



SAABE TIMES

A Publication of the San Antonio Association of Building Engineers

February, 2002

Education Corner

by Kenny Aguilar

Mark Your Calendar — How To See Lighting From The TCOO Perspective...

Our February luncheon will be sponsored by Voss Lighting / Philips Lighting. The local Philips representative, Bryan Lesch, will be showing us how one needs to see things from the TCOO (Total Cost Of Ownership) perspective when evaluating any lighting system. This is important because there are several components to the cost of lighting and each component is crucial to an accurate lighting system cost assessment.

Bryan has been in the electrical field since 1984 and has lived in San Antonio since 1990. He has been with Philips for the past two years. Philips is the largest lighting manufacturer in the world and has been around since the 1800s. Philips is committed to continued product improvements and innovative breakthroughs, especially when it comes to saving the end user (i.e. building engineer) in his bottom line. Come on over to the Old San Francisco Steakhouse on Wednesday, February 20 and hear how understanding TCOO could help you in your bottom line!

Classes being offered:

Chillers—Operation and Maintenance of Chilled Water Systems: Feb. 26-28 Houston, TX, March 19-21 San Antonio, TX; NTT, 800-922-2820.

Basics of Industrial Electricity: March 5-7 Houston, TX, March 19-21 Dallas, TX; NTT, 800-922-2820.

Molds and Fungi Part 1: San Antonio TX, 2/12/02, 8 hrs. Addresses indoor air quality issues regarding mold and fungi. You will learn to make reasonable judgment as to whether the situation can be managed by in-house personnel in this course. Texas Engineering Extension Service, Cost is \$200.00. Call 210-208-9300 for information.

Molds and Fungi Part 2: San Antonio, TX. 2/13-2/14/02. Cost \$345.00. In this course you will get a basic understanding of the techniques and protocol necessary to collect mold and fungi samples as well as necessary steps and techniques required to remediate mold and fungi contaminated areas. You will learn to make reasonable judgments as to whether the investigation and remediation can be conducted by in house personnel.

The San Antonio chapter of the Refrigeration Service Engineers Society (RSES) will be hosting the 52nd Annual Southwestern Regional Educational Conference on March 14, 15 and 16, 2002. Events and Educational sessions scheduled during this conference are as follows:

- A tour to a nearby HVAC duct fabrication and insulation company.
- A/C Tune Up
- OSHA Orientation
- Mold I
- Time Management for all service oriented people
- Air Flow Measurement
- Fans and Blowers
- Mold II
- Compressor Failure
- Selection & Use of Alternate Refrigerants

Make plans now to attend. For more information, contact RSES Chairperson, Elena Castillo, 822-8570 or email: silverfox0001@earthlink.net.

A Message from the President by Elena C. Castillo

Sick Building Syndrome (SBS)

Sick Building Syndrome (SBS) is a term used to describe situations in which building tenants experience acute health and comfort effects that appear to be linked to time spent in a building or office space, but no specific illness or cause can be identified. The complaints may be localized in a particular room or office, or it may be widespread throughout the building. On the other hand, the term "Building Related Illness" (BRI) is used when symptoms of an illness are identified and can be attributed directly to airborne building contaminants.

A report by the World Health Organization Committee in 1984 suggested that up to 30 percent of new and remodeled buildings worldwide could be the subject of excessive complaints related to indoor air quality (IAQ). Often this condition was temporary, but some buildings had long-term problems. These problems were a result of a building being operated or maintained in a manner that was inconsistent to its original design or operating procedures. Sometimes indoor air problems were a result of poor building design or occupant activities.

Some problems of SBS included and still include occupants complaining of discomfort, such as headaches; eye, nose, or throat irritation; dry cough; dry or itchy skin; dizziness and nausea; difficulty in concentrating; fatigue; and sensitivity to odors. However, the causes of these problems are unknown, and most of the people complaining seem to report a relief immediately after leaving the building.

BRI indicators include occupants complaining of symptoms such as cough, chest tightness, fever, chills, and muscle aches. These symptoms are clinically defined and have clearly identifiable causes. Sometimes the complainants require a prolonged recovery time after leaving the building. Other symptoms may include an illness contracted outside the building, allergies, job related stress, or other psychosocial factors.

