rot out within seven to 10 years, and the unit's usable life is 10 to 15 years."

The advantages of aluminum

Srisirikul had a background in consulting before moving to facility oversight, so when he took over facilities management at Partners, he was aware of the cost savings that come with aluminum air-handling units. And because aluminum doesn't rust, the usable life of an aluminum unit can be more than double that of a steel unit. Srisirikul projects the life of an aluminum unit at 30 to 40 years.

"Any new project that we start, we're putting in aluminum equipment," he says. "Each of our campuses has a different percentage of aluminum units, but overall, I'd say about 40 to 50 percent of our units are now aluminum. We've been installing aluminum units for 17 or 18 years."

Galvanized steel units are what Srisirikul terms commercial grade. They come in assorted predesigned models, and a facility manager must purchase the steel model that best fits the facility's needs — whether it's an exact fit or not.

The aluminum units that Srisirikul purchases are custom built, fitting the space available in the building. For buildings with tight spaces, odd angles or support beams in the way, custom solutions are a must.

"When the units can be customized, you can do a lot more things with them," Srisirikul says. "You can have them designed to fit the length of the space where they need to go. If you have a column in the way, you can have them designed to go around the column. The commercial-grade units generally have fixed dimensions, and they might not completely fit your needs in terms of space.

"Basically, you know the space you have to work with and the maximum size of the equipment that can go in the space, and then you go back and work with your manufacturer. It can come up with a solution instead of just selling a product."

Working with your CFO

Custom aluminum units generally cost more than mass-produced steel units, and that price difference has historically been the attraction to steel units. They might not last as long, but the savings look better on the balance sheet in the short term.

When Srisirikul wanted to make the move to aluminum units, he was frank with the system's financial managers about the increased upfront investment but emphasized the long-term cost savings of making the switch.

"You tell the CFO it will cost up to 5 percent more to make the initial purchase, but in the long run, instead of

“WE’VE BEEN USING AIR ENTERPRISES FOR MORE THAN 20 YEARS ALREADY, AND THEY ARE A GOOD COMPANY. THEY PUT OUT A GOOD PRODUCT, THEY STAND BEHIND THEIR PRODUCT AND THEY ASSIST YOU IN THE TECHNICAL MATTERS.”

– Chai Srisirikul,
Director of Engineering, Partners HealthCare

having to replace the equipment in 15 years, you’ll replace it in 30 years,” he says. “The total cost of replacing the equipment can vary, but it usually averages around \$1.5 million including temporary work. So, per unit, you might spend an extra \$50,000 to \$70,000 to make the initial purchase on an aluminum unit, but in the long run, you’re saving over \$1 million during the life of the equipment. It’s really a no-brainer.”

Businesses that opt for steel over aluminum often do so because they feel they can’t justify the cost of aluminum units up front and there are too many other things that can be done with that \$50,000 to \$70,000 instead of improving the quality of the air handling units. But if you consider the cost savings of replacing a unit in 30 years instead of 15, aluminum pays for itself several times over during the life of the product.

“If you explain it in those terms, any CFO should get it,” Srisirikul says. “They’re money people. In the past, you just wanted to stay within the projected budget. Anyone who was consulting a business owner might not explain the benefits of spending the extra short-term money to go a step higher and save more money in the long run.”

The savings that result from aluminum units aren’t confined to decreased repair and replacement costs. Because the units are custom built and the pieces are made to fit

together within the space allotted, the units are also more airtight than their steel counterparts.

“Because custom aluminum manufacturers can do a better job of the details on a fitting, you see less air leakage than with galvanized steel units,” Srisirikul says. “If there is a leak with an air unit, you’re losing half a percent to 1 percent of the air volume. With commercial-grade steel, it’s more like 1 to 2 percent of air leaking out. For us, that’s quite a bit because we’re paying for that 24/7 over the life of the equipment.”

