

## New Apple Store at Grand Central is "in control"

Sadly, Steve Jobs, co-founder of Apple, didn't live to see the grand opening of his company's grandest store. The famous Grand Central Terminal, with its main entrance at 42nd Street and Park Avenue in midtown Manhattan, is now home to the Apple Store Grand Central.

The 23,000-square-foot, premier shopping space now occupied by the Apple Store once housed a restaurant. Roughly 750,000 people pass the store every day while walking through the terminal's main concourse. The store is one of Apple's largest retail locations.

To make every aspect of the "Apple Experience" perfect for shoppers, sweeping renovations to the space included a mechanical retrofit. The project hustled at a New York pace to meet the Dec. 9, 2011, grand opening, just in time to

occupies the north and east balconies of the terminal. Guards are on duty when the sales staff calls it a day.

The lack of doors is in tune with the the wide open floor plan. Stone covers nearly every surface, and the vaulted ceilings make for vast indoor vistas. Choosing a mechanical system was no small task for the unique space.

Two separate HVAC systems were installed, both controlled by Taco's iWorx controls. A few levels below the main concourse, a steam generation plant heats all of Grand Central. A control valve limits the amount of steam that enters the new steam-to-water heat exchanger for the Apple Store. Distribution of heat is accomplished with an extensive radiant in-floor system, with a secondary system of hot water coils to heat several small alcoves.

To make every aspect of the "Apple Experience" perfect for shoppers, sweeping renovations to the space included a mechanical retrofit. The project hustled at a New York pace to meet the Dec. 9, 2011, grand opening, just in time to sell the iPad2 for the holidays.

Apple said that 2,500 people were waiting in line before the opening, and the store had nearly 4,000 visitors before noon.

Apple's fifth store in New York City adds to the company's arsenal of more than 300 locations worldwide. The developer of the iPhone and iPad continues to expand its retail locations, counting on the popularity of its devices and a burgeoning swell of social media activity to drive traffic to its stores. In response, Apple managers have boosted product sales by giving consumers the opportunity to "test-drive" the devices and to interact with Apple experts.

### Keyless entry

At the Grand Central location, there are no doors; two giant staircases lead up to the store, which



A mechanical retrofit of the Apple Store Grand Central in midtown Manhattan was completed in just in time for a holiday season grand opening in 2011.

in large part because of their ability to finish the project by the deadline. Lots of overtime and double shifts kept a large portion of Arista's 150-person crew busy. Grand Central was the fifth Apple location that Arista has completed, and a sixth is close to completion.

### Genius bar

For the controls portion of the job, the expertise of a subcontractor was needed. Wiring Made Easy (WME) had the right solution. Its owner, Alex Marx, is referred to as "the Rain Man of wires," by hydronic guru Dan Holohan. "When it comes to things electrical, Alex Marx is a true savant," said Holohan.

"I began to focus on HVAC controls about four years ago," said Marx. "I saw it becoming more involved and interconnected than many mid-size contractors wanted to deal with. It was a perfect fit to my background in technology and low-voltage systems."

Having worked with him on several other intricate systems, Arista brought Marx on, knowing that if anyone could design and install a system capable of the things Apple wanted, it would be Marx.

"The store is one of the toughest places to condition that we've worked on," said Berger. "Add to that [the fact that] Apple kept changing the floor plan. To maximize sale space, sometimes we'd have to knock out a closet or wall that already had ductwork installed. But Marx and everyone else just took it in stride."

### iEverything

The iMac, iPod, iPhone the iPad; Neither Jobs nor anyone else at Apple ever went on record and officially stated what the "i" prefix stands for. Although rumored at one time to stand for Internet, it's been left largely to personal interpretation. Popular opinion points toward a variety of sensible translations, such

Although Grand Central has a central chilled-water plant below ground, it's already tapped to capacity. Cold water for the Apple Store comes from three, five-ton, air-cooled Trane chillers perched high above the sale floor on a catwalk. Hydronic fan coils scattered throughout the store keep shoppers comfortable. Nearly 32 tons of additional heating and cooling in hard-to-reach areas is provided by ductless heat pump systems.

