

> Solving remote Alaska's clean water woes

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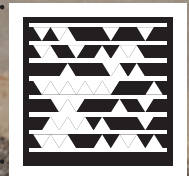
Facilities Resource Group  
Director of Engineering  
Ben Wirick

Facilities  
Resource  
Group

## Come and get it

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# Come and get it

➤ Turnkey tankless rack system keeps hot water flowing at restaurants across the country.



Facilities Resource Group's tankless water heater rack assemblies are designed and fabricated at the company's Grandville, Mich., headquarters and then driven to restaurants for installation.

**H**ot water is the lifeblood of any restaurant kitchen operation. Lacking a sufficient and ready supply at the correct temperatures, as prescribed by local health authorities, facility management usually has no choice but to lock the doors until the problem is fixed.

Despite the vital importance of hot water, delivering the right quantities to the right outlets at the right temperatures – especially during operational peaks – is an anxious, uphill battle for many managers. Whether the culprit is undersized equipment, poor installation or inadequate maintenance, many restaurants routinely endure a tense can't-live-with/can't-live-without relationship with their commercial water heaters.

But an innovative approach to restaurant water heating that melds all the necessary components into a single, prefabricated, ready-to-install package is achieving positive results for a growing number of proprietors who have experienced improved system performance and longevity, as well as energy savings.

Grandville, Mich.-based Facilities Resource Group engineers a rack system that combines one to six Noritz America condensing tankless water heaters (Energy Factor of 0.93) with isolation valves, system and pump controllers, surge protectors, and even recirculation pumps and expansion tanks as needed – all mounted to a mobile aluminum frame and finished off with insulated copper tubing.

The true breakthrough was FRG's decision to leverage the inherent advantages of multiple tankless water heaters into a turnkey service program catering

Photos by Frank Monkiewicz Photography and Kevin Bewick, People, Places & Things Photographics



This Chili's restaurant in West Auburn, Mass., features a rack assembly of four tankless water heaters. More than 100 Chili's in 10 Northeastern states employ the tankless rack technology.



Members of a local plumbing crew put the finishing touches on a rack assembly in a restaurant mechanical room. Beyond the tankless rack installation, FRG makes sure every hot water usage point in a restaurant operates properly.

specifically to the rigorous demands of quick-service and casual-dining restaurant chains. FRG designs and fabricates the racks, ships them in FRG trucks, personally participates in the installation (with a qualified local contractor) and coordinates post-installation service work.

The rationale for this turnkey package is based on the key role hot water plays in a restaurant's daily operation and the impact it can have on the establishment's long-term viability.

"I have seen restaurant chains spend thousands of dollars to ship cooking equipment cross-country overnight just to prevent any loss of business on an upcoming busy day," FRG Director of Engineering **Ben Wirick** states. "These operators are concerned about not just the lost dollars and cents they can count, but also the less-tangible losses. If they must shut down for

even a half day, will disappointed customers opt for a restaurant down the street and never come back? They don't want to take that chance."

In addition to affecting operations in the back of the restaurant, a lack of hot water is a health concern for customers.

"Not having the ability to be sanitary is a critical violation," Wirick says. It's not only for employees in the back of the house, but the guests in the front of the house that use the restrooms. There have been Norovirus outbreaks that have closed restaurants and made a bunch of people sick with some nasty stuff. It connects back to people not washing their hands and going back into the restaurant."

Since launching its comprehensive service in 2008, FRG has designed, built and installed approximately 800 tankless water heater rack systems in 200 corporate and franchised restaurants nationwide. Its most prominent accounts include Texas Roadhouse (35 new installations and 160 retrofits), Cracker Barrel and Pepper Dining Inc., which owns and operates 106 Chili's locations in 10 Northeastern states (38 retrofits).

**Scott Amerault**, PDI's director of facilities, turned to FRG for help in February 2010. Amerault is responsible for keeping hot water flowing at all PDI facilities.

"I handled everything from finding the product and hiring the installer to coordinating the installation with our local restaurant team," he explains of his pre-FRG relationship responsibilities.

Amerault also had the unenviable task of summoning the installer back to the restaurant if there was a problem.

"In some cases, it was a nightmare of chasing people down and dealing with a lot of finger-pointing," he says. "With FRG, I make one phone call and they go to work with my local team to solve our problems. Working with FRG, I have never needed to close a restaurant equipped with a tankless water heater."

### How they do it

Wirick, a licensed master plumber and mechanical contractor, and his team developed the one-, two-, four- and six-tankless unit prototype designs FRG adapts and tweaks to meet specific restaurant needs.

It's not unusual for Wirick's team to begin a project by viewing digital photographs of the mechanical room provided by the local restaurant. "Most store managers have a smartphone," he explains. "If I can't get an FRG professional on-site to inspect the space because the time frame is too tight, I'll request a dozen or so photos to give us a better handle on how our rack will fit into the room."