Some causes of Sick Building Syndrome can be attributed to:

- **Inadequate ventilation.** In the early and mid 1900's, building ventilation standards called for approximately 15 cubic feet per minute (cfm) of outside air for each building occupant, primarily to dilute and remove body odors. As a result of the 1973 oil embargo, however, national energy conservation measures called for a reduction in the amount

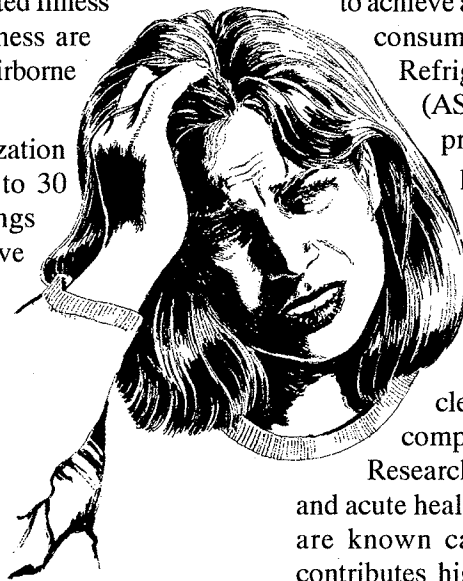
of outdoor air provided for ventilation to 5 cfm per occupant. In many cases these reduced outdoor air ventilation rates were found to be inadequate to maintain the health and comfort of building occupants. Another factor was that HVAC systems might not effectively distribute air to people in the building. As a result, in order to achieve an acceptable IAQ while minimizing energy consumption, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) revised its ventilation standard to provide a minimum of 15 cfm of outdoor air per person (20 cfm/person in office spaces).

- **Chemical contaminants from indoor sources.** Indoor air pollution in an office building comes from adhesives, carpeting, upholstery, manufactured wood products, copy machines, and pesticides. Some cleaning agents may also emit volatile organic compounds (VOCs), including formaldehyde.

Research shows that some VOCs can cause chronic and acute health effects at high concentrations, and some are known carcinogens, i.e. tobacco smoke, which contributes high levels of VOCs. In the home, low to moderate levels of multiple VOCs may produce acute reactions. Combustion products such as carbon monoxide, nitrogen dioxide, can come from unvented kerosene and gas space heaters, woodstoves, fireplaces and gas stoves.

- **Chemical contaminants from outdoor sources.** Indoor air pollution can also be attributed to outdoor air that enters a building. Some examples are motor vehicle exhausts, plumbing vents, and building exhausts (bathrooms and kitchens). These pollutants can enter the building through poorly located air intake vents, windows, and other openings.

- **Biological contaminants.** These include bacteria, molds, pollen, and viruses, which may breed in stagnant water, or collected on damp ceiling tiles, carpeting, or insulation. Sometimes dead insects or bird droppings can be a source of biological contaminants. Physical symptoms related to biological contamination include cough, chest tightness, fever, chills, muscle aches, and allergic responses such as mucous membrane irritation and upper respiratory congestion. One indoor bacterium, *Legionella*, has caused both Legionnaire's Disease and Pontiac Fever.



continued on page 4



January Luncheon Summary

Employment Opportunity —

by Kendal Langenberg

Chief Engineer Wanted

The national real estate management firm of Jones Lang LaSalle has a full-time CHIEF ENGINEER position available at a 465,000 square foot, Class A, owner occupied facility in San Antonio. The facility includes open-plan office space, corporate data center, and full service café.

Primary responsibilities include overseeing the efficient operation of building systems, management and professional development of the engineering team, and effective communications with the Facility Manager of all conditions affecting building services and the occupant's comfort and safety. Specific areas of responsibility include performing maintenance, troubleshooting, and repair on low and high voltage switchgear, motor control centers, transformers, motors, automatic transfer switches, UPS batteries, PDU's, and related equipment, as well as the management of alterations for interior improvements.

Other requirements include excellent skills in the areas of customer service and tenant relations, preventative maintenance, purchasing and inventory control, contracted maintenance, general maintenance, and computer proficiency.

This position includes a strong benefits package and competitive compensation.

Qualified and interested candidates may fax their resume to: The Group Manager at (972) 717-1948 or mail to: Jones Lang LaSalle 300 E. Carpenter Frwy, #150 Irving, Texas 75062.

Mike Tyler of City Public Service had a great presentation for us at the first General Membership Meeting of the new year. He walked us through the details of deregulation and its potential effect on all of us here in San Antonio. As it stands now, since municipally-owned CPS is exempt from mandatory deregulation, the city council has opted to delay deregulation of the San Antonio market until at least 2003. This will allow some time for evaluation and research just to make sure that deregulation in our city will not be disastrous as it has been in other cities and states. Caution is a good thing; we can wait as long as we wish to enter the deregulated marketplace (or never do it) but once we "opt in" there is no turning back. Thanks again, Mike, for your time, effort, and support in providing our meeting program. Also, a special thank you is in order for Doug Graves who stepped in and ran the meeting in Elena's absence. We would love to see all of you at our next luncheon at the Old San Francisco Steakhouse on Wednesday, February 20th!

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Questions people ask me, and my answers.