"We began our work there in August of 2011," said Craig Berger, VP at Arista Air Conditioning. "It was an interesting space to work in and had some unique challenges, but the group of contractors worked well together, and the project came together as smoothly as any of this scope could have."

According to Berger, the deadline was tight. Arista was awarded the bid



Peace of mind. **Every time.**



## **Fabricated Systems.** Worry-free from start to finish.

Our Fabricated Systems for hydronic heating and domestic hot water provide customers with limited risks and locked in outstanding performance. All of the system components—from pumps to controls to piping—are engineered to work together, and factory skid mounted to produce superior performance in the field. Our factory packaged skid systems offer control over installation quality and single source responsibility. A turnkey solution—because you have better things to do with your time.

Get peace-of-mind contact [pkmarketing@harsco.com](mailto:pkmarketing@harsco.com) or visit [www.harscopk.com](http://www.harscopk.com)



MORE INFO? SCAN WITH  
YOUR SMART PHONE



**Insight onsite.**

**HARSCO**  
INDUSTRIAL  
Patterson-Kalley

as individual, intelligent, intuitive and inspirational. Since the store is full of products worthy of such adjectives, it would only be fitting that the HVAC controls aren't an exception.

"With central steam to radiant heat, hydronic fan coils for cooling and all the eccentricities of the venue, Apple Store Grand Central seemed like the perfect opportunity to showcase the modularity of Taco's iWorx controls," said Marx. The unique challenges called for flexibility, not only on the part of the contractors involved but on the system components as well.

"The trains coming in and out of the station act as giant pistons," explained Marx. "In the winter, they push cold air into the terminal and drag warm air out with them when they leave." The cavernous space makes Grand Central a challenging place to heat and cool, as do the endless stone surfaces, dozens of

doors into the main terminal and crowds of occupants, whose number fluctuates dramatically throughout the day.

A wall-mounted LCI2 (local control interface) is the center of the controls system, not only for local control but also for web-enabled interaction with the entire system. From it, alarm modules, flow sensors, zoning controls, outdoor temperature sensors and a number of other remote modules chime in to bring a complex system together harmoniously. All told, 17 modules input to the LCI2.

"Because heating and cooling often run simultaneously inside the store, we had to split the DXU3 air handler controls from the in-floor controls," continued Marx. "The store features arched alcoves with a variety of different backlit Apple displays and a copious amount of lighting."

With relatively low ceilings holding the radiant heat in the alcoves, any number of shoppers and all the lighting, it doesn't take long for the alcoves to get uncomfortable. Before this happens, the fan coils provide AC.

**Radiant**

Wales Darby, with locations in New York and New Jersey, supplied everything for the in-floor system. Five zones account for 10,000 lineal feet of 5/8-inch PEX. Taco radiant mixing blocks use BZU2 modules to control the in-floor zones. Floor temperature is carefully monitored and checked against indoor and outdoor readings.

"The in-floor system works flawlessly now," said Berger. "But a few workers with the concrete outfit didn't grasp the concept that you can't rest a wheelbarrow on PEX while you dump it. A few splices, though, and we were back in operation."

Not long after the project was finished, Arista was called back in to drain and shut down a small section of the in-floor system. Apple decided that another sales station was needed and running electric conduit to the new station would eliminate the use of one radiant loop.

**Under a microscope**

"MTA (Metropolitan Transit Administration) is big on monitoring, so iWorx shines in that respect," said Marx. The DXU3 includes inputs for smoke detector and filter life, among other things. All chilled water lines in Grand Central have condensate pans. ALM2 alarm modules were used throughout the mechanical system to monitor water levels in the pans.

"I've been watching iWorx evolve since its infancy," said Marx. "I knew from the beginning that it was going to shake up the HVAC controls scene. The comprehensiveness of the system is impressive, and the modules seem to be fairly indestructible.

"I found that I had to shed much of my experience with other control platforms before I could really catch on to iWorx, but it wasn't difficult," continued Marx. "When I needed help, Taco bent over backwards. I even got tech support on a Saturday."

