



SAABE TIMES

A publication of the San Antonio Association of Building Engineers

February 2006

Mark Your Calendar—

JOIN US FOR OUR FEBRUARY LUNCHEON

The next General Membership Meeting of the San Antonio Association of Building Engineers is set for 11:30 am on Wednesday, February 15 at the Alamo Cafe on 281 (just north of Bitters). Program topic to be announced; visit our website (www.saabe.org) for full details.

The meeting will be held in the first floor Travis/Bowie rooms, to the right of the entrance. There is plenty of parking at the back of the restaurant. **Please make sure to check in at the front desk when you arrive.** Please do not leave valuables in your vehicle, as members have reported attempted break-ins in the restaurant parking lot.

Please RSVP to (210) 408-1699 by Tuesday, February 14. PLEASE RSVP so we can be sure to have enough meals on hand!

We hope to see you there! ❖

Education Corner

Troubleshooting Mechanical and Rotating Equipment

- April 26–27, San Antonio; May 3–4, Austin
- A practical course designed for building facility maintenance technicians.
- Cost: \$895

Electrical Troubleshooting and Preventative Maintenance

- March 8–9, San Antonio; March 22–23, Austin; March 29–30, Corpus
- Build and troubleshoot electrical circuits using real-world components.
- Cost: \$790

Electrical Troubleshooting and Preventative Maintenance

- March 8–9, San Antonio; March 22–23, Austin; March 29–30, Corpus
- Build and troubleshoot electrical circuits using real-world components.
- Cost: \$790

2005 National Electrical Code

- March 8–9, Austin; March 22–23, San Antonio
- Learn how to navigate the code and find out about the many 2005 changes.
- Cost: \$795

Basic Electricity for the Non-Electrician

- March 6–7, San Antonio; March 20–21, Austin
- Understanding and working with industrial electricity.
- Cost: \$790

All above classes are offered by American Trainco. To register, visit their website at www.americantrainco.com, or call 877-97-TRAIN.

Three Days of Electrical Training

- March 21–23, Houston; March 28–30, Austin
- Day 1: Reading Electrical Drawings. Day 2: Understanding Industrial Electricity. Day 3: Troubleshooting Electrical Controls.
- Cost: \$395/day
- Offered by Impact Training Services. To register, visit their website at www.impactu.com or call 800-858-6879.

HVAC/R Test Preparation

- Sponsored by Construction Seminars, endorsed by the Texas Air Conditioning Contractors Association
- February 10–12, Austin
- Cost: \$450
- Call 1-888-500-PASS or visit www.constructionseminars.com for more info.

Contact Laura Bray (408-1699) if you know of other courses or events. ❖

CELEBRATING
20 YEARS
OF EXCELLENCE IN
BUILDING ENGINEERING

A Message from the President

by Bob Beal

As most of you know, I am now working in Johnson City for the Pedernales Electric Co-op. It's funny how 65 miles makes me feel so far away from the city and people I have become so fond of. I just want to remind all of you that I am still available to talk and meet with you about anything. I have created a new e-mail address to dedicate to my SAABE brothers and sisters (beal44@hotmail.com), and my home number is 210-658-4463.

Super Multi-Taskers

I feel very lucky that I have had the opportunity to be educated by some of the best Engineer/Technicians in San Antonio (if not the country). Now that I am kind of looking in from the outside, I can tell you that San Antonio engineers have evolved into high-tech multi-taskers. In some cases owners and managers do not realize exactly how much knowledge is needed to be a good engineer. If you are going to be successful you have to become a sponge for knowledge. You also have to develop real relationships with the people you do business with in order to network when you need more info. The list of stuff we deal with is endless. I would like to list some of the things that come to mind. Chillers - heat exchangers - cooling towers - centrifugal pumps - water treatment - generators - sump pumps - joy fans - air handlers - split A/C systems - water cooled condensers - package units - heat pumps - CVI and VAV boxes - high, medium, and low pressure duct work - pneumatic thermostats and controls - electronic thermostats - EMS systems and controls - variable frequency drives - drinking fountains - water fountain and pool equipment - alarm systems - fire sprinkler systems - fire pumps and controls - gas suppression systems - wet and dry pipe systems - glycol systems - electrical motor control centers - switch gear and bus duct systems - server room equipment - large and small UPS systems - garage entrance gates - air compressors - air

Marley Cooling Tower Erection & Reconstruction

ROY C. GARRETT, INC.

411 FM 1103

San Antonio, Texas 78108

Office 210-659-6701

Keith Garrett

Mobile 210-861-5245

dryers. Some of our daily tasks require us to be electricians, A/C technicians, plumbers, construction supervisors, and the list goes on and on. As chief engineer we have to be managers, supervisors, teachers, construction supervisors, personnel directors, public relations agents, bid takers, designers, and pin cushions if we do not get it all done when it is wanted. We are the most diversified employees in any trade and you can take that to the bank.

