

C A S E S T U D Y
PROJECTS

APPLICATIONS

03

CORPORATE
HEADQUARTERS

ADVANCING THE SCIENCE OF AIR DISTRIBUTION

Rethink what air management systems can be.
Revise your notion of functionality.
Redefine your comfort zone.™



Comfort, Redefined.

Since 1946, Titus has focused on technologically advanced products that create the highest degree of comfort.

We've consistently led the industry by breaking the barriers of expectation and convention when it comes to technology. We've redefined how technology drives, influences and supports air management. And by being first to market with the most innovative approaches to air distribution, we're proud to say that the marketplace has taken notice, and is counting on us to lead the way into the next decade. A challenge we're more than happy to accommodate.

Titus has raised the bar on design, proving that functional can also be beautiful. And we've redefined what it means to be energy efficient, with a collection of smart technology products that optimize the use of natural resources.

Titus has also redefined what it means to work with an air management products partner. We pride ourselves on listening and responding so that we can not only meet expectations, but also exceed them. Service has been, and will always be, our main focus at Titus. And, it's why so many of our customers keep coming back.

Welcome to your new comfort zone. It starts here.

PROJECT - IAC BUILDING

Manhattan, NY

CLIENT - INTERACTIVE CORPORATION

ARCHITECT - FRANK GEHRY

CONSTRUCTION - TURNER CONSTRUCTION

MECHANICAL ENGINEERS - COSENTINI ASSOCIATES

LEED CERTIFICATION - NONE



ABOUT THE PROJECT

The InterActiveCorp (IAC) Building is a fascinating structure that could easily double as an art sculpture. Spanning 160 feet into the sky and having 130,000 square feet of space, this innovative design features the world's first glass curtainwall to be cold-warped. Architects, engineers and fabricators collaborated to calculate the curvature for each glass panel on site in order to fit the wall's design. The unique design of the exterior allows the entire structure to be exposed to natural light while conserving energy.

The unique shape of the building's superstructure required innovative construction solutions to create the finished product. Several of the support columns are tilted rather than vertical. This created an unusual shape for the underlying skeleton of the building. Engineers also had to solve how





FEATURED PRODUCTS



IAC BUILDING
interior photos

the many angled columns would appear. They used laser guided surveying equipment to find the exact positioning of the structural components.

THE TITUS SOLUTION

By having such a unique and impressive appearance from the exterior, the interior design of the IAC Building would have to be just as impressive. The free flowing open office design definitely creates a very different experience for those who are use to typical cubicles in an office environment. Titus had many HVAC solutions to choose from to compliment this design. The products selected were not only chosen for their performance, but for their aesthetics as well. The OMNI and FlowBar diffusers, which blend well into the superior design of the interior of this building, are high performance units that provide higher airflow with minimal noise levels.

The Titus OMNI diffuser has strong, clean, unobtrusive lines that harmonize with the ceiling system. The curvature of the OMNI's backpan works with the formed edges of the face panel to deliver a uniform 360 degree horizontal air pattern. The face panel is made from 22-gauge steel or heavy aluminum. This new face panel construction ensures a smooth, clean appearance and makes for easier installation and removal.

The FlowBar offers an installation alternative to the conventional linear diffuser. Conventional linear diffusers are supported by the duct system and in most cases are installed after the ceiling system is in place. The FlowBar



system actually supports and becomes an integral part of the ceiling system and is installed along with the ceiling system. FlowBar's outstanding performance allows higher airflows than conventional linear diffusers and produces lower noise levels. The DESV is a terminal unit that regulates airflow to a zone in response to zone temperature requirements. The Titus ESV is unique as it incorporates many design features that increase performance, decrease service and installation costs, and offer increased value.

THE END RESULT

The stunning and impressive design of Frank Gehry, one of the world's most renowned architects, makes the IAC Building a clean and stylish facility capable of hosting any event in the New York City area. It has spaces that would be the perfect setting for conferences, forums, product launches, dinners and cocktail receptions.



