

# THE INNOVATOR

## Newsletter

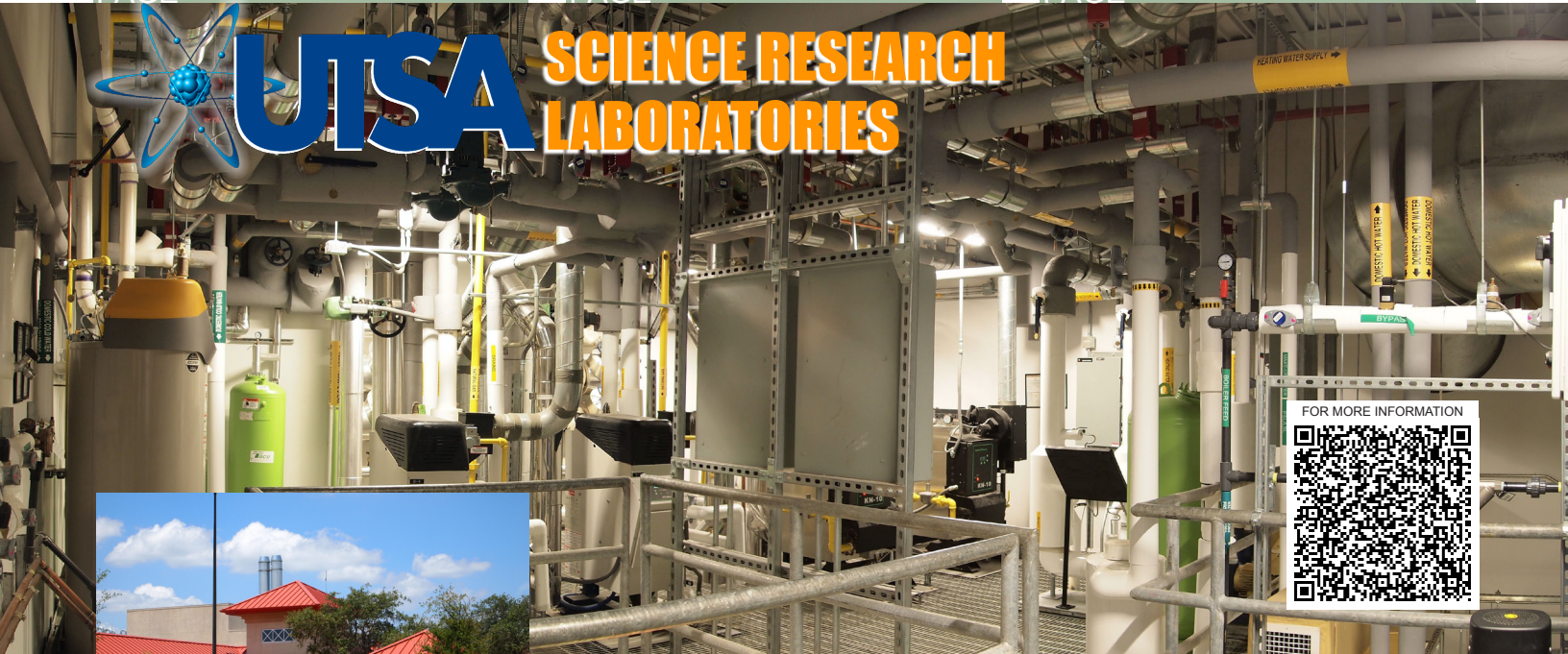
WINTER 2012

**2** UTSA  
An Inside Look  
PAGE

**3** ABIA  
Capital Improvements  
PAGE

**4** LIFE  
STYLES  
PAGE

### UTSA SCIENCE RESEARCH LABORATORIES



Back in 2007, The University of Texas at San Antonio (UTSA) determined that it needed additional lab space on its campus to meet its rapidly growing research and teaching needs. TGCE was fortunate to be on a programming and design team to help study (and eventually design) the best way to achieve UTSA's needs for more lab space. **Jennings-Hackler and Partners** served as the Prime Architect for the project.