By Dan Marsh
658-0900

1. I heard Automated Logic makes a direct replacement panel for the Johnson DSC 8500?

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2. Dan, what is your background?

Answer: I have over 22 years in mechanical service, specializing in controls the last 12. Before coming to Alamo Controls, I spent time in the Semiconductor Industry at Micron Technologies and Intel, managing controls start-up in their Fabs. Last year in May I received my Bachelor of Science Degree in Business, so whatever mechanical or controls problems you have, I'm confident I can find a solution for you here at Alamo Controls.

Please send any questions or comments to,
Alamo Controls Inc.
Dan Marsh - Service Sales Manager
848 West Byrd Blvd.
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Ten Things You Should Know About Mold

1. Potential health effects and symptoms associated with mold exposures include allergic reactions, asthma, and other respiratory complaints.
 2. There is no practical way to eliminate all mold and mold spores in the indoor environment; the way to control indoor mold growth is to control moisture.
 3. If mold is a problem in your home or school, you must clean up the mold and eliminate sources of moisture.
 4. Fix the source of the water problem or leak to prevent mold growth.
 5. Reduce indoor humidity (to 30-60%) to decrease mold growth by: venting bathrooms, dryers, and other moisture-generating sources to the outside; using air conditioners and de-humidifiers; increasing ventilation; and using exhaust fans whenever cooking, dishwashing, and cleaning.
 6. Clean and dry any damp or wet building materials and furnishings within 24-48 hours to prevent mold growth.
 7. Clean mold off hard surfaces with water and detergent, and dry completely. Absorbent materials such as ceiling tiles, that are moldy, may need to be replaced.
 8. Prevent condensation: Reduce the potential for condensation on cold surfaces (i.e., windows, piping, exterior walls, roof, or floors) by adding insulation.
 9. In areas where there is a perpetual moisture problem, do not install carpeting (i.e., by drinking fountains, by classroom sinks, or on concrete floors with leaks or frequent condensation).
 10. Molds can be found almost anywhere; they can grow on virtually any substance, providing moisture is present. There are molds that can grow on wood, paper, carpet, and foods.
- If you have IAQ and mold issues in your school, you should get a copy of the [*IAQ Tools for Schools Kit*](#).

Source: www.epa.gov

A Message from the President

continued from page 2

An investigation on a building can be performed to determine where the problem lies. The procedure begins with identifying and solving air quality complaints and prevents them from recurring by determining the most appropriate corrective action. This involves four basic factors that influence the indoor air quality: the occupants, the HVAC system, possible pollutant pathways, and possible contaminant sources. A walkthrough should include documenting about the history of the building and of the complaints, identifying problem HVAC areas, and identify key individuals needed for information. Steps should be taken to formulate hypotheses, testing them, and evaluating them until the problem is solved.

Finally, the solutions to Sick Building Syndrome include combinations of the following:

- Pollutant source removal or modification. Clean or replace filters as needed, replace water-stained ceiling tile and carpeting, establish smoking restrictions, vent contaminant source emissions to

the outdoors, proper storage and use of paints, adhesives, solvents, and pesticides.

- Increase ventilation rates. Often this can be a cost effective means of reducing indoor pollutant levels. When there are strong pollutant sources, local exhaust ventilation may be appropriate to exhaust contaminated air directly from the building, for example, restrooms, copy rooms, and printing facilities.

- Air Cleaning. High performance air filters capture the smaller, respirable particles but may be relatively expensive to install and operate.

Finally, education and communication are the important elements in both remedial and preventive indoor air quality management programs. When building occupants, management, and maintenance personnel fully communicate and understand the causes and consequences of IAQ problems, they can work more effectively together to prevent problems from occurring, or to solve them if they do.

Source: www.epa.gov

Heard It Through the Grapevine



- **Marley Garrett** is now the SAABE representative for Roy C. Garrett, Inc.
- **Dan Watson** and **Jeff Froboese** are now the SAABE representatives for Nathan Alterman Electric.
- **David Rodriguez** is now with Orion Partners, as building engineer at Brookhollow Park.
- **Paul Thompson** is now with The Trane Company.
- Tolin Mechanical has added two additional representatives from Travis Park Plaza: **Phil Harbin** and **David Gifford**.
- Brandt Engineering has added **Matthew Dunn** as an additional representative.
- S&H Realty has added **Joe Carranza** as an additional representative from the Spectrum Building.
- **Tomas Lobo** has been added as an additional representative for CityView.
- Ward Systems has added **Dan Himel** as an additional representative.
- **Matt Accardi** has been added as an additional representative from Blackmon Mooring Steamatic.

