EMA'S ENGINEERING TODAY

Providing Solutions that Deliver Results

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Information and Helpful Hints For School Districts and the Architects who serve them.

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Estes, McClure & Associates, Inc.
Engineering and Consulting

Are You Seeing Blue or Orange?

Helpful Hints for Boiler Maintenance

With winter approaching, boilers will be getting fired up soon. To keep boilers operating at peak efficiency, a maintenance program should be implemented and continued throughout the heating season.

Blue flames can indicate efficient burner operation.

Two procedures to complete annually include combustion gas analysis and thermographic inspection. The **combustion gas analysis** uses flue gas samples to determine boiler efficiency. The composition of flue gas is an indicator of efficiency. While some excess air helps ensure complete combustion, too much translates into energy waste. **Thermography**, e.g. an infrared camera, allows for non-contact measurement of surface temperatures. The results can be used to assess the condition of tank and piping insulation as well as motor bearings in hot water pumps.

Boilers should also be checked often throughout the heating season and a log kept to track potential problems. Some items to include in the regular inspections include:

- Conduct a visual inspection to look at overall condition and check for leaks.
- Ensure that water levels, temperatures, and pressures are within guidelines.
- Check burner flame color. (Orange flames can indicate inefficient burner operation.)
- Inspect combustion air openings to ensure they are unobstructed.
- Confirm that water treatment systems are operating properly.

Regular inspections can improve operation, efficiencies, and safety. Of course, all testing should be completed according to manufacturer's recommendations.

Improving Power Factor Can Lower Penalty Charges

Power factor is a measure of how efficiently electrical equipment uses the power supplied to it. Many devices consume power that cannot be converted to usable work (e.g. lighting a bulb or turning a motor). Electric circuits must still have the capacity to carry this "unusable" power.

Why does the utility company care what your buildings' power factors are? The more power a facility requires, the larger the service wires and transformers must be. Similarly, feeder lines, substation transformers, and transmission lines must all be bigger. Therefore, higher power factors allow existing power systems to carry more power. Electric utility power factor surcharges are based on the combined power factor of all equipment connected to a given meter. If the power factor falls below a certain level, typically 90% to 95%, some utilities impose a surcharge.

One north Texas school district installed power factor correction capacitors at their high schools. They saved approximately $4000 in surcharges in a recent billing month when compared to the previous year..

A building's power factor can be improved in several ways. First, when given the option, purchase equipment with higher power factors. Second, consider adding variable speed drives (VFD) to large motors and chillers. These options involve higher first costs, but may raise a building's overall power factor and lower any penalty charges. Finally, the addition of power factor correction capacitors may be needed if other measures have already been taken or are not applicable. Capacitors are typically installed at the main electric panel. Costs for the installations generally range from about $10,000 to $40,000, depending on the size of the facility.

EMA Receives Chamber Award

Estes, McClure & Associates, Inc. was named Small Business of the Year by the Tyler Area Chamber of Commerce at their annual meeting. James McClure, CEO, and Mike Clendenin, President, were present to accept the award on behalf of the company. Approximately 500 business and community leaders attended the event.

Mike Clendenin and James McClure accept award.

Baldwin Named Honorary TEMA Member

Glenda Baldwin was recently named an honorary member of the Texas Energy Managers Association (TEMA). Mrs. Baldwin served as a Program Manager at the State Energy Conservation Office in Austin for many years. She was instrumental in developing and coordinating SECO's School Partnership Program.

Rebecca Corderio (Spring Branch ISD), Glenda Baldwin, Victor Melton (CFB ISD)

Carrollton-Farmers Branch ISD Recognized for Energy Efficiency

Carrollton-Farmers Branch ISD has been recognized by the U.S. Environmental Protection Agency as an Energy Star Leaders Top Performer. To receive the award a district's buildings must be, on average, more energy efficient than at least 75 percent of the schools in the country.

CFB ISD utilizes energy efficient design practices and personal contact to improve its overall energy efficiency. Programs such as TEAMS, Watt Watchers, and Kitchen Watchers get both staff and students involved in energy conservation efforts.

ENGINEERING
Air conditioning
Communications
Controls
Electrical
Energy
Lighting
Mechanical
Plumbing
Technology

CONSULTING
Communications
Emergency power
Energy
Fire/Safety
Lighting
Master planning
Media
Research studies
Sustainability
Security
Technology
Workshops/Training

SCHOOL EXPERIENCE
35 years service
585 Texas ISDs
47 colleges and universities
Other schools throughout the country

EMA can assist with your bond election, whether passed or planned. Call Gary Bristow to address building MEP and energy.

Test Your Knowledge

1. Boilers are fired with excess air as a ___.
   a. safety factor
   b. noise factor
   c. power factor
2. One kilowatt (kw) of lighting load adds ____ of internal heat to a building hourly.
   a. No amount
   b. 3,413 Btu
   c. 5 degrees
3. For boilers the ____ temperature and ____ gas concentrations are primary indicators of combustion efficiency.
   a. boiler room, fuel
   b. stack, flue
   c. outside, natural
4. Orange colored flames from boiler burners are an indicator of inefficiency.
   a. true
   b. false

1.a, 2.b, 3.b, 4.a

COMPANY SPOTLIGHT

Clint Johnson, Amber Phillips, Matt Hensley, and Cammy Hensley participated in the White Cane Day walk in downtown Tyler. The event is intended to celebrate the accomplishments of the blind and visually impaired and emphasize the importance of the white cane to blind people's independence.

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