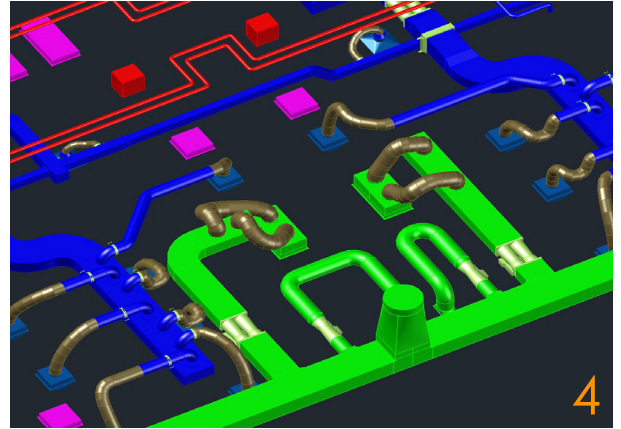
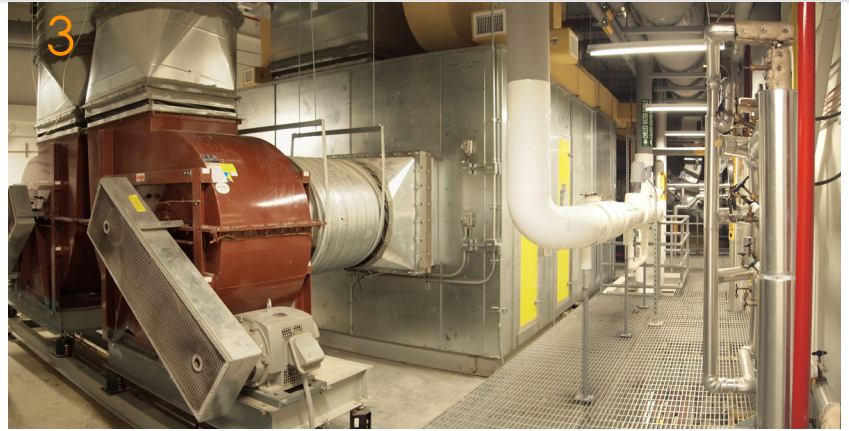
One of the first things UTSA articulated to our team was that its strategic vision was to become "a model of the new comprehensive university". Ultimately, this vision took the form of revitalizing and renewing a few older buildings on campus and turning them into state-of-the-art lab facilities with sophisticated building systems and energy conserving features.

Two one-story buildings with a total of approximately 30,000 GSF were selected to be fully renovated. These buildings were built in the 1970s and as such, the building systems were in need of full replacement, the exterior was in need of a "face-lift", and the space usage/layout was in need of a complete re-configuration.

During the programming and study phase of the project, it was determined early on that the existing above ceiling clearance for routing of building systems was not adequate. This minimal amount of ceiling space was ultimately solved by using 3D CAD design tools to maximize above ceiling space usage.



Since energy consumption in lab buildings is extraordinarily high, energy recovery features were provided that exceed minimum energy code requirements and have relatively short payback intervals. The building was also designed with highly sophisticated water treatment systems. ~ *Greg Canter, P.E., LEED AP*



## 1 WATER SYSTEMS

The facility program included several water domestic water and process water treatment processes. First, all domestic water entering the facility passes through water softeners. Water treatment to reduce total hardness of San Antonio water is practically mandatory to prevent scale buildup in water heating equipment, warewashers and sterilizing equipment. Dual softening beds were used to allow for continuous softening with one bed online, and with the second bed in regeneration or standby mode.

On the process water side, the first stage included carbon filters to remove chlorine and other contaminants. Water out of the carbon filters was categorized as RO (Reverse Osmosis) Feed water. The RO Feed water supplied an RO system dedicated to boiler make-up water, a second RO system dedicated to animal watering for the adjacent (unrenovated) vivarium, and a third system that produced deionized water that was distributed throughout the facility via a continuously recirculated piping loop.

## 2 ROOFTOP DUCTWORK

Due to such tight structural conditions within the existing buildings, it was determined that the roofs, with built-up structural steel supports (by J-Q, Inc.), would sustain the distribution highway of laboratory supply, neutral and exhaust systems ductwork. This concept, achieved a much more desirable and maintainable above ceiling plenum within the buildings and the architectural features concealed this ductwork while simultaneously merging with the West Campus architectural context.

