Technology As If The Earth Mattered

Fall 2011

110 South Albany Street
Ithaca, New York 14850
607-277-1118
www.taitem.com

## from Ian's desk

Heraclitus or Isaac Asimov or somebody once said "the only constant is change" or something like that. How do we respond to this constant change? I hope with some combination of flexibility, two feet on the ground, and as much professionalism as we can muster.

At Taitem, we have been flexing our flexibility with new services, trying to stay grounded in quality work and professing to the humility wrought by a rocky economy. In all the tumult, I am extremely proud of our findings relating to the water and energy losses of bath diverter-valve leaks, our work on window energy losses, a paper on the selection of HVAC systems for high-performance buildings (*ASHRAE Journal* in October), and so much more.

Meanwhile, our Thursday basketball game has picked up some great players. If you want to join us, head over to Henry St. John at noon. See you there!

-Ian Shapiro, President

## news


- Taitem Engineering has registered its office at 110 S. Albany Street under the **USGBC LEED® for Existing Buildings**, Operations and Maintenance rating system. LEED-EB measures the **environmental responsibility** of a building's operations and maintenance, and upgrades of existing buildings. We are targeting **Gold certification**, which is the second-highest classification under the LEED rating system.
- The MaineSource Food and Party Warehouse in Ithaca is the first grocery store in the Finger Lakes to achieve **LEED Silver certification,** and Ithaca City leaders say earning the award is a breakthrough for businesses. Taitem played an integral role in guiding MaineSource through understanding and achieving many of their LEED points.
- Taitem has been awarded a statewide contract for the NYSERDA Flextech Benchmarking Pilot. Under this contract, Taitem is developing site-specific **benchmarking and assessment reports** to show building owners how operational or system modifications may result in energy savings without significant capital investment.

## staff highlights

### congratulations to...

**Javier Rosa** for receiving certification as a Ground Source Heat Pump Loop Installer by the North American Technical Excellence Organization.

**Dan Cogan** for obtaining licensure as Professional Engineer in New York State this January, bringing the number of registered PE's at Taitem to five.

**Yossi Bronsnick,** who has taken over as head of the Design Department.

**Rob Rosen** for receiving accreditation as a LEED AP BD+C (Building Design and Construction). This accomplishment brings the number of LEED AP's at Taitem to six.

**Crista Shopis** for launching Synairco, Inc.

**Nate Goodell** for receiving certification as an Existing Building Commissioning Professional in May.

**Dominick DeLucia** for receiving certification as a designer of variable refrigerant flow systems from Mitsubishi.

### a warm welcome to...

**Allen Quirk,** Office Administrator

**Jordie van Ham,** IT Support Specialist

**Nick Kirk,** Energy Technician

**Nick Goldsmith,** Energy Manager

**Theresa Ryan,** Project Coordinator

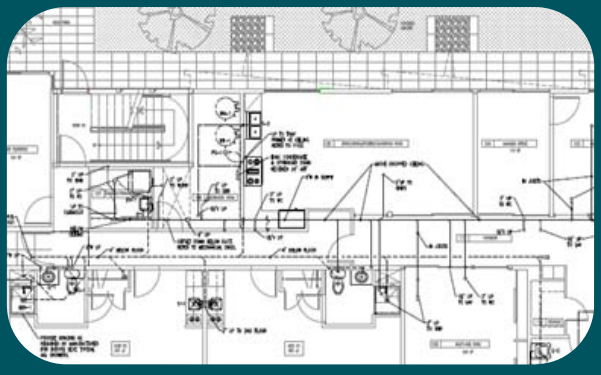
# featured projects

**Maguire Automotive | Ithaca, NY**

Taitem Engineering provided mechanical, electrical, plumbing, and structural design for renovation of an existing car dealership and construction of a new building. Taitem is also providing LEED consulting and construction administration services. This is the first automobile dealership in the United States seeking LEED Platinum certification. The building is expected to achieve LEED Platinum in 2011.