Second Annual SAABE Picnic

Once again summer is heading our way, so get ready for the second annual SAABE Picnic on Saturday, May 6 out at Medina Lake. Jeff and the guys are working real hard to make this year's event even better than the last. Last year I was a little taken aback by the fact we had more vendor participation than we did engineers. Remember this stuff is for you folks, so please mark your calendars now. Our new location will allow us to camp and swim. I am sure we will have our horseshoe contest and plenty of stuff for the kids. More details to come. ❖

Welcome New Members

Jim Whitten, Robert Hernandez, and Ted Miers

Jim Whitten Roof Consultants
(512) 290-0999
jim@jimwhitten.com

Rick Maxey

Chemico
(361) 533-0964
rhmaxey@direcway.com

Kevin Hoffman

Cross & Company
(210) 385-9771

Jarred Logan

Grubb & Ellis Management Services, Inc.
(210) 546-2132
jarred4777@aol.com

If you know someone who'd like to join SAABE, have them visit our web site at www.saabe.org to obtain a membership application. ❖



Tech Talk #102: Basic Refrigeration Methods

by The Charlie

Part 1 of 2

Refrigeration by Sensible Heat

It is possible to obtain refrigeration effect from a cold substance or object by using the flow of sensible heat from a warmer substance or object to a cooler one, but the method has limitations. One limitation is the small amount of cooling available. Suppose that a block of cold stone (35°F) is used to cool an insulated box the size of a refrigerator to 40°F. The specific heat (described in earlier articles) is about 0.20 Btu per pound. In order to absorb 4,000 Btu, 4,000 lbs. of stone would be needed (about 25 cubic feet). $4,000 \times (\text{specific heat of } 0.2 \text{ times } \Delta T \text{ of } 5^\circ\text{F}) = 4,000 \text{ lbs. of stone}$. The amount of heat absorbed in this example is approximately the cooling capacity that a small home refrigerator would produce every hour. More sensible cooling could be obtained by using a substance, which has a higher specific heat than the stone, such as water that has a specific heat of 1.0. If water were used in the same application, it would take 800 lbs. (approximately 95 gallons), of water.

In addition to only a small amount of cooling, additional limitations are that the temperature of the cold substance limits the lowest temperature obtainable, and a new supply of the cold substance must periodically be available.

Refrigeration by Melting

Refrigeration by melting of a cold substance is much more practical than by the use of sensible heat. If heat flow to a cold substance causes it to change its state from a solid to a liquid, it will absorb latent heat of fusion from a warmer object or substance. This makes available a much large amount of heat removal than is obtainable by sensible heat. Earlier, 800 lbs. of water at 35°F was needed to remove 4,000 Btu when used to cool something to 40°F. The latent heat of fusion of water is 144 Btu per pound; so $4,000 \div 144 = 27.8 \text{ lbs.}$ of ice will absorb 4,000 Btu when the ice @ 32°F is melted to water at 32°F.

In one of the oldest methods of obtaining refrigeration, natural snow, ice from frozen rivers/lakes, was harvested, transported and stored for cooling purposes. Subsequent use of the stored ice created a practical method of melting ice which established the basis for the unit ton of refrigeration (i. e. 1-ton = 12,000 Btuh)!

Refrigeration by Latent Heat of Vaporization

A simple example of heat removal by the latent heat of vaporization can be demonstrated by using two metal paint cans filled with water and placed outside in the sun (one with a lid with a hole for a thermometer, and one with no lid). The difference in the two is that one is tightly covered and one is open. Both cans will absorb heat from the sun. The water in the covered container will become warm. However, the water in the open container will be cooler (perhaps 20-30 degrees cooler), than the closed can. The reason for this is that some

of the water in the open bucket is evaporating. The latent heat of vaporization is being taken out of the water and being carried off in the water vapor. However, this will not produce much useful cooling, and a greater cooling effect could be obtained by substituting with a liquid boiling point. But heat removal by latent heat of vaporization works excellent as part of a system within a cooling tower.

Sensible Heat of Water

Mechanical systems such as heating, cooling, and refrigeration installations commonly transfer heat from one place to another by circulating a medium such as water or air. In the process, the medium is either heated or cooled, the changes in the heat content occurring as changes in sensible heat of the medium without a change of state.