## 3 ENERGY RECOVERY

The air handling unit is provided with a total enthalpy wheel system and a run-around piping system. These systems recover energy from the large quantities of building exhaust air to condition the supply air. The run-around piping system provides free re-heating of the supply air during all seasons for use by a neutral duct system delivered to the building corridors for make-up air. The run-around system also serves to cool the exhaust air as it enters the total enthalpy wheel system, thus improving the enthalpy wheel efficiency. The total enthalpy wheel system pre-conditions incoming outdoor air by efficiently pre-cooling and pre-dehumidifying the air in the cooling seasons and pre-heating and pre-humidifying the air in the heating season. An energy recovery piping system is provided to recover heat rejected at an air-cooled chiller. This system includes a desuperheater at the air-cooled chiller, piping from the chiller to the heating water boilers, and associated pump, chemical filter feeder, etc. The energy recovery system uses waste heat at the chiller to heat water in the heating water system, achieving virtually all re-heat from recovery.

## 4 3D DESIGN UTILIZATION

Although duct mains were located on the roof, above ceiling conditions remained congested. TGCE turned to the help of three-dimensional modeling in AutoCAD to develop highly efficient and highly sophisticated laboratory systems layouts. The use of this technology not only helped us in design, it also showed the Owner that desirable maintenance clearances were achieved, and assisted the Contractors in meeting the design intentions.



# ABIA

## CAPITAL IMPROVEMENTS ARE CLEARED FOR TAKEOFF

If you have a sharp eye you may have noticed a few small changes occurring at Austin Bergstrom International Airport (ABIA) over the past year: changes that help to market Austin while also saving in long-term energy and maintenance. The overhead roadway signs along Presidential Boulevard are receiving a face-lift. The old grey signs are being replaced with shiny new blue ones. The parking garage is receiving some repairs and new lighting fixtures, and the restrooms are also seeing some improvements via remodeling.

In total the Austin Airport Advisory Commission approved over \$13 million for last year's Capital Improvement Plan Budget. However, many of the things that happened last year (with the exception of those items indicated above) were behind the scenes airside projects (airside projects focus on the airfield). This year though, the airport is turning its attention to more landside projects. One of the most visible of these projects will likely be the Presidential Blvd. Roadway Safety and Security Improvements. TGCE is excited to be involved in this project, which includes the design and construction of a new two lane divided road (one lane each way) connecting Presidential Blvd. to Spirit of Texas across the site adjacent to the Hilton.

The construction of this road marks the next step towards continuing the Cell Phone Lot Development plan presented in the 2008 ABIA Capital Improvement Program report. In November of last year the airport took the first step towards this development by opening the free cell phone parking lot. What the cell phone lot allows for is when people come to the airport to pick up a passenger, instead of circling around the big loop road (Presidential Blvd.) they can pull into the cell phone

lot and wait for a cell phone call from their pickup. The lot is even currently equipped with flight information displays, so it is easy to know if a plane has been delayed or is on time.

The future of the cell phone lot is envisioned to expand into a full development. It will likely include everything from retail shops to restaurants and even a gas station. All of which will help to stifle the boredom of waiting for a delayed flight. The construction of the new roadway will be key to this future development. The new road, which will be beautifully landscaped and will include winding walk paths along both sides, will provide a safe accessible route for vehicles to enter and exit the development from Presidential Blvd. and Spirit of Texas Drive.

In designing this roadway ABIA, the City of Austin, and the design team (headed by [Limbacher & Godfrey Architects](#)) are focusing on a greener, more sustainable design. All the lighting for the roadway, including sign lighting, is planned to use LEDs (example shown below). The use of LED lighting will bring several benefits to the design.



LED's high efficiency means that we will be able to provide a well lit roadway while consuming more than 30% less



energy when compared to a traditional 100W metal halide source. Also, the advanced optics available with LED lighting fixtures allow the design to put the light where it is needed. This ability leads to a more uniform lighting level, less light trespass, and less light pollution.

Another large sustainable part of the project that is planned is the extensive use of rain gardens to help in the management of rainwater runoff. These rain gardens and other features of the project will work to enhance the existing airport wide reclaimed water irrigation system. The design team is also planning on incorporating the use of solar power into the design.