Improved service and safety

For Srisirikul, deterioration of air-handling equipment isn’t primarily an issue of monetary cost, it’s an issue of down time. If a unit is down for repair and buildings aren’t properly ventilated or kept at a comfortable temperature, patient care can be compromised. That is compounded by the fact that the rust on steel units can serve as a breeding ground for bacteria and other contaminants, which can find their way into the building and increase the risk of infection among the hospital’s patient population, some of whom have weakened immune systems.

“When units deteriorate and start leaking, you lose a lot of capacity,” Srisirikul says. “That’s why down time costs a lot more than the cost of fixing a leak. If the air in a building isn’t heated, cooled or conditioned properly, it can compromise patient care. In order to meet code, you have to provide a certain amount of ventilation to a space.”

The threat of nonfunctioning units, and the effect that could have on patients, was the primary motivator for Srisirikul to recommend the move to custom-made aluminum units. The initial cost is minimal compared to the long-term savings, and the ability of the health system to provide excellent care to its patients is improved.

“When I first came over to operations, we had a lot of equipment that wasn’t in good working condition,” he says. “We knew we had the opportunity to do better. That’s why we started looking into aluminum units, and ultimately decided to start using them. The equipment costs a bit more, but when you factor in replacement costs and potential down time, the cost is actually minimal.” ▲



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ALUMINUM VS. STEEL

ALUMINUM AIR ENTERPRISES UNITS:

- Aluminum units do not rust – creating irregular surfaces, aluminum units are more hygienic not perpetuating contaminants to infiltrate and negatively affect the air delivery system.
- The life expectancy of aluminum units without unsightly deterioration far outlast steel counterparts; life expected beyond 50 years.
- Aluminum product does not corrode or degrade over time, routine maintenance of the casing is not required for the life of the product.
- An aluminum unit will not oxidize in coastal environments, significantly extending the unit life for these applications.
- Though perceived as higher upfront costs, aluminum units provide better long term value and significant return on investment, due to longer life and reduced annual maintenance requirements.
- Aluminum units typically weigh 30-40% less than steel counterparts, this can lead to reduced structural, installation and rigging costs.



STEEL AIR HANDLING UNITS:

- Rust on steel units has proven to be a breeding ground for bacteria and other contaminants, which find their way into the building's air, creating an unsafe environment for occupants.
- Steel structure air handling units will typically begin to degrade and rot 10-15 years into their life cycle; though typically left in place, useful life has expired by 25 years.
- Even though painted or galvanized, the formed edge of the steel material will begin to corrode and deteriorate early in the product's life. Regular costly maintenance and down time is required to treat these units to obtain maximum life expectancy.
- Life expectancy of a steel unit in coastal environments is less than 10 years, requiring regular costly replacement of the units.
- While steel units are considered less expensive first cost, their shorter lifespans and the need for replacement, along with maintenance demands and downtime can be a long term drain on the budget.
- Heavier weight of steel units can increase installation and rigging costs; as well, design options are limited for increasing size of existing units on building structure.



Aluminum units (left) provide a long life and high return on investment; steel units (right) are prone to degradation, creating environments that lead to infectious control issues.



SOME OF THE TOP INSTITUTIONS IN THE WORLD WORK WITH AIR ENTERPRISES.



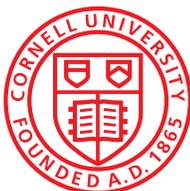
One of the largest university campuses in the US. Installed 45 Air Enterprises units in a variety of applications; ranging from a sports field house, a theatre, and several laboratories.



Winner of the Consumer Choice Award and voted the #1 hospital in Virginia. Relies on Air Enterprises SiteBilt® solution for campus-wide upgrades.



One of the leading healthcare systems in the US. 36 Air Enterprises units installed since 2001.



Prefer the consistency of quality over the years delivered by Air Enterprises product since 1975.



One of the top medical centers in the US and the world. Client since 1972. Over 170 Air Enterprises units installed.



Consistently ranked as one of the top three hospitals in the nation by U.S. News & World Report. Over 100 Air Enterprises Units Installed.



One of the nation's largest systems of higher education. 12 Air Enterprises SiteBilt® Units installed since 2010.



Leading the way the world treats and defeats childhood cancer and other life-threatening diseases. Prefers Air Enterprises quality for their critical environments.