PROJECT - FOSSIL CORPORATE HEADQUARTERS

Richardson, TX

CLIENT - FOSSIL

ARCHITECT - CORGAN ASSOCIATES

ENGINEERS - SCHMIDT & STACY CONSULTING ENGINEERS

CONTRACTOR - TDINDUSTRIES

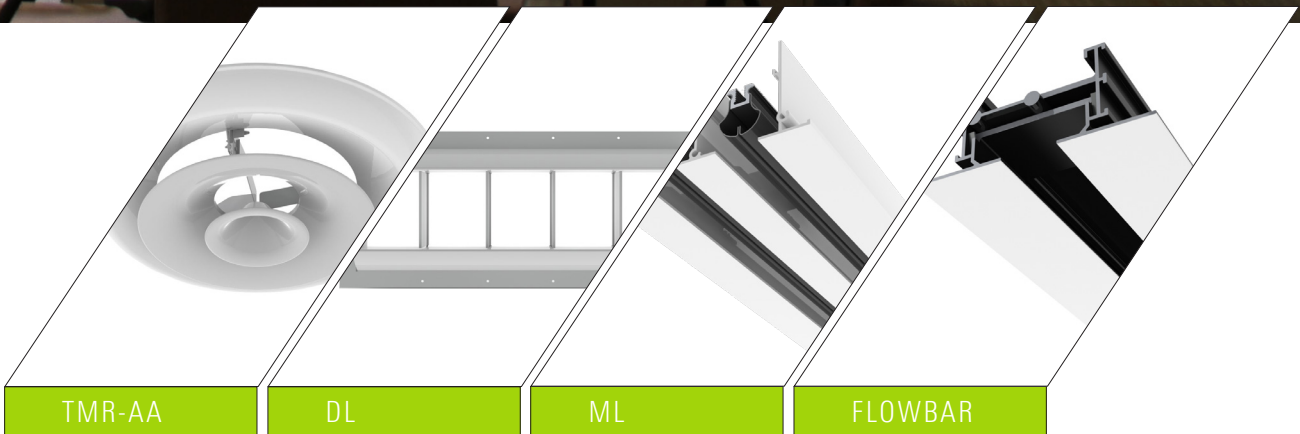
LEED CERTIFICATION - NONE



ABOUT THE PROJECT

The new Fossil Headquarters located in the old BlueCross / BlueShield of Texas building is an impressive interior renovation completed by Corgan Associates, Schmidt & Stacy Consulting Engineers, TDIndustries and others in a very short timeframe. The contractors and installers had consistent input from the designers throughout the project. The new headquarters combines three buildings to create a breathtaking facility that consists of open and hard ceilings, a two-story gym, a photo lab for producing their own marketing collateral and conference rooms that resemble small boutique stores! Fossil truly spared no expense when it came to creating the perfect office environment for its employees and customers.





FEATURED PRODUCTS



FOSSIL CORP. HEADQUARTERS
interior photos

THE TITUS SOLUTION

Titus was extremely pleased to be selected to provide the air distribution for such a strong fashion brand. We have many products that not only work well in open-ceiling environments, but also produce products that perform well in hard ceiling applications. There are a tremendous amount of Titus products featured throughout this 535,000 square-foot facility. The majority of our products featured within the new headquarters are the TMR-AA diffuser, the FlowBar, the ML diffuser, and the Drum Louver (DL).

Titus model TMR-AA is a round ceiling diffuser designed for both heating and cooling applications. All sizes have three cones, giving it a uniform appearance where different sizes are used in the same area. The TMR-AA delivers a uniform 360° air discharge pattern and exhibits excellent performance in variable air volume (VAV) systems.

Our linear bar diffusers are quickly becoming a favorite selection for architects to choose from. Titus' FlowBar and ML diffusers highlight this particular set of diffusers. The FlowBar is an architectural linear diffuser system that maximizes engineering performance without sacrificing the aesthetic considerations of the architect. FlowBar's outstanding performance allows higher airflows than conventional linear diffusers. The wide array of slot widths allow for more CFM per linear foot while minimizing noise and pressure loss. The Flowbar system is available in continuous linear, incremental linear and square configurations. The Titus ML Modulinear