During Marx's follow up, the system was running perfectly. The 315 employees at Apple's newest store in the Big Apple are now able to concentrate on helping customers, not on monitoring the HVAC system to assure comfort. ●

**NOBURST®**

**-100° Antifreeze & Heat Transfer Fluids**

*The Original NOBURST Antifreeze*

- Non-toxic\*
- Non-corrosive
- High System Efficiency
- Blended with Deionized Water

**Applications:**

- Heating Heating Systems
- Industrial Heat Transfer
- Water Based Roof Extraction Systems
- Cooling Systems/Chillers

*Extended Temperature Range Antifreeze*

- Non-toxic\*
- Non-corrosive
- High System Efficiency
- Blended with Deionized Water

**Applications:**

- Solar Heating
- Geothermal
- Hydronic Heating Systems
- Geothermal & Earth Coupled Heat Pumps

*The All Metals Antifreeze*

- Use with ALL Metals
- Special Inhibitor Package
- Non-corrosive
- High System Efficiency
- Blended with Deionized Water

**Applications:**

- Cummins Pumps
- Industrial Cooling Systems
- Cooling Systems/Chillers
- Earth Coupled Systems

*Concentrated Antifreeze*

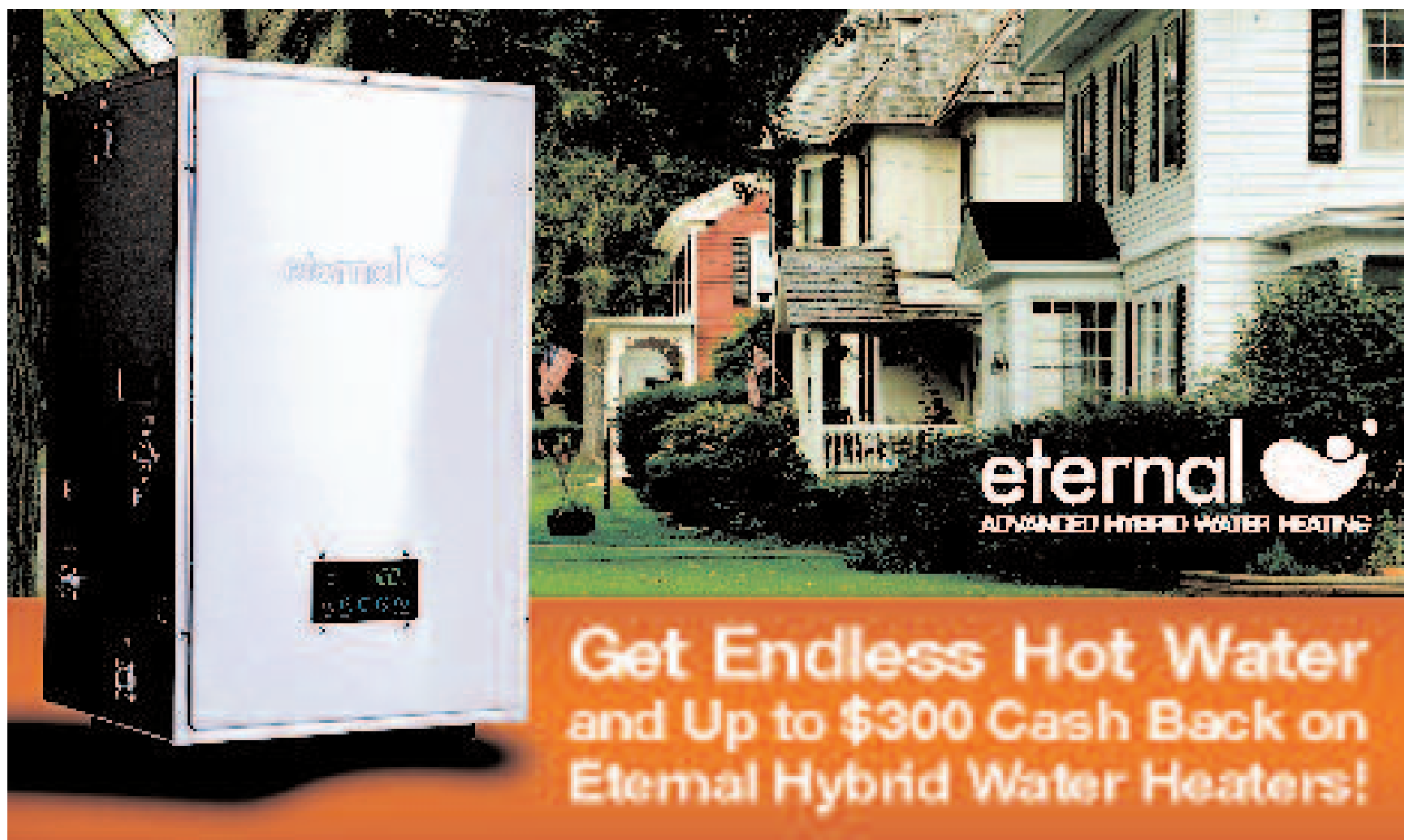
- Non-toxic\*
- Non-corrosive
- High System Efficiency
- Blended with Deionized Water