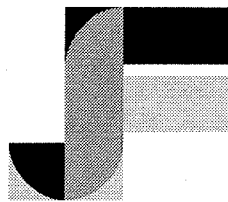
SAABE Welcomes New Members

Associate:

ThyssenKrupp Elevator
 Mark Bice
 1077 Central Pkwy S, Suite 300
 San Antonio, TX 78232
 Phone: (210) 495-8585

Regular:

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 Mike Halvorsen and Luis Villarreal
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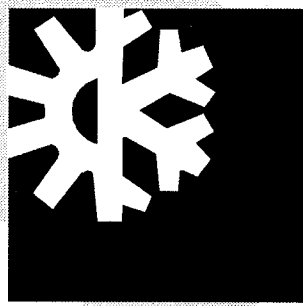
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Improving HVAC System Performance!

(Part Three of Four)

System Improvements

More extensive system improvements can be considered, but these are more expensive. As mentioned earlier, annual energy savings alone is not enough alone to justify making large-scale changes to HVAC systems. However, if the system is being replaced because of age or condition, then it is time to consider systems that provide greater energy efficiency. Here are some upgrade ideas:

Economizer: High internal heat gains often require air conditioning systems to operate even during periods of mild to cold weather. An economizer system uses large quantities of outside air to meet the cooling load rather than operating the mechanical cooling system. This involves providing additional controls to evaluate outside versus indoor air (some systems only measure temperature while others also measure humidity conditions), and ductwork to allow up to 100 percent outside air to be brought into the building, and an exhaust or relief fan. Certain areas such as computer rooms should not be considered for economizers because of their special environmental requirements.

Variable Air Volume: A large amount of systems were designed as constant-volume. Constant-volume systems always deliver the same quantity of air, and the air temperature is changed to control room conditions. Therefore, all spaces receive the same conditions, even rooms that are not occupied. A variable air volume (VAV) system maintains a constant supply air temperature and varies the amount of air delivered to each space. Therefore, spaces requiring less cooling receive less airflow, while those requiring more cooling receive greater airflow. VAV systems save energy because it is unusual for all spaces to require full cooling at the same time.

Heat Recovery: Heat recovery is a general term relating to the useful application of heat that normally would be wasted or exhausted from the building. Heat recovery is often cost-effective in industrial facilities, but is not usually cost-effective in commercial buildings because of the low temperature and small quantities of exhaust from them. One exception is commercial kitchens or restaurants, where exhaust from the kitchen can often be used for heat recovery. For heat recovery to be successful, three requirements must be satisfied: a heat source; a heat target, or use for the heat; and for these two requirements to occur at the same time.

Thermal Storage: Most managers are more interested in conserving money than conserving energy. Thermal storage systems save money in the form of monthly operating expenses. Thermal storage systems are ice-making systems that are employed at night to produce ice that can then be melted during the day to provide a chilled water source for air conditioning.

However, in some cases thermal storage systems can actually use more energy than conventional systems, since making ice is more energy-intensive than producing chilled water. However, since the system operates at night during off-peak periods, this strategy can be less expensive if it is coupled with an off-peak power rate.

Part-Load Boilers and Chillers: HVAC systems are selected to meet the buildings heat loss and gain during design weather conditions, or the coldest and hottest times of the year. For this reason, individual boilers and chillers tend to be oversized for most of their operating times.

In order to better track changes in the weather, many engineers are now designing systems with multiple boilers and chillers. One unit can be sized for 75-80 percent of the design load, while another is sized for part-load performance, or roughly 30-40 percent of the full load. This allows the operator to select which unit to operate based on energy-efficiency performance. When the weather requires full capacity, both units operate; during spring and fall, only the smaller unit operates. However, more times than none, these systems are designed as a series system as opposed to a parallel system; additionally, Murphy's law will always break the larger unit during times in which it is needed leaving the smaller unit too undersized to produce the design chilled water temperature.

In addition, some systems also use the boiler to provide domestic hot water. Building operators can install and operate a summer boiler where they had to operate a large boiler during the summer to produce domestic hot water.

Next Month: Energy Management

CHARLIE'S LAW: Do not follow a beaten path. Instead, go where there is no path. And leave a trail!

JUSTA MAINTENANCE MAN



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of Building Engineers**
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**SAABE TIMES
February Issue**

Final Thought —

“Nothing is foolproof to a sufficiently talented fool.”

2002 Board of Directors

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Association Coordinator (lynnfor@mindspring.com)

**Membership Luncheon
February 20, 2002**

Time: 11:30 a.m.

Location: Old San Francisco Steakhouse

Program: Lighting from the TCOO Perspective

Sponsor: Voss Lighting/Philips Lighting

Upcoming Luncheon:

March 20, 2002

Program: Building Engineer of the Year Award
This year's nominees are Danny Gonzalez,
Mo Serros, and Paul Thompson

The SAABE Times is produced monthly for the San Antonio Association of Building Engineers by:



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