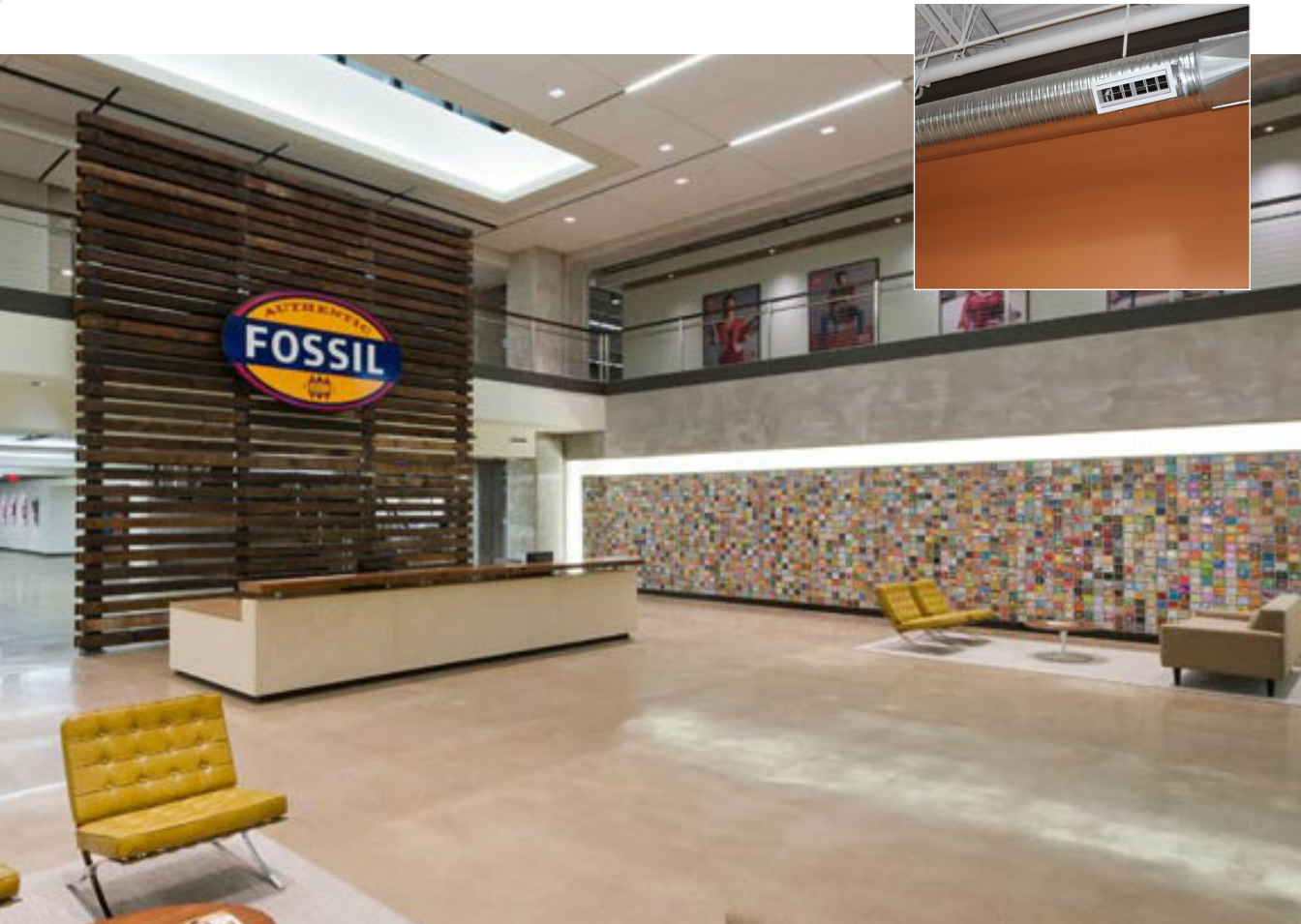


diffuser is a high performance, high quality linear slot diffuser. The unique “ice tong” deflector blades allow for both changes in air volume and direction from the face of the diffuser. This diffuser is also available in 1 through 8-slot configurations except for the ML-40. It is only available in 4-slot configurations.

Finally, Titus drum louvers (DL) are great for shopping malls, warehouses, sports arenas, gyms, factories and other large open areas where air must be thrown over a large distance. The high capacity long throws and rugged construction make them an ideal choice for any commercial / industrial application. Additionally, our TMS diffuser, 23RL grille and CT linear bar diffuser are also featured at various points within the building.

THE END RESULT

The completion of Fossil’s impressive corporate headquarters renovation was a very quick and coordinated effort by all involved. The representative firm, contractors, engineers, and architects all coordinated their efforts to create a superior working environment for one of the world’s best Lifestyle and Watch brands. This facility will definitely aid in Fossil keeping the creative juices flowing to maintain it’s status as a strong brand name for many years to come.