**Applications:**

- Plumbing Winterization
- Ice Melting Machines
- Sewer Lift Systems
- Fire Hydrant Winterization
- Cooling Coil Defrosting
- Expansion Freezing

**Noble Company**

800.878.5788 | www.noblecompany.com



### Eternal Hybrid Rebates

**\$50 Rebate on GU100**

**\$150 Rebate on GU145**

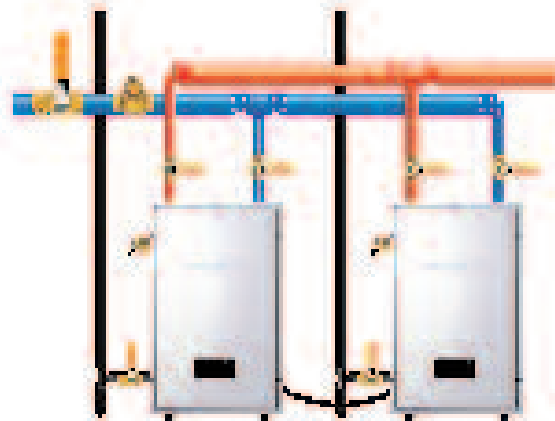
**\$200 Rebate on GU199S**

**\$300 Rebate on GU199M**

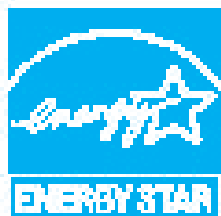
End-users can receive up to \$300 cash back with the purchase and installation of an ETERNAL hybrid water heater. Offer good on units purchased and installed between April 23, 2012 and September 1, 2012. For complete program details and eligibility requirements, go to [www.eternalwaterheater.com/rebate](http://www.eternalwaterheater.com/rebate).



Patented Heat Exchanger Design



Link Multiple Units For Larger Applications



- Endless hot water to multiple applications simultaneously
  - Up to 98% thermal efficiency, .96 EF exceeds Energy Star
  - Top mounted water connections and 2" or 3" PVC venting
  - Easy integration into existing recirculation systems
  - 15 year residential / 5 year commercial no leak warranty\*
- \*The GU100 model is for residential applications only and has a 1/2" gas line.

#### Eternal Rebate Program

End-users can receive a cash rebate with the purchase and installation of an ETERNAL hybrid water heater. Rebate amount varies with each model that is installed by a licensed contractor and purchased by the end-user. Offer valid for units purchased and installed from April 23, 2012 through September 1, 2012. To request a rebate, go to [eternalwaterheater.com](http://eternalwaterheater.com), print the rebate form, fill out the re-plate information, and mail the form with the original sales receipt and the original barcode to the address on the form. The complete terms and conditions of the rebate program are provided at [eternalwaterheater.com/rebate](http://eternalwaterheater.com/rebate).

**Learn more at [eternalwaterheater.com](http://eternalwaterheater.com) or call 866.946.1096**