Magnolia House | Ithaca, NY

Taitem's design team has partnered with Travis Price Architects to provide mechanical, electrical, plumbing, and structural design for this new building in Ithaca, NY. The 14-unit home with on-site support services, developed by Tompkins Community Action, will serve single women who are homeless and in recovery from drug and alcohol abuse.



# new services

## aeroseal

Taitem became a licensed Aeroseal contractor in July and created a new business, **Aeroseal of Ithaca**. Aeroseal is a technology for sealing ductwork from the inside out by injecting an aerosolized sealant into the ducts. The **sealant does not stick to the inside of the ducts**. When there is a rapid change in air velocity, the aerosol is deposited, which allows it to seal holes. Holes are filled by the sealant similarly to how blood cells clot to stop a wound.

Duct leakage **can account for as much as 50% of the energy use** in forced air systems, and Aeroseal can reduce leakage by 90%. Manual methods, like mastic and metal tape, cannot get to all of the leaks in a system, such as when ductwork is buried in walls. Taitem is excited to make this service available to residential and commercial buildings in our region.

For more information on Aeroseal email Daniel Cogan, **dcogan@taitem.com**

## solar pv design and installation

Taitem's broad background of experience within mechanical, electrical, and structural engineering, as well as many years of contracting within the trades, has led us into the solar photovoltaic (PV) installers' realm. With our staff's experience and high attention to detail, we decided in June 2011 to add **PV engineering, procurement, and contracting (EPC) to our list of services.** We're looking forward to developing this piece of the business into something that will provide future clean energy design and installation work centered mainly around commercial-size installations. However, we are gladly accepting residential jobs just the same. As **we have seen and continue to see the true benefits of our newly installed PV array**, we're happy to be able to extend this service to our clients.

## new services continued...

We are pleased to announce the formation of a new company, Synairco, Inc, to commercialize President Ian Shapiro's invention of the split-airstream desiccant air-conditioner. Synairco is currently funding to develop the ultra-efficient air conditioner past the prototype phase and has submitted proposals under several programs, including the Small Business Innovative Research (SBIR) program. Synairco has already won seed money through two competitions, the Cornell Big Red Venture Business Plan Competition and New York's Creative Core Emerging Business Competition.

Synairco welcomed summer intern Johanna Bentley, a graduate student who worked on sizing components for the second-generation prototype. She also completed a carbon emissions analysis that showed excellent results. The split-airstream desiccant unit has lower greenhouse gas emissions than any of its competitors.

For more information on **Synairco** email Crista Shopis:
**cshopis@taitem.com**

## community news

Taitem is participating in the 18th Annual Cancer Resource Center Walkathon & 5K Run on October 15. Please come join us and help support the Cancer Resource Center.

Taitem announced a **fundamental commitment to protect the environment** by becoming an ENERGY STAR Partner.

Team Taitem conquered the ropes course at Cornell's Hoffman Challenge Course for this year's annual retreat.

## office locations

110 South Albany Street
Ithaca, NY 14850
(607) 277-1118

116 John Street, Suite 2500, New York, NY 10038
71 Perrine Street, Auburn, NY 13021
365 Town Line Road, Hermon, NY 13652
5625 Route 812, Ogdensburg, NY 13669
480 North Street, Williamstown, MA 01267

## team taitem

Tim Allen
*Senior Energy Analyst*

Yossi Bronsnick, LEED AP
*Senior Engineer, Structural*
*Manager, Design Department*

Mahbud Burton
*Energy Analyst*

Nicole Ceci
*Project Engineer*

Dan Cogan, PE
*Senior Engineer*

Dominick DeLucia
*Engineering Associate*

Susan Galbraith
*Senior Energy Analyst*

Arthur Godin
*Business Manager*

Nick Goldsmith
*Energy Manager*

Nate Goodell
*Project Engineer*

Evan Hallas
*Energy Analyst*

Jim Holahan
*Energy Analyst*

Joy Joseph
*Maintenance*

Betsy Jenkins
*Senior Energy Engineer*

Bill King
*Project Engineer*

Nick Kirk
*Energy Technician*

Beth Mielbrecht
*Senior Engineer*
*Manager, Training Department*

Allen Quirk
*Office Administrator*

Javier Rosa, PE
*Senior Engineer, Structural*

Rob Rosen, LEED AP
*Senior Energy Analyst*

Courtney Royal, LEED AP
*Energy Analyst*

Theresa Ryan
*Project Coordinator*

Fred Schwartz
*Senior Engineer*

Jan Schwartzberg
*Business Development and Information Manager*

Ian Shapiro, PE, LEED AP
*President*

Scott Shipley
*Senior Energy Analyst*

Crista Shopis, LEED AP
*Project Engineer*
*Manager, Energy Audit Services Department*