The fourth-oldest institution of higher education in the US. Using Air Enterprises SiteBilt® solution, providing a cost effective approach on retrofit projects.



Heavy duty

ALUMINUM EQUIPMENT CAN WITHSTAND SEVERE OPERATING CONDITIONS

Facilities managers whose buildings are subject to harsh environmental conditions face a complicated set of issues when it comes to choosing air handling equipment. Areas such as coastlines, areas of extreme humidity and places where abrasive chemicals are present in the air all create conditions that tend to corrode galvanized steel equipment. In such severe environments, aluminum-housed units can provide the answer.

“From an environmental standpoint, the coastal environment is among the most aggressive that we see and the one that presents the greatest challenges for those dealing with air handling units,” says Glenn Swartz, Vice President, Air Enterprises. “However, chemical-laden environments, such as chemical manufacturing facilities where gases and chemicals may be corrosive, also present difficult situations.”

The durability and projected lifespan of air handling equipment are important factors to consider for facilities managers whose buildings are subject to harsh conditions. The answer can often be found in buying aluminum equipment instead of steel. Aluminum provides better longevity and, ideally, should be able to last for the lifetime of the building. Units can be designed with the proper configuration to be serviced and maintained by the owner's facilities group.

Almost fifteen years ago, Air Enterprises worked with Morton's Steakhouse in San Juan, Puerto Rico. The restaurant is located in a beachfront luxury hotel, and the surrounding sea air created a hostile environment for its air handling equipment. The owner had to replace their units, on average, every six years because the environment caused the units to corrode so badly.

“This had a direct negative impact on his customers,” says Swartz. “They weren't comfortable in the building because the humidity levels were too high.” In addition, high operating utility costs were having a direct impact on the restaurants' profits. This was due to high air leakage of the air handler and necessary monthly maintenance to keep the unit in operation.

Downtime was another obstacle the building owner had to consider, as replacing the units every six years disrupted the flow of business and the restaurant's revenue stream.

The owner decided to buy an aluminum unit that would last much longer, as it would not rust in San Juan's salty sea air. Over ten years later, the

“THE COASTAL ENVIRONMENT IS AMONG THE MOST AGGRESSIVE THAT WE SEE AND THE ONE THAT PRESENTS THE GREATEST CHALLENGES FOR THOSE DEALING WITH AIR HANDLING UNITS.”

– Glenn Swartz, Vice President, Air Enterprises

unit still looks like it did new, and the owner is no longer experiencing issues of uncomfortable customers due to high humidity levels in the restaurant. The owner will also not have to replace the unit every six years due to corrosion issues.

Since the owner decided to invest in aluminum air handlers over ten years ago, they have saved over \$160,000 in direct-cost of capital expenditures. In addition, the owner has substantially reduced their annual utility operating costs by almost 15% due to the construction features of the air handler. In addition, the owner has reduced their monthly maintenance cost of the air handler.

“It's one less thing the owner has to worry about, and they will not have to replace it again,” says Swartz. “That experience is typical of the company's clients.”

He says the company has units in Puerto Rico that have been functioning for over 35 years, and they are still running.

“It's a tough environment down there, but this equipment is made to handle it,” he says. ▲



before



after



FOR MORE INFORMATION, CONTACT AIR ENTERPRISES, (330) 794-9770, AIRENTERPRISES.COM.



Making it work

AIR HANDLING RETROFITS ARE POSSIBLE EVEN ON DIFFICULT SITES

Not all air handling unit installation sites are uniform; some require access to interstitial space, while others require elevator access. Some are rectangular, while others are polygons. Still others need to be built around existing walls, pipes or columns.

However, replacing an air handling unit in what may seem like a difficult or even impossible space is now easier than ever. For example, the University of Texas at Austin's Main Building, also known as The Tower, is a 30-story structure with an air handling unit on the 25th floor, immediately below the university president's office. The unit was built on a difficult site behind the clock on the tower, says Tom Elmore, Air Enterprises.

