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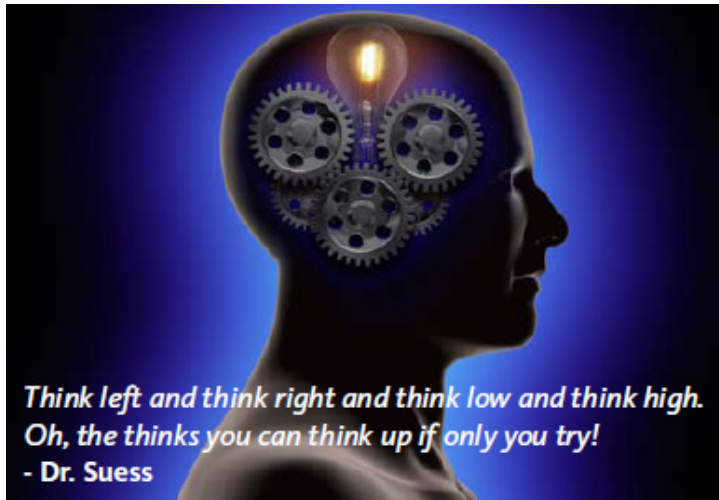
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Replenishing the Ranks

An analysis on cultivating the next generation of engineers.

Rarely can a student be pushed into engineering. The attrition rate of engineering schools is indicative of that. For an individual to be successful in engineering, he or she must be inspired. It is that inspiration that enables engineering students to dredge through the rigors of engineering school. It is that inspiration that keeps young engineers at the office well into the night as they search for solutions to complex problems. It is that inspiration that allows seasoned engineers to change their communities, their industries, and the world. But where does this inspiration come from?

Every generation of engineers has found their inspiration from a combination of the works of the generations before them and world events. At the turn of the century, mankind was introduced



to new technologies ranging from electricity to the automobile to manned flight. Each of these technologies was created to meet the needs of a society transitioning to the modern world. These scientific and engineering marvels, paired with two world wars, provided inspiration and motivation for the next generation of engineers to pioneer Hoover Dam, mobile infantry, and naval aviation. Inspiration from these feats, in addition to the political influence of the Cold War, led the next generation of engineers to develop satellites and technologies required for human space flight that ultimately led to human lunar exploration. The list goes on...

Fast forward a few generations and the question becomes: What past engineering accomplishments and what present world events can we tout as the inspiration for the next generation of engineers? This question can be difficult to answer when broadly comparing our situations today with those of the generations listed above. After all, this generation hasn't been tasked with landing a man on the moon by the end of the decade. However, a closer look does provide clear opportunities for inspiring the next generation of engineers.

- 1. Limited resources in the midst of growing population and consumption:** It's no secret we live on a planet with finite resources. How could it be? Copious sums of money have been spent on increasing awareness of our finite resources and the need to reduce our consumption. These conditions make the issue of renewable energy a topic of which all students should be aware. Students simply need to be made aware of the opportunities that exist for engineers in the renewable industry. Plant the seed for inspiration and the marketing and advertising campaigns should take care of the rest.
- 2. Smart phones and the mobile revolution:** Similar to the example above, large sums of money have been spent on informing people of advances in mobile computing technology (smartphones, tablets, etc.). Furthermore, tech companies that create these devices have developed a corporate culture that appeals to the younger generations. Once again, showing students the opportunities that exist for engineers in the tech industry is about all that needs to be done. Let them know they can design the newest, greatest iWhatever, and they very well might.
- 3. Austin skyline and local population growth:** The Austonian really is a beautiful building. So are a lot of the buildings surrounding it. It's a good thing too, since these buildings are often a visitor's first impression of the city (and they've also been cited as a reason many people return). Growing the Austin skyline presents an appealing challenge to architects and engineers, and it's a challenge that will remain for the foreseeable future given the current rate of population growth in central Texas. A building and the opportunity surrounding it can be very inspirational to students, especially in the current job market.

If these examples seem very formulaic, it's because they are. To inspire the next generation of engineers, key on engineering accomplishments and current events they can relate to, and give them the whole picture. Share with them what opportunities exist in the different engineering fields and show them paths to get there. The problem of a shrinking engineering population falls at the feet of those who've already found their inspiration. The engineering community must become more involved in schools, engineering education, and mentoring programs to ensure further generations of engineers emerge to replenish the ranks. ~ Jay Young, *E.I.T., LEED AP*



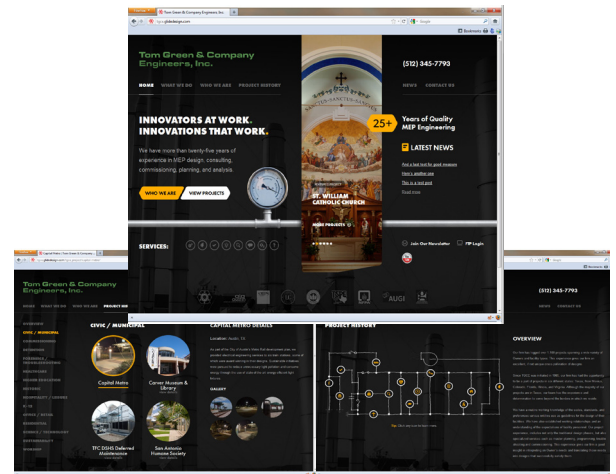
Out With the Old, In With the New

We couldn't be more excited to launch our new website. Just as with engineering design, it is always very cool once you see a concept become reality.

