

# THE INNOVATOR

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## PROWESS IN PRECISION

Since November of 2013, TGCE has designed 15 custom air handling units. In all, these units total to 672,400 cfm, 75 fans, and 89 coils (chilled and heating water, steam, and wrap-around). These custom air handling units have spanned six projects and three unique clients. From office buildings to a university science building to healthcare facilities, each unit presented unique challenges that required precision in both the design and construction phases of the project.

TGCE has helped usher a fast and favorable convergence in precision between the designed air handler and the finished, installed product. This convergence can be attributed to three main factors. First is TGCE's long history of custom AHU design, even prior to a year inundated in such design—i.e. practice makes perfect. (I can hear my dad now, “No, perfect practice makes perfect.” Don't worry Dad, that's where two and three come in.) Second, TGCE worked, and continues to work, closely with manufacturers' reps so that its design detailing reflects how a particular unit and its components will be manufactured and assembled. Third, TGCE has seen 11 of these most recent 15 air handlers through construction/installation and commissioning.

Through the construction administration phase, TGCE designers and engineers are able to physically see and experience how the designed unit and its components within are assembled. These “perfect practice” factors have allowed TGCE to further tune unit design to promote more accurate submittals and shop drawings, and therefore even better constructability. Some project samplings are provided below.

### STATE OFFICE BUILDING

**Summary:** 32,500 cfm 100% outside air handling unit with wrap-around coil on the roof of a 13-story state office building. Construction complete.

**Challenge:** Replace a heating only outside air handling unit on the roof of an existing 13-story building in the middle of downtown Austin.

**Solution:** Close coordination with structural engineer and project team to provide a platform tied into existing structure for the support of the new 100% outside air unit.

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## PROWESS MEETS PRECISION

(cover story continued)



Procurement of the only mobile crane in Texas capable of achieving height and weight of AHU lift.

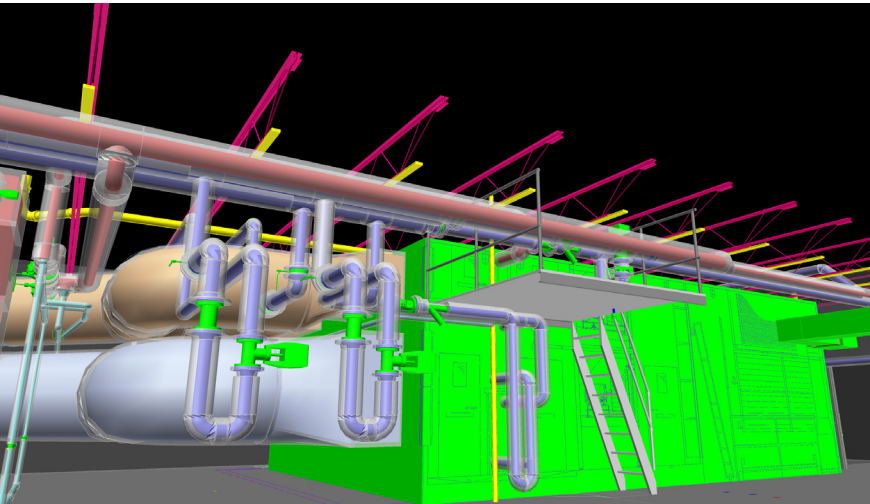
Unique Feature: Wrap-around coil for energy savings and UV lighting section for improved air quality.

### GOVERNOR'S OFFICE BUILDING

Summary: 60,000 cfm dual-duct air handler with chilled water cooling coil, steam heating coils, and outside air preconditioning section. Construction complete.

Challenge: Replace a 50+ year old air handling unit in building's existing penthouse. Provide redundancy and outside air preconditioning in new unit. Construction time limit of 10 days (demolition to new AHU providing cooling).

Solution: A parallel, "two units in one," panelized design in which each of the two sides is individually accessible and maintainable and an internal outside air preconditioning section lofted within the return air section. Coordination and close communication with contractor/sub-contractor and frequent site visits; around the clock work under manufacturer's direct field supervision.



Unique Feature: Permanent sliding ladder integrated into filter rack to access/change out filters.

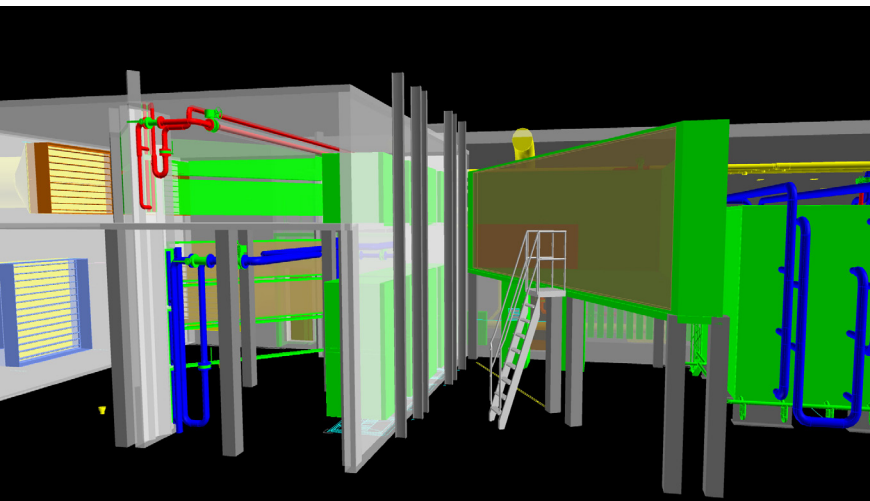
### UNIVERSITY SCIENCE BUILDING

Summary: Two 120,000 cfm, dual-duct air handlers comprised of custom components within an existing built-up air handling unit (part of building's original construction) with outside air preconditioning section. Awaiting construction.