Once assembled, the tankless rack is equipped with wheels and rolled onto one of two trailers FRG uses to travel to jobs across the nation. PVC piping, copper tubing, black iron for gas distribution along with other valves, fittings and materials are on board as well – and usually for more than one project, sometimes up to four. FRG uses Grundfos pumps, Viega pipe fittings, Caleffi mixing valves and Johnson Controls among the many technologies that comprise the rack system.

The project manager, who built the racks, then drives the system to its destination and oversees the installation. A project manager can spend two or three weeks on the road at a time.

"Having the project managers do both the prefab and the installations short-circuits the blame game if something goes wrong on the job," Wirick explains. "All of our project managers are licensed plumbers, so they know how to modify a system when the mechanical room proves more of a technical challenge than we anticipated."

Wirick estimates roughly one in five jobs, because of mechanical-room dimensions, involves disassembling the prefabricated racks and mounting the tankless units to the wall.

### Tankless success

Before 2008, FRG had been supplying high-efficiency, storage tank-type water heaters to its restaurant clientele. At that point, most customers were still inclined to stick with traditional tank technology, even if they found themselves without hot water and in need of new units with increasing frequency.

"Restaurants put a heavy load on water-heating equipment, especially when they're super-busy," Wirick states.

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# Come and get it

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In addition, the drive to maximize sales-per-square-foot can result in a mechanical room that simply is too small to house the amount of hot-water storage the restaurant needs during its busiest times.

"Without the need for storage, we can pack a lot more Btu into the same small footprint," Wirick says. "This enables the restaurant to manage its peak loads more easily at a lower operating cost."

Meanwhile, that total Btu capacity is typically split among four, five or six water heaters, which deliver two more important advantages: load-matching to cut energy costs and, even more paramount, the peace of mind that comes from unit redundancy.

The ability to gear energy consumption to present demand delivers substantial savings and efficiency. The Nortiz units have an input range of 11,000 to 199,900 Btu/hr. If a single hand-sink faucet turns on, only one of the tankless units in the rack activates. The modulating burner inside the unit fires at the lower end of the Btu input range to meet the isolated need. Why use 199,990 Btu when 11,000 Btu will do?

"But a conventional commercial water heater whose burner does not modulate will immediately ramp up to its full Btu capacity to deliver hot water to that one hand sink," Wirick says. "This not only wastes energy, but also stresses the equipment."

Amerault conducted an informal survey of the first PDI installation in June 2010 and determined he was saving roughly \$1,800 per year. "But I haven't done a formal, detailed energy analysis because efficiency is not the driving force behind my company's decision to go tankless," he says. "We are even more enthusiastic about the reliability gained through multiple redundancies."

With four tankless water heaters, if one shuts down, Amerault's operation still has nearly 600,000 Btu (199,900 x 3 units) at its disposal. Plus, fixing or replacing the down unit is less expensive. "If a tank-type heater fails on a Friday night, I'm hiring a plumber to work at double time to replace that tank immediately," he says. "If I lose a tankless heater on a Friday night, I just operate with the other three. I can wait until Monday for service, and it's only one guy carrying a new unit in on his shoulder and working straight time for 90 minutes."



An informal survey of the first rack installation at a PDI Chili's property in 2010 reveals the restaurant saved roughly \$1,800 per year in energy costs.

## Above and beyond

**Rick Frazine**, a project manager at FRG since November 2010, recently completed a retrofit conversion at one of Amerault's restaurants in West Auburn, Mass. Work immediately commenced after the Chili's facility closed at 11 p.m. and once all the dishwashing was completed. All the work, including final inspection, was done by 7 the next morning, several hours before the staff returned.

In addition to setting the rack, the team installed a new circulator and expansion tank in the system's 140°F recirculation loop, as well as a mini-mixer beneath each of the 10 hand sinks to temper the water to 110°F to comply with local code. FRG also ensures water is delivered at 140°F to prep sinks and 180°F to dishwashing machines. A maintenance monitor pad in the manager's office provides on-off control and tracks system water temperatures, while a flashing light indicates a maintenance issue.

"When FRG does a conversion, it also checks every usage point for hot water in the building, making sure my dishwasher and every faucet is running at an optimum level," Amerault says. "They really take ownership of the entire hot-water system."

Wirick adds: "Every restaurant is a system with the water-heating equipment at its heart. If the vessels and other components – the veins, if you will – are not properly connected to one another and to the heart, the restaurant simply won't function."

That breakdown and dysfunction are what so often create problems for water heater manufacturers, Wirick says, and their equipment winds up being blamed for what is a systemic problem.

FRG maintains electronic records on all service calls by local technicians it recruits, and it doesn't hesitate to note when a restaurant staff has neglected proper procedures, such as putting salt into the water conditioner.

"We are the eyes and ears of our customers, and we own their water-heating system from cradle to grave," Wirick says. "We're confident enough to say that any restaurant operator who has seen the FRG approach to installing and servicing water heaters will never go back to their old ways again." **pme**

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