



New Location

Environmental Technology, Inc. is most likely making a move to a modern 25,000 square foot office and manufacturing facility here in South Bend, near the Michiana Regional Airport. Current plans call for moving early in the first quarter of 2005. Since access to 1302 High Street will be available throughout the move and for a month, or so, thereafter, shipping will not be interrupted.

The move to the new facility is not without its regrets. Although the High Street location is totally obsolete for our current activities, the old building has given many years of good service. It has more than a few good memories associated with it. Moving from High Street marks the end of an era for Environmental Technology.

High Street was originally a three-story brick furniture factory with wood floors. It was built in four sections: the first three sections were completed by the early 1900's and the final part in 1938. It has 247 windows. The main building consists of nine sections isolated by brick fire walls and fire doors along with a single story warehouse. A dry sprinkler system was installed around 1920.

Occupying this building has not been without its thrills. A few years ago, lighting struck the warehouse during working hours causing a small fire. As if that was not enough excitement, in July of 2003, a down burst or a weak tornado accompanying a severe thunderstorm took off the roof of the warehouse causing much water damage but no injuries. During this event, everyone huddled in the basement for protection. Shipments began the next day even though electric power was not restored for nearly a week. Environmental Technology avoided disaster through the extraordinary efforts of its employees and key vendors.

Design Aid Program

The first of a series of computer design aids for snow melting systems, DAP-3, is now available on www.networketi.com. The user specifies the number of square feet in the system, the number of watts per square foot and the heater supply voltage. DAP-3 then calculates the minimum number of APS-4 and SC-40 Satellite Contactors needed to switch the heating load. Each APS-4 and or SC-40 is loaded to 100% capacity before an additional contactor is added. DAP-3 can also play "what ifs" to help optimize the control configuration. For example, using an extra SC-40 may reduce system costs by using less copper.

DAP-3 costs nothing to use, so why not experiment with the program? After a few minutes, insight will be gained into the effects that various parameters have upon control complexity.

Safety Testing

Since Environmental Technology sells its HVAC/Construction products both in Canada and the US, they must be tested to meet appropriate safety standards set by each country. Currently UL tests electronic sensors and controls for the US and for Canada as an NRTL. CSA tests heater products for Canada as an NRTL for the United States.

Scheduling uncertainty and very long lead times at UL make it necessary to change this practice. In the future, all new products will be tested by CSA for Canada and as an NRTL for the U.S. Thereafter, UL will be contracted to do the paper work necessary to list the products, which will give both UL Listing and CSA Certification.

New Products Intro

The introduction of several new products had to be re-scheduled for January 2005. For a variety of reasons, this decision was unavoidable. The wait will be worthwhile. These new products will open new markets by providing a new exceptional value for a variety of mid-range snow applications.

Scanning This Issue

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Book Review

Snow melting is such a specialized endeavor that books dealing with this subject are exceedingly rare. When a search of Amazon.com turned up "Snow and Ice Control Manual for Transportation Facilities" by L. David Minsk it was a must have if for no reason better than curiosity. After paying \$59 plus a few dollars for shipping and waiting for several weeks the book arrived.

As the title implies, this book focuses on transportation facilities. However, don't let title mislead you. Although it may take a little searching to find gems of wisdom that apply to your particular non-transportation application, its worth the trouble. If nothing else, this book makes an interesting read for those involved in snow removal.

The book is written from the viewpoint of the practitioner and not the scientist. Calculations involve nothing higher than elementary algebra. The author's writing style is logical and easy to follow. The book cites numerous references along with a glossary of snow removal terms. These two items are probably worth the cost of the book.

As you might suspect, highway and bridge snow removal receive special emphasis. The author devotes substantial space to the unique characteristics of these applications including chemicals, heavy equipment, removal techniques and snow removal objectives. Railroad and airport snow control have their own chapters.

While the first three chapters have the greatest concentration of general interest material, the second is quite

useful. It contains climatic data along with information describing the properties of snow and ice. The third chapter includes sections dealing with thermal control and drifting.

In conclusion, this book was well worth \$59. It can be purchased online from Amazon.com or ordered from your local full service book store. It's published by McGraw-Hill and has the file number ISBN-0-07-042809-3.

Sno-Talk

This month's topic is safety, relating to roof and gutter deicing applications. Although seldom discussed, due to fear of litigation, safety is an important issue of concern to all freeze protection professionals.

During the past two years, ETI personnel have observed two wet fires in the process of starting! Both were interrupted before causing property damage. Both were caused by improper installations that were not NEC compliant. Both could have caused fire catastrophes — one at a church and the other at a residence. Both were completely avoidable.

Before diving into forensics of these near disasters, some background information will be useful. A wet fire occurs when an arc or arc track develops between the current carrying conductors or between a current carrying conductor and ground. Experience indicates that all types of heater construction can be susceptible to a wet fire — even

mineral insulated heaters. Modern heater construction and NEC requirements have essentially eliminated the wet fire problem. Heaters are now constructed using self-extinguishing polymetric or refractory insulating materials. That is, the insulation will not continue to burn in the absence of a flame or other high-energy source. The NEC and all heater safety standards require that the heater be shielded with a braid or enclosed within a metallic tube. Both the shield and the metal tube must be grounded. This fundamental safety scheme ensures that the current resulting from an insulation failure flows to the ground.

The final term in the safety equation is either a GFCI (ground fault circuit interrupter) or a GFEP (ground fault equipment protection). Upon sensing a ground current exceeding a threshold value, 6 MA in the case of a GFCI and 30 MA when using a GFEP, voltage to the heating cable is interrupted thus removing the energy necessary for continued combustion.

Safety requires using a shielded heater in combination with a GFCI or GFEP device. The shield must be grounded or it will not perform its safety function.

The first wet fire was caused by an installation error. The heater shield was not grounded! The heater insulation was damaged which allowed water to enter. The water breached the insulation thus forming a conductive path. The problem was discovered before the fire began.

Steam from the heated water was discovered by the homeowner who had the common sense to pull the circuit breaker on the problem heater. This heater was protected by a GFEP. The ground current had not reached the 30 MA trip point of the GFEP.

The second problem occurred in a segment of cable used to keep a drainage path through the downspout open. Apparently, the end of the cable that was routed through the downspout to a distance approximating the frost level had deteriorated due to extensive submersion or a chemical attack of some kind. The wet fire had started on the cable. As in the previous case, someone at the church spotted smoke and pulled the circuit breaker supplying voltage to the defective heater.

Examination revealed that none of the 30, or so, circuit breakers controlling the system had been equipped with GFCI protection as is required by the NEC. Luck prevented serious property damage and potential loss of life.

The conclusions drawn from these two cases is each was preventable. In the first case, lack of training was the culprit. In the second case, allowing economic considerations to prevail was the root cause. In both cases, neither ETI nor heating cable installation instructions were followed which in itself violated the NEC. Neither installation was NEC compliant. Either of these problems could have resulted in the loss of lives and property.

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