PROJECT - VISTEON VILLAGE

Van Buren Township, MI

CLIENT - VISTEON CORPORATION

ARCHITECT - SMITHGROUP

LEED CERTIFICATION - LEED GOLD CERTIFIED



ABOUT THE PROJECT

The Visteon Corporation is a leading innovator in the automotive design industry and produces components, systems, and modules that appeal to drivers and passengers throughout the world. Their corporate headquarters is a unique collection of buildings designed to create a community-style work environment while promoting green building concepts.

They strongly believe in corporate responsibility with environmental management among their highest priorities. Visteon preserved the wetlands on the site and also conserves energy by utilizing extensive daylight harvesting. The Titus underfloor products used to provide the air distribution are the DLHK terminal unit, the CT-TAF-L linear bar grille, and the TAF-R underfloor diffuser in numerous locations along the perimeter of the





CT-TAF-L

TAF-R

DLHK

FEATURED PRODUCTS



VISTEON VILLAGE CORP.
interior photos

building's interior to provide the necessary airflow for the load requirement.

THE TITUS SOLUTION

SmithGroup, a full-service architecture and engineering firm, had a ingenious idea for the underfloor application. George Karadis, PE, Vice-President and Director of Mechanical Engineering for SmithGroup, envisioned an integrated system for the building perimeter that did not utilize fan coil filter units, underfloor partitions or a myriad of control devices. The solution satisfies all perimeter heating, ventilating and air distribution requirements through one linear floor grille assembly.

Incorporated into the continuous CT linear bar grille frame are varying sets of segmental nuanced aperture plates, blank-offs and deflector wings that are mounted into heating, cooling or return plenums. The next stage of development involves actuation of a sliding aperture plate beneath a fixed one. This will modulate the open area through which the air jets pass. Variable cooling requirements will be met while maintaining a nearly constant velocity of air and plume heights. Titus engineers went through the process of taking their concept and turning into a viable product - The TAF-L Perimeter System.

THE END RESULT

By arranging the floor grille over the aperture plates, it created room air induction, thus raising the temperature of the air jets and reducing the



height of the vertical plume. The Visteon project design utilizes a floor pressure of .07" w.g. which discharges 225cfm of conditioned air in a 6-7' vertical plume at an angle of 5°. This mixes the air in the occupied zone without disturbing the stratified layer overhead.

The TAF-L Perimeter System is designed to address the challenges of handling perimeter loads in a modular system. It is comprised of a modular cooling plenum, the TAF-L-V, a linear diffuser return plenum, the TAF-L-R, and two heating plenums, the TAF-L-W and the TAF-L-E. The CT-TAF-L linear bar diffuser, which mounts into the TAF-L's cooling, heating or return plenum, is designed to handle the high loads of the perimeter while maintaining the engineered plume height throughout its operating range. The CT frame drops into the perimeter slot and sits on top of the carpeting. It installs into the TAF-L plenums from the top surface and removal of the flooring is not required.



PROJECT - NEW YORK TIMES BUILDING

New York, NY

CLIENT - NEW YORK TIMES COMPANY

ARCHITECTS - RENZO PIANO / FX FOWLE ARCHITECTS

LEED CERTIFICATION - NONE



ABOUT THE PROJECT

The New York Times Company, one of the leading multi-media companies in the world, is committed to bringing their reader/viewer high-quality news, information and entertainment from around the world either in print or online format. Their new building, the New York Times Building, is the first high-rise building to utilize a curtain wall with ceramic sunscreen to be built in the United States. This innovative design was a collaboration between world renowned architect Renzo Piano and FXFowle Architects.

The technologically advanced building will use natural light to maximize energy savings through daylight harvesting. The use of the double-skin curtain wall of clear glass creates a transparent relationship between the street and the building. The New York Times Building is 1.6 million square