The quantities of heat involved can be calculated by the use of appropriate equations, which take into account the rate of flow of the medium, its specific heat, and its change in temperature. Such equations are often used in testing and balancing, the following one is a common equation when heating or cooling with water:

$$\text{Btuh} = 500 \times \text{gpm} \times \text{TD}$$

- Btuh = rate of heat transfer in Btu's per hour
- 500 = the constant of water where specific heat is 1, the weight is 8.33 pounds per gallon, and there is 60 minutes in an hour ($1.0 \times 8.33 \times 60 = 500$).
- Gpm = the flow rate of water in gallons per minute
- TD = the temperature difference in degrees F between the entering and leaving water (Delta T)

For example, in a hydronic heating system with water flowing at a rate of 5 gpm into the boiler at 178°F and leaving at 200°F there is 55,000 Btuh of heat transfer being put into the system ($500 \times 5 \times (200-178) = 55,000$).

Sensible heat of water can best be illustrated by placing water in a flask at room temperature and atmospheric pressure, sealing the flask, and connecting it to a vacuum pump. The vacuum pump will reduce the pressure within the flask, and the water will boil. If the pressure is sufficiently reduced, the boiling point can be lowered to 50°F, or less! A very practical application of this method is the dehydration, or removal of moisture, from refrigeration systems before refrigerant is added. Another method would be that of an absorber but we'll go into that at a later time.

Next Month: Vapor Compression Cycle

CHARLIE'S LAW: The reason Santa is so jolly is the he knows where all the bad girls live!

JUSTA MAINTENANCE MAN ❖



Communications Check-Up[®]

by Laura Bray

“Demons” Part 1

The English language is filled with words that sound the same but have different meanings (“to,” “too,” and “two,” for example). My junior high English teacher referred to them as “demons.” Here’s part one of a series of articles on how to properly use these confusing words:

Stationery/Stationary: “Stationery” (with an –ery) refers to the paper on which you write letters, as in:

“My mother wants me to write to her, so she bought me a lovely box of stationery for Christmas.”

“Stationary” (with an –ary) refers to something being fixed in position, as in:

“The planets rotate around our stationary sun.”

Remember, -ary is “affixed.”

Stationery: materials for writing

Stationary: fixed in position

Less/Fewer: Use “less” when speaking of a general quantity, as in:

“The weather service is predicting less snow than it did in yesterday’s report.”

Use “fewer” when you’re speaking of a number, as in:

“Therefore, the police department is anticipating fewer car accidents.”

Less: refers to quantity

Fewer: refers to number

“The Elements of Style,” Strunk and White

(Continued on page 5)



TRANE[®]

It’s Hard To Stop A Trane.[®]

3650 Highpoint Drive, San Antonio, Texas 78217
PH – (210) 657-0901 FX – (210) 657-0627

San Antonio: TACLA004724C

<http://www.trane.com>

Scott Meyerkord sameyerkord@trane.com

Ken Dixon krdixon@trane.com

Jeff McCombs jbmccombs@trane.com

Jeff Turov, jturov@trane.com

Equipment Systems

Controls

Parts

Services

Training

Contracting

Cooling Towers

Rental Equipment

January Meeting Summary

by Kendal Langenberg

We started the new year off with a bang at our January luncheon at the Alamo Café! San Antonio Armature Works gave us a very informative presentation on "Electronic Power Equipment That Improves Power Quality and Provides Cost Savings For Your Buildings." We were given a bird's eye view of the latest and greatest developments in power management and the effect that these breakthroughs can have on the functioning of your building and the improvement of your bottom line. A big thank you goes out again to John with San Antonio Armature Works and Mitch with Toshiba for sponsoring our January luncheon and for treating us to an excellent presentation! If you are interested in sponsoring a future lunch, please see Laura or any of the Board members.

In addition to our speaker, the January luncheon featured all of the "regular stuff," too: good food, reminders about all the opportunities for training within our organization, and a charge to again consider where you might help out in SAABE. There are still MANY needs for volunteers in almost every category of our organization. We need YOU to help keep SAABE successful and fresh! Please see Laura or any of the Board members for additional details.

See you at the February 15 lunch! ❖

BRANDT ENGINEERING CO.

11111 Iota
San Antonio, Texas 78217
Phone 210-599-6120
Fax 210-599-7921
Email: rshaner@brandteng.com
dfelts@brandteng.com

Total HVAC Services

- ✓ Preventative Maintenance
- ✓ System Upgrades & Retrofits
- ✓ Engineering Design
- ✓ 24 Hours Emergency Service
- ✓ Building Automation

(210) 599-6120

Ronnie Shaner

David Felts

**Don't Wait... For an
Emergency to get
your BACK-UP Generator
installed or serviced!**

Our factory-trained technicians can service any make & model generator set or automatic transfer switch. We also provide preventative maintenance and customer support agreements. We can even sell or rent you a new or additional set or switch.

Sales: Ed Moseley Service: Todd Moseley

(210) 648-8407



Communications Check-Up

(Continued from page 4)

Affect/Effect: The words are often confused and used incorrectly. Most commonly, "affect" is used as a verb, meaning "to influence," as in:

"Secretary Annan's speech on world hunger affected me greatly."