Umit Sirt, PE, HBDP, CEM-
*Senior Energy Engineer*

Kapil Varshney, PhD
*Manager, Research Department*

Lou Vogel, PE, LEED AP
*Vice President*
*Manager, Green Building Services*

Jordie Van Ham
*IT Support Specialist*

Myron Walter
Senior Engineer, Electrical

## featured tech tip

### leaking showerhead diverters

***Did you know*** that if a diverter valve leaks in shower mode, the water flowing out of the bathtub spout goes straight down the drain, wasting both water and the energy used to heat that water? It's like pouring money down the drain! A diverter is used in combination bath/shower units to direct flow either to the bath tub spout or to the showerhead. Taitem surveyed approximately 130 apartments and houses, which collectively had 120 combination bath/shower units with diverters.

The **largest leak was 3.0 gallons per minute (gpm)**, **and the average of all leaks greater than 0.1 gpm was 0.8 gpm**. Assuming that the showers were used 10 minutes per day, and assuming a savings factor of 0.7 for fixing the leaking diverters, per the results of our research, the sum of the potential water savings would be approximately 89,000 gallons of hot water per year.

**We found that 34% of the diverters leaked more than 0.1 gpm.** Savings from fixing diverters were higher than savings from installing low-flow showerheads! This is not to say that low-flow showerheads should not be installed, but rather to say that **the potential savings from fixing diverters is very high.**

## featured research project

### acoustic method for measuring air infiltration

Air infiltration is recognized as a major source of energy loss in residential and commercial buildings. The most commonly used method for this measurement requires use of **a blower door test, which is expensive, requires large equipment, and is often not available to energy auditors.**

Taitem Engineering has developed a method that is quick, inexpensive, and easy-to-use by measuring **sound transmission loss (STL)** through gaps/cracks in various building components**.** The method is based on the use of a sound source that radiates sound inside the building at a known frequency and two sound-level meters that measure sound intensities inside and outside the building.

When compared with the blower-door method, it is anticipated that using this alternative method could help people to make better decisions about sealing the air gaps in their buildings by quantifying air leakage for different building components. Field -testing results show that **the method has promise to be used to measure air infiltration in a building.**

## tech tip photo

**A leaking diverter allows water to flow out both the showerhead and the tub spout sim-ultaneously.**

**For more information on this Tech Tip, email Betsy Jenkins bjenkins@taitem.com.**

**Click here to view more great Tech Tips by Taitem staff.**

## research photo

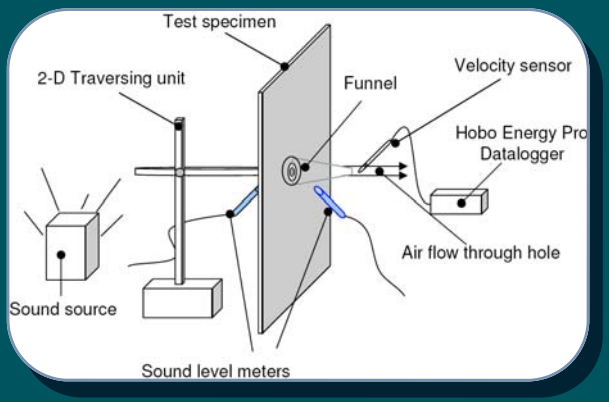



**Diagram of the test rig**

**For more information on this research, email Kapil Varshney kvarshney@taitem.com.**

**Click here to view more great research projects by Taitem staff.**