DPFC

TAF-R

DLHK

FEATURED PRODUCTS



NEW YORK TIMES BUILDING
interior photos

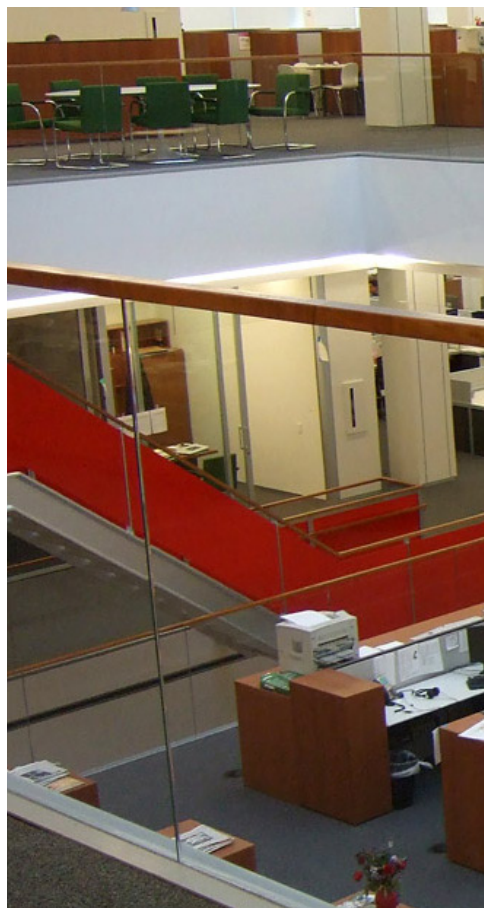
feet and spans 856 feet into the sky. Since its completion in 2007, it has already become home to major financial businesses and law firms who are equally committed to growing and prospering in New York.

THE TITUS SOLUTION

To compliment the architect's vision of designing an aesthetically pleasing building while utilizing Green Building technology and concepts, Titus recommended products from its UnderFloor product line to provide the air distribution for this project. The DLHK and DPFC are fan powered terminal units for underfloor applications. The TAF-R diffuser is a swirl diffuser that installed above the carpet. These products are among the many diffusers and terminal units selected for the building.

The DLHK is a fan powered terminal unit that is installed in the underfloor plenum of the underfloor grid systems. The DPFC is a booster terminal unit for underfloor applications while the TAF-R diffuser provides the air distribution. The versatile UnderFloor Air Distribution (UFAD) system is designed for comfort and efficiency. With this underfloor air system, The New York Times Company Building is able to air condition 10 degrees warmer than a typical system—at 68°F—and gently pump this chilled air up from the floor rather than pushing air down from the ceiling at high velocity.

Cooler air naturally fills the lower area of the room and rises when it hits warmer objects such as people or the office equipment. The warm air



then exits through vents in the ceiling. This method not only saves energy, but it also ensures a much more regulated, comfortable temperature throughout the occupied space. The Times Company is also able to use free-air cooling, meaning that on a cool morning, air from the outside can be brought into the building. The UFAD system also uses waste heat from the cogeneration process to heat the space on colder days. This is the largest underfloor installation of its kind in New York City.



THE END RESULT

The New York Times Building features several environmentally sustainable innovations - from the open-air garden to the double-skin curtain wall that reduces the amount of the sun's energy that penetrates the building - that places the New York Times Company at the forefront of the competition. The UnderFloor Air Distribution system that provides the airflow for this impressive structure is poised to be the leading underfloor system designed for any building to date.



PROJECT - QUICKEN LOANS BUILDING "THE QUBE"

Detroit, MI

CLIENT - QUICKEN LOANS

ARCHITECT - ROSETTI ARCHITECTS

ENGINEERS - MA ENGINEERING

LEED CERTIFICATION - NONE

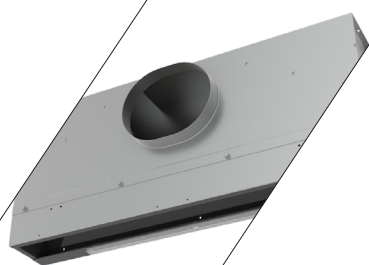


ABOUT THE PROJECT

The Qube, formerly known as Chase Tower, has been a landmark of the Detroit skyline since 1959. Standing at 14 stories high, it also occupies the site of Detroit's first skyscraper. Having been purchased by Quicken Loans, the company moved forward on a complete remodel of the facility in 2011. The remodel was intended to bring the building up to date and add designs to match the company's modern style. MA Engineering was brought in to take on the mechanical engineering aspects of the project. As a firm that incorporates aspects of sustainable design into every project, they were a good fit for ensuring good indoor air quality, comfort and sustainability.

Based in Birmingham, Mich, John Richards at MA Engineering, served as the lead mechanical engineer and project manager of the renovation. His





EOS

FEATURED PRODUCTS



QUICKEN LOANS BUILDING
interior photos

team was tasked with the complete renovation for nine of 14 floors, equaling 280,000 square feet. One of the renovation challenges was that the project did not call for new infrastructure. This meant that MA Engineering had to find a way to reuse the dual duct system that included all overhead air distribution. MA Engineering was concerned about occupant comfort near the windows because the original building design incorporated a slot air distribution device in the base of each window, creating a blanket of air over the buildings single pane windows. The new architectural design eliminated the slot at the base of the windows, but the single pane windows remained, creating a challenge to maintain comfort along the windows. In addition, the new office layout included workstations directly along the windows.

