

## Lawrence comes to Arabia

ASHRAE Distinguished Lecturer to lead workshop on LEED ratings and sustainable design practices...

**A**SHRAE Emirates Falcon Chapter (EFC) on June 5 will host a full-day workshop on Green Buildings at the Courtyard by Marriott Dubai Green Community.

Dr Tom Lawrence, PE, Senior Editor of ASHRAE GreenGuide, will be conducting the workshop. "The objective of the workshop is to provide a practical introduction to sustainable building design practices," said Bassel Anbari, President of EFC. "It will overview the state-of-the-art in Green Building and sustainable design practices, and the ASHRAE GreenGuide. While primarily focused on topics of interest to heating, ventilation, air-conditioning and refrigeration engineers (HVACR), the workshop will also discuss other topics to provide insight into a fully integrated building design process and systems."

Topics that will come up for discussion include...

- 1) Overview of Green Building and Sustainable Design
- 2) The ASHRAE GreenGuide

- 3) Green Building Rating Systems and Standards
- 4) Green Building Design Process
- 5) Green Building Design specifically related to HVACR Engineers

Dr Tom Lawrence, a LEED-AP, has a PhD in Mechanical Engineering from Purdue University. He is vice-chair of ASHRAE Technical Committee 2.8, "Building Environmental Impact and Sustainability". He is a member of the committee writing an ASHRAE standard on high-performance green buildings (SPC 189), and is an ASHRAE Distinguished Lecturer on sustainable design topics. Dr Lawrence has presented papers on building energy consumption and IAQ at conferences in the US and Europe, and published papers on sustainable design and energy usage in buildings in such journals as *ASHRAE Journal*, *Solar Today* and *Buildings and Environment*.

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Dr Tom Lawrence

## Field-trip to Fujairah

ASHRAE EFC members visit the Perma-Pipe Middle East factory to observe pre-insulation processes

**M**embers of ASHRAE EFC on April 22 went on a field trip to the Perma-Pipe Middle East factory in Fujairah. The factory produces pre-insulated pipes for district cooling, industrial, and oil and gas industries. The facility handles, insulates and jackets pipes from two inches to 72 inches in diameter. It can apply 10 inches of insulation and provide insulation and jacketing of up to 2,000 metres of straight pipe every day.

During the visit, members had the opportunity to observe and understand the process of pre-insulation. While placing insulation on to a pipe is a fairly easy, resolving issues, such as what type of insulation to use and how much, are not so easy. Insulation is available in nearly any material imaginable. The

most important characteristics of any insulation material include a low thermal conductivity and a low tendency towards absorbing water.

During the field trip, members had the opportunity to view Perma-Pipe's Xthru-Therm manufacturing process to produce polyurethane-foam insulated piping systems for district cooling applications. In contrast to the commonly used foam-injected insulated piping systems, the Xtru-Therm spray process assures void-free insulation, which aids in thermal efficiency. The cell structure of spray-applied foam demonstrates lower thermal conductivity and improved compressive strength.

The Xtru-Therm piping system includes three distinct processes, which are merged into a continuous line operation. The in-feed conveyor and loading arms

put the pipes through the Autotherm process. The pipes are usually coated with steel mill varnish or, if specified by a customer's contract, an anti-corrosion coating, such as fusion bonded epoxy. Rigid polyurethane insulation is sprayed on to the surface of the pipe continuously.

The extruder, barrel and die convert room temperature pellets into a hot molten sheet of HDPE. The hot HDPE leaves the extruder die in a thin sheet and fuses tightly to the thin activated PE film and PUR foam insulation. The roller on the back side of the pipe presses and fuses the hot HDPE sheets into a thick, uniform jacket. The hot HDPE jacket is quenched by water, until it reaches room temperature. During the cooling process, the bonded jacket shrinks tightly against the PUR insulation. --Leena Mathew