"Effect" can be used as either a noun or a verb, leading to even more confusion. As a noun, it means "a result," as in:

"The effect of Secretary Annan's speech was a quick trip to the grocery store to purchase a food bank donation."

"Effect" isn't used very often as a verb. In those rare cases, it means, "to bring about" or "to accomplish," as in:

"I effected the transfer of the food by dropping it off at a local church."

Affect (verb): to influence

Effect (noun): a result

Effect (verb): to bring about, to accomplish

"The Elements of Style," Strunk and White

Next month: Listening Skills. ❖

Engineer Spotlight

by Jeff Turov

Rusty Surratt

Facilities Manager/Security Coordinator
Oak Hills Church
19595 IH 10 West
San Antonio, TX 78257
Phone – 210-698-4664
Fax – 210-698-1323
E-mail rustys@oakhillschurchsa.org

- **How long have you been in the building engineer trade?**

One year

- **Any awards, recognition, or special training?**

Rusty was involved in the law enforcement field for many years. His career involved the Canine Unit, the Special Operations Unit, and the SWAT team. During his years of service he received numerous letters of commendation and also received a Life Saving award for saving the life of a 16-day-old baby by performing CPR. This award stands out most in his mind because when the baby had its first birthday, Rusty received a birthday card.

- **What do you enjoy during off-hours?**

During his off-hours Rusty enjoys spending time with his family. He is very involved in his two sons lives and coaches football and baseball teams for both. He also enjoys golfing, hunting, and fishing.

- **Family/children?**

Rusty has been married for thirteen years and has two sons, one seven and the other twelve.

- **What do you enjoy about the building engineer trade?**

What Rusty enjoys most is the new projects that he is constantly involved with at Oak Hills Church. Keeping up with technology is also a challenge he enjoys as he oversees all facility operations.

- **Advice you would share with those just entering or considering the trade?**

Look, listen and learn. Benefit from the knowledge that others are willing to share with you throughout each day.

- **Any interesting stories from your years in the business?**

Since Rusty's change to facility management he has enjoyed the flexibility that this career affords him. He is now able to spend more time with his family and stay involved in his son's lives. ❖



**We can't make these
work with a suit...**



...but we can fix your roof.

**CRAM
ROOFING**

210/691-7815 www.cramroofing.com

The Daily Chronicle

Choose York International for HVAC Needs!

Are you receiving San Antonio's finest HVAC services? We are the local service of York International, a manufacturer of

"Let me show you how York San Antonio Service can get the most out of your HVAC dollars!"

Chris Finger,
Service Sales Representative
(210) 496-6631, Ext. 602

Our People Make the Difference!



What We Offer:

- Quick response 24 hours a day, 7 days a week
- Factory trained technicians
- Experience with all major brands of equipment
- Maintenance Agreements for all your service needs
- Increased reliability through planned maintenance
- Energy Cost Savings
- Engineered enhancements to your equipment
- Solutions to your CFC refrigerant problems
- Chiller manufacturing plant located in San Antonio
- Turnkey equipment replacements

Call today!

 **YORK**

INTERNATIONAL

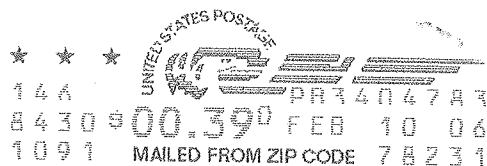
(210) 496-6631

5892 E. Houston St. Suite 101
San Antonio, TX 78220

...and much more!



San Antonio Association of Building Engineers
 PO Box 780785
 San Antonio, TX 78278



RECEIVED FEB 13 2006

Charles Mikolajczyk, Jr., CBE-M
 Endeavor Real Estate Group
 8000 IH 10 W, Suite 250
 San Antonio, TX 78230

SAABE TIMES February Issue

Final Thought:

"The events of life are mainly small events - they only seem large when we are close to them." – Mark Twain

78230+3880-50 C025



2006 Board of Directors

Bob Beal President	830-868-4749
Tom Lasater 1st Vice President	403-8241
Mike Halvorsen, CBE-M 2nd Vice President	979-8002
Kendal Langenberg Secretary	885-5194
JR Uresti Treasurer/SABOMA Representative	495-2195
Jock Tilghman, CBE-J Education Director	681-2494
Allen Mangrum Vendor Representative	
Elena Castillo Past President	822-8570

Laura Bray
 Association Manager
 (laurabray@braycommunications.com) 408-1699

Membership Luncheon February 15, 2006

Time: 11:30 a.m.

Location: Alamo Cafe on 281
 Program to be Announced

Upcoming Program:
 Wednesday, March 15
 Program to be Announced

The SAABE Times is edited by Laura Bray and printed monthly for the San Antonio Association of Building Engineers by:



210-340-5454
 email: inkspotink@sbcglobal.net