Challenge: Replace (with limited downtime) the internals of a 40+ year old built-up, high pressure air handling unit in which walls are a part of the building structure. Provide outside air preconditioning in new unit where it did not previously exist, and package all components into existing AHU boundaries.

Solution: Close attention to existing unit, building, and structural details to create the design with individual custom components (coils, fan arrays, filter banks, specialized controls, etc.). Also designed was a lofted return air filter section (parallel to outside air filtration) to decrease the static pressure requirements and panelized outside air preconditioning sections built up within the existing walls of the AHUs.

Unique Feature: Panelized vestibules for unit access and pressure equalization between AHU sections and central return air corridor.





# CSSUCCESS

## COMMISSIONING IN REAL TIME

Under the umbrella of our Construction Support Services (CSS), TGCE was selected by **White Construction Company** to perform Pre-Commissioning (Pre-Cx) services, along with some additional roles, for three highly technical new construction buildings totaling approximately 106,000 SF located in Central Texas. The objective was to assist in having the varied and complex systems fully operational and ready for the Owner's Cx before the Owner's Cx began.

Everything was on our side...except time. An excellent GC group led a team of talented tradesmen and women, and the Owner/Owner's representatives fully understood the intricacies of the construction process. Still, we needed a Pre-Cx system that would be easy, efficient, and fast for all involved.

To respond to the challenge of time, our team employed the use of a cloud-based file storage and synchronization service. It was free, user-friendly, and live! All of these things were a huge benefit when dealing with subcontracting teams from various parts of the State. Although other Cx software platforms can provide a host of other features, our method provided the simplicity this particular project needed. Some other benefits to note include:

- A drastic reduction in Cx form progress email transmissions. All Cx forms are updated and reside online, accessible to the entire construction team with only a few clicks. No one needs more email clogging their inbox with the chance of oversight.
- Elimination of hard copy forms that get dirty, torn, or lost in the field. Raise your hand if you've seen this over and over.
- Provided an excellent source of overall Cx progress to the Owner's Cx Agent prior to his arrival on-site.

Another success story in the books. How do we know it was a success? The electrical contractor, the controls contractor, and even the Owner's Cx Agent are now using the same cloud platform in their day-to-day operations. A living testament of success.

We were honored to work with such a terrific construction team and look forward to working alongside them again.

~ Greg Maxwell, LEED AP - Designer/CSS Director





# TGCE LIFESTYLES



## TGCE ADDS NEW PLAYERS TO THE FIELD

**MEILANI LEOS, E.I.T.** - Mei first worked at TGCE as an intern while studying at UT. After graduating with a degree in Architectural Engineering, she went to work for another local MEP firm for a few years, and earlier this year decided to come back to the TGCE team. With a background in Architectural Engineering, Mei has an appreciation for architecture and a passion for energy efficient buildings. She is excited to continue her career with TGCE and looks forward to getting some forensic experience, in addition to working on more diverse design projects. When Mei and her husband Matt are not working on their 1930s fixer upper, they like to go out and enjoy the Austin music scene, try out the numerous restaurants around town, and spend time with their family in Bastrop and San Antonio.

**ART IRWIN, CBCP, LEED® AP BD+C** - Art joined the TGCE team in late April after moving from San Jose, California, with his wife, Marlene, and dog, Nico. During his childhood in Colombia, Art became fascinated by how things work and developed a knack for detailed, eye-roll inducing explanations of all things mundane and complex. A teacher told him that such a trait would be welcomed by the engineering community, if not by his peers. Therefore, he went on to study at LeTourneau University and ultimately graduated with a degree in Mechanical Engineering from San José State University. Since the start of his consulting career in 2001, Art has developed a passion for energy analysis and sustainable design through involvement with numerous projects in Silicon Valley. As a LEED Project Administrator and Certified Building Commissioning Professional, he was drawn to the commitment to quality at TGCE and is eager to expand his repertoire. Art enjoys incorporating his passion for photography into his work, but he maintains that nothing quite beats island excursions to Hawaii and to his wife's native Azorean islands.

**ELAINE DOLECEK, P.E.** - Elaine joined TGCE in late October after spending two years working on a creative startup in Austin. She graduated from Kansas State in 2005 and has since worked for MEP firms in Dallas and Austin. Elaine is excited to get back into the field and start designing complex and technical projects again. When she's not in the office, Elaine enjoys woodworking, 3D printing, and spending time with her husband, John.

**SPENCER DANIELS** - The most recent addition to TGCE, Spencer relocated from Northern California in 2006 and is often told "you should've come to Austin years ago, before it was ruined by people moving here from California." Nevertheless, he started his education over, attending a local technical school. Within the year, he was employed at another local MEP firm where he spent 8 years learning Plumbing and Fire Protection design. He now joins the ranks of TGCE and brings us some of that knowledge (as well as an exciting, ever-changing sock collection). When not at work or turning heads at the gym, Spencer can be found enjoying live music, watching (and sometimes performing) standup comedy, and convincing his girlfriend he knows how to pronounce all those fancy words on the menu like charcuterie and tuile.