So, start taking advantage of the free cell phone lot today and look forward to a greener and more enjoyable way to pick up your friends, family, and others from the airport! ~ Mark Kostroun, E.I.T.

# TGCE LIFESTYLES



For nearly two years now, the *Innovator* Newsletter has been bringing our readers an inside look at the continued success of our company. We've been amazed at the high volume of readers and the attention this outlet has gained.

Too often we tend to keep our head down and ignore one of the delights of life...interaction. Communicating on more of a personal level is key to everyone, as individuals...as humans. Our original purpose in creating *The Innovator* was to try and regain some ground in the communication realm.

Our goals have been not only to highlight the projects on which we have worked, but also to recognize those who worked on the projects along side us. The entire team is what makes TGCE strive for excellence every time.

We're honored to have received the SMPS Austin Chapter 2011 Communications Award for the Best External Newsletter. Here's what some of the judges had to say:

*"I love that your company newsletter is not all business. It is a fun read front to back. Love it! Well written on a personal level."*

*"So many email newsletters are boring and easy to ignore, but this one is not! The mix of content, especially industry info and fun additions, makes your audience want to read it."*

*"Love the newsletter, especially the friendly, yet very informative, approach you take with the tone of it."*

With an average of a 51% read rate and continued compliments from our clients, colleagues, family and friends, it is safe to say that we will keep on keeping on. Thank you all for your contributions. YOU have made *The Innovator* the success it has become!



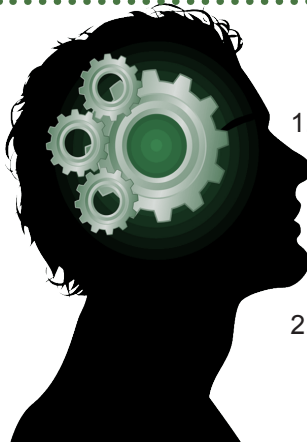
You may have heard the saying, "If you haven't been to Waxahachie... you haven't been to Waxahachie". So it goes with attempting to relate to others a trip to Rancho el Paraiso in the beautiful and remote Agalta Valley in Olancho, Honduras, Central America (CA).

The Ranch, as we call it, was organized by and is managed by **Honduras Outreach, Inc. (HOI)** out of Atlanta, GA. The Ranch staff, all natives of CA, are also the key ingredients that have made the operation so successful in roughly 20 years of helping 42 villages in the Valley.

I became acquainted with the Ranch in 1999, and have managed to find myself (literally) there every year since. Why return to Waxahachie? Well, its hard to understand if you've never been. To give a small glimpse, I'll describe it much like my Spanish vocabulary: generally single words (usually food nouns). Ask me about any of them. They each have their own story.

Jim. Anita. Paraiso. Dugouts. Bumpy. Landing. Trunks. Music. Cross. Immersed. Marta. Uva. Jose. RAS. Plywood. In-service. Emily x 2. Talapia. Squeal. Lucas. Routers. Lumber. Kindergarten. David. Hearts. Pollo. Texting Caballeros. Hay. Oxen. Music. Teamwork. Naranja. Scholarship. Teachers. Raul. Hammocks. Herman. Music. Yoli. Methane. Christina. Milking. Bat. Rosa. Futbol. Lynnsey. Frijole. Bell. Sue. Feet. Ishmael. Chimneys. Waterfall. Generator. Computers. Dancing. McHorse. Cellular. Security. Harold. Nets. Frogs. Chris. Music. Jeri. Coral. Jade. Nativity. Butterflies. Porch. Howling. Stars. Gecko. Flacco. Concrete. Termites. Fence posts. Betty. Stars. Better yet, why not join us in January 2013? ~TG

## TOM'S TRIVIA



1. How many different words can be formed by using the following letters? (Note: not all letters will be used for every word.)

**ENGINEER**

2. List as many as you can.

\* All "close to correct" responses will be pooled, with a winner drawn and awarded a \$25 gift card to The Home Depot.

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Check our website at [www.tgce.com/news/newsletter](http://www.tgce.com/news/newsletter) for results.