THE TITUS SOLUTION

COMFORT

Richards turned to Fontanesi and Kann, a company committed to providing the very best products, services and support to owners, contractors and design engineers through their variety of professional project and construction management services. As a result the two approached Titus HVAC, the world leader in air distribution to help solve the challenge. "Our firm is always watching for new, sustainable technologies to provide additional value to customers and Titus offers the best technology for perimeter challenges," said Richards. "That's why we decided to look at the Titus EOS for this project."



The EOS is the industry's first light-powered, energy-harvesting diffuser. With its wireless, energy-harvesting technology it pushes the HVAC science of air distribution to new heights. It was designed to improve comfort and save energy while providing a solution to challenging building perimeter applications.

Having previous experience with the Titus Dynafuser, Richards and his team were familiar with the overall concept of the new EOS technology. As Richards describes it, "EOS is better than typical diffusers because it has a 'brain' and can automatically adjust according to the temperature need so the area by the windows now maintains better comfort in both heating and cooling modes."

The EOS is designed to address the imperfect split compromises that are commonly found in the perimeter of a building's system, like the Qube. Its smart system delivers both heating and cooling by utilizing an auto-changeover function that eliminates wasteful compromise by automatically changing the air distribution pattern. Because comfort was the primary objective it became clear that the EOS was the right diffuser for the job.

"With the EOS, the air is sent horizontally in the cooling mode and vertically down over the single pane window, creating a blanket in the heating mode. In addition, the unit runs on solar power which makes it more appealing to the client and can also save on energy costs," said Richards.

THE END RESULT

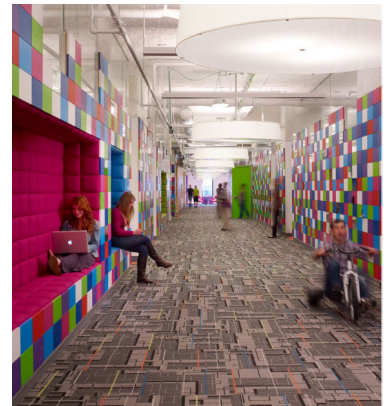
ADVANCING THE SCIENCE OF AIR DISTRIBUTION

Another challenge on the project was that the office space featured an open ceiling with exposed ductwork and air diffusers. As a result, MA Engineering worried that a normal diffuser might not get the cooling flow needed. In order to make sure the cooling mode could project the air out into the space; Joe Fontanesi worked with the Titus HVAC lab to engineer a "lip" that helped make the air projection horizontal instead of vertical. The lip would ensure that the EOS distributed air more evenly and throughout the entire building rather than just one area. The Titus HVAC lab used videos to show the engineers how the new lip would work.

"Being able to see the demonstration videos and the projection the lip would make was incredibly helpful," said Richards. "Titus eliminated the guess work and helped us to better understand and explain how it would work in this particular building."

SUSTAINABLE

Having been listed as one of the 'Top Places to Work in America' for many years running, the solar aspect of EOS was important to Quicken Loans. As a light-powered energy-harvesting diffuser, the EOS is powered completely by natural light making this smart system cost effective and sustainable. In fact, the energy harvesting feature on the EOS can provide up to 30 percent energy savings during heating over a split compromise system. The solar aspect also supports the company's progressive brand image as solar powered and green systems are popular aspects among the young professionals the company is looking to attract. Not only does the company win in the eyes of its employees, but Quicken Loans is



able to improve their bottom line.

Because MA Engineering had so much success with the EOS on the Qube project, they are already incorporating it into other projects as well. As Richards pointed out, "The EOS and support from both Fontanesi and Kann and Titus far exceeded expectations," said Richards. "They provided us with the technology that allowed our engineers to be successful on the job. We intend to work with them and use the EOS on future projects."

C A S E S T U D Y
PROJECTS



ADVANCING THE SCIENCE OF AIR DISTRIBUTION

605 Shiloh Rd.
Plano, Texas 75074
(ofc): 972.212.4800
(fax): 972.212.4884
(web): www.titus-hvac.com