We wanted this new site to be "out of the norm" or different because... well, because we are different than most other firms in our industry. Habitual excellence is something that TGCE always strives to possess, to maintain.

With the incorporation of several more featured projects, lists of services, and some neat photo galleries, we'd like to extend an invitation for all to check it out. The folks at TGCE hope you find things a little more reflective of our culture and in an easily navigable fashion. Enjoy!

~ Greg Maxwell, LEED AP - Designer/Technologist



Duct Cleaning 101

It's common to find internally lined supply ductwork used throughout buildings constructed in prior decades. Within the past few years, we've worked with a number of Owners that have experienced a common symptom with these internally lined supply duct systems: mold growth, evidenced at times by visible release into the airstream and the rooms served. There are a number of factors that contribute to this symptom including (but not limited to) a moisture laden airstream, mold spores, and mold "food" (dust/organics on the internal insulation). Owners have sometimes tried cleaning (only) inside the ductwork, with the symptom subsiding for awhile but eventually returning.

What can be done? Certainly replacing the old internally lined ductwork with new externally insulated ductwork is an option. However, the duct replacement process can be very costly and disruptive to building operations. In most cases, replacing the ductwork is not feasible due to cost and/or disruption. Owners end up having the ductwork cleaned...and then cleaned again...and again.

We've successfully implemented an alternative solution.

While the process described below is not necessarily new, it has been improved over the years. And as with any other job, the experience and care brought to it by the individuals performing it greatly affect the results.

The solution includes gently but effectively cleaning the inside surface of the duct liner, "fogging" inside the ductwork with disinfectant, and then applying an anti-microbial coating to the surface of the duct liner. The coating serves two purposes: it encapsulates any leftover contaminants residing within the insulation (i.e. not on the surface), and it prohibits mold growth in the insulation and on its surface.

The pictures on the right represent before vacuum cleaning, after vacuum cleaning, and after coating conditions of internally lined ductwork. It's all a little different than what the movies portray, huh?

When considering this solution, it's important to note that holes must be cut at strategic locations in the ductwork. In addition to allowing the cleaning, fogging, and coating processes to occur, these holes are used to visually inspect the inside of the ductwork after each step. As a rule of thumb, holes are needed upstream and downstream of fittings (elbows, offsets, etc.) and can serve up to 25 ft. of straight ductwork.

~ Greg Canter, P.E., LEED AP - Senior Engineer



TGCE LIFESTYLES

PICKS OF THE SEASON



CULINARY CREATIONS



CHICKEN AND SAUSAGE GUMBO

Cooking Ingredients:

- 1 lb. Cajun-style smoke sausage, sliced
- 1/2 cup vegetable oil
- 3/4 cup all-purpose flour
- 1 medium onion, chopped
- 1/2 large green bell pepper, chopped
- 2 celery ribs, chopped
- 3 garlic cloves, minced
- 2 bay leaves
- 1 Tbsp. Worcestershire sauce
- 2 tsp. Creole seasoning
- 1 tsp. chopped fresh or 1/2 tsp. dried thyme
- 1/2 tsp. Old Bay seasoning
- 2 (32-oz.) containers chicken broth
- 3 cups chopped cooked chicken, shredded
- 4 green onions, sliced
- Filé powder (optional)
- Hot cooked rice



"Creole Open House." Recipes.
Southern Living Christmas at Home, Dec.2008:18
Photo by Greg Maxwell

Method:

1. Cook sausage, in 2 batches, in a large Dutch oven over medium heat 2-1/2 minutes on each side or until browned. Drain on paper towels. Pat dry with paper towels. Wipe Dutch oven clean.
2. Cook oil and flour in Dutch oven over medium heat, stirring constantly, until flour is milk chocolate colored (about 20 minutes).
3. Stir in onion, bell pepper, and celery; cook, stirring often, 7 minutes or until vegetables are tender. Add garlic, and sauté 1 minute. Add bay leaves and next 4 ingredients; gradually add chicken broth, and bring mixture to a boil. Reduce heat to low, and simmer, stirring occasionally, 30 minutes.
4. Add sausage, chicken, and green onions to gumbo; cook 30 minutes.
5. Remove gumbo from heat; remove and discard bay leaves. Sprinkle individual servings with filé powder, if desired. Serve over hot cooked rice.



FROM YOUR TGCE TEAM



Dropbox - FREE



Dropbox is a free service that lets you bring all your photos, docs, and videos anywhere. After you install Dropbox on your computer, any file you save to your Dropbox will automatically save to all your computers, your iPhone and iPad, and even the Dropbox website!

The University of Texas at Austin - FREE



Bleed burnt orange? The University of Texas at Austin is now available wherever you go. Search for UT news, check out campus-related events, keep tabs on sports news and scores, tap into the UT directory, navigate campus maps, watch UT videos, and stayed engaged with your University.

Holiday TOM'S TRIVIA

1. In spirit of Halloween, what candy was the first wrapped penny candy in America?
2. Who declared Thanksgiving to be the last Thursday of November?
3. Due to time zones, how many hours does Santa have to deliver gifts? Take a guess on how many homes per second he'd have to visit.

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

Reply to (CLICK LINK FOR AUTOREPLY) newsletter@tgce.com.
Check our website at www.tgce.com/news/newsletter for results.