"The Tower is the namesake of the university and is what everyone looks to as the symbol of UT, so the university wanted to make sure the unit was installed without damaging the structure," Elmore says. "There was a 3-by-3-foot elevator to get something the size of a school bus up there. And it's also a main pathway of the campus, so we couldn't have large rigging because of the risk of something falling on the students below."

The unit was constructed on site with simpler rigging and elevator access during the campus's two-week holiday break and was installed by the start of classes.

This example illustrates many of the essential points of retrofitting, Elmore says. Keep these tips in mind when

considering or engaging in retrofitting.

- **Build on site.** This is especially important for a retrofit project because it eliminates costly, disruptive demolition and logistical headaches due to expensive crane or helicopter permits when bringing an already-built unit to the site. Make sure the unit has the same quality and warranty as a factory-built unit. "It is important that you don't factory build something, take it apart, then put it back together," Elmore says. "When you do that, it is never as good as when it was built the first time, no matter who designed it or put it together."
- **Install a quality product.** A quality unit that is made of aluminum won't rust, rot or corrode. The result is less maintenance, which is especially important on a site with difficult access. Ideally, the unit should last the life of the building; the life expectancy of a modular steel unit is 15 to 20 years, while a custom steel unit is 25 years. An aluminum unit, however, has a life expectancy of 50 years. In addition, ask what kind of seals the company uses and what percentage of leakage it achieves. The industry standard for on site leakage is 3 to 6 percent, but some companies can achieve 0.5 percent.
- **Employ creative solutions.** Your air handling unit provider should be able to design for difficult situations, such as the University of Texas tower, with unique processes and creative engineering. There is always a solution, and you shouldn't have to dismantle the building to find it. "When most people think of air handling units, they think of a rectangular box, but it doesn't have to be that way," Elmore says. "Units can be built to fit the space."
- **Look at the cost.** A quality, custom aluminum unit may cost more up front, but when compared to energy savings and repair or replacement costs, it saves money in the long run. Also make sure the unit has a lasting warranty.
- **Have a single point of contact.** Choose a company that takes responsibility for the entire project. Having multiple contracting entities can result in a blame game if problems arise on site. The company should also have a representative on site supervising the installation. ▲



University of Texas at Austin's Main Building, also known as The Tower



SEE WHAT UT IS SAYING; VISIT AIRENTERPRISES.COM/UT TO VIEW THEIR VIDEO.



BUILDING THE BEST

DEDICATED EMPLOYEES ARE THE KEY TO CREATING QUALITY PRODUCTS

Kevin Jackson has only been with Air Enterprises for five years, but he envisions a long-term career with the company. He has risen through the ranks from a partner in the Receiving department to a supervisory role in the plant, to his current position as a Project Coordinator in the Project Management department.

We spoke with Jackson about what it's like to work at Air Enterprises and how the dedication of the company's employees helps ensure quality products.

Why did you want to work at Air Enterprises?

It's a good company and provided a good opportunity. It has also been around a long time, for over 50 years, and many of the employees have been here 20 and even 30-some years. I think that dedication says a lot about the company.

What do you like most about your job?

I really like the people at Air Enterprises. There isn't anyone here I don't get along with. Everyone has a good work ethic and is always ready to get the job done. There is no naysaying or complaining. Everybody does what they need to do to get the job done and create a quality product.

"AIR ENTERPRISES ALWAYS ASKS FOR OUR IDEAS AND SOLUTIONS. WE CALL IT BOTTOM-UP THINKING."

– Kevin Jackson



What do you think sets Air Enterprises apart from other companies?

The way they treat their employees is definitely new to me, and something I hadn't seen at other companies I worked for. At Air Enterprises, if you show hard work and diligence, they will recognize it. There is opportunity for advancement, and they offer paid time off when you need it.

They are also upfront, honest and open. They encourage us to ask questions, and if they don't know the answer, they'll get it for us. They keep us informed. We have monthly company meetings to go over the company's finances, including losses and gains. We also have weekly meetings where we go over safety goals and daily meetings where we think of ways we can improve. Air Enterprises always asks for our ideas and solutions. We call it bottom-up thinking.

What is the workplace atmosphere like at Air Enterprises?

Everybody is dedicated to working together to get the job done. Nobody holds up the process. If I ask my partners to get something done, they

do it immediately. If we need help from another department, people often drop what they're doing to help, even the guys who have been here for 20 or 30 years.

Communication is big on the shop floor. If there's a problem within a department, we work together to fix it. If the problem involves multiple departments, we get together to discuss it and set up a game plan.

How do you think the employee dedication you described translates to a better quality product?

First of all, Air Enterprises employees are proud of the way the company treats us. Even though the company went through hard times during the recession, it kept as many employees as possible. And when current ownership took over, they brought a lot of employees back.

We're also proud of our product. It's No. 1. We know we produce a quality product, and we want to ensure that we continue to produce a quality product. When you have a group working the best it is able, the product will definitely be the best it can be. ▲



A SMART INVESTMENT

"TRUE" CUSTOM AIR HANDLING EQUIPMENT BEATS THE ALTERNATIVES IN THE LONG RUN

When facility managers are considering the purchase of air handling equipment, they face a variety of choices from standard packaged equipment, modular custom or a "true" custom-designed unit. And when making that decision, there are several factors to weigh in addition to first cost, including serviceability, durability and life cycle cost.

"With "true" custom designs, the unit is designed specifically to fit the space and the application requirements of a particular business," says Val Fenti, Northeast Regional Manager for Air Enterprises. "Other unit types, even some that claim to be "custom", typically require the customer to modify the space where the unit will be located in order to suit the equipment and serve the application."

The space required to service air handling components such as motors, fans and coils must also be considered. So when making choices, the facilities manager must assess how much room will be available to work in the area in which the unit will be housed.

Fenti cites a recent client example. About a year ago, Air Enterprises sold a custom unit to a company that had also considered a modular unit. The competitive air handling unit being considered was 12' wide and 7½' high; dimensions that would have left very little space in the room to service the unit. The room where the unit was to be located had a high ceiling, so Air Enterprises offered to create a "true" custom unit that was 8' wide and 11' high, gaining the client 4' of additional floor space to service the equipment. There was an additional complication, the equipment would have to be brought in through an 8' tall doorway. Air Enterprises was able to overcome this impediment by providing a SiteBilt® solution, bringing the unit into the space in crates and erecting the unit in place.

Because the Air Enterprises solution was close to the price of the competitive unit, the owner agreed to the purchase. "He said, 'If I can gain 4' in service space, I'll pay an extra 10% for the unit,'" Fenti says.

When making an air handling unit purchase, facilities managers must also consider the durability of the unit. Packaged or modular units and also some "custom" units may



be constructed using galvanized steel. Sometimes even when aluminum is offered for the casing and floors, these skins may be mounted over galvanized or painted steel substructures. Caulking is depended upon to assure units are air and water tight. Without costly routine maintenance, these units start to degrade within 10 years. The usable unit life and integrity of the unit is cut short as rust and failing caulk take their toll. "True" custom units made of all-aluminum, with fully welded bases and structural casings are more durable and do not require costly routine maintenance to last 40 to 50 years. It is not uncommon for a custom casing to be kept in place and internal components replaced to add an even longer life, mitigating the need for full replacement.

"I'm working on a job right now where the equipment is going to be buried in the center of the building," Fenti says. "The passageways to get it in are narrow; the doors are 3' to 4' wide and 7½' high. To install equipment in this space and then have to replace it in 20 years would be very disruptive, and the owner would have to shut down the facility to change out the air handling equipment."

While the first cost of "true" custom air handling units may typically be higher than the other choices in the market, they often are able to make up the difference within a few years because they are more energy efficient, last longer and offer a superior return on investment. Fenti says that Air Enterprises was contacted about a year and a half ago by a large manufacturer that had been leaning toward going a less-expensive route. "We showed the client that, even though our price was higher, their payback would be less than three years because they would save 20% in energy costs compared to the other units being considered, and they would be getting a unit that was all aluminum, versus galvanized steel."

In the end, it was an easy choice, and Air Enterprises landed the order. ▲



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