

Setting the pace at a boiler a day

SPECIAL to CONTRACTOR

FORT GARLAND, COLO. — Sierra Grande K-12 school in Fort Garland, Colo., struggled to make it through the mild 2011-2012 winter. Of the three 1.8 million Btuh LP-fired, cast iron boilers in the mechanical room, one had been down for some time. Another caught on fire halfway through the heating season.

The third boiler managed to heat the building until the school's spring break in March. The boilers were providing water at 160°F to a variety of fan coil units and a small quantity of fin-tube

baseboard. A long-outdated pneumatic control system made individual classroom controllability a distant dream.

After years of consideration and several bids, the school board decided that a new system was past due. The 80,000-sq.ft., 42-classroom school would have its new system in the blink of an eye.

"We've got six days to remove and replace 4.8 million Btu worth of boiler capacity," said Matt Husmann, president of Husmann Plumbing & Heating, Alamosa, Colo.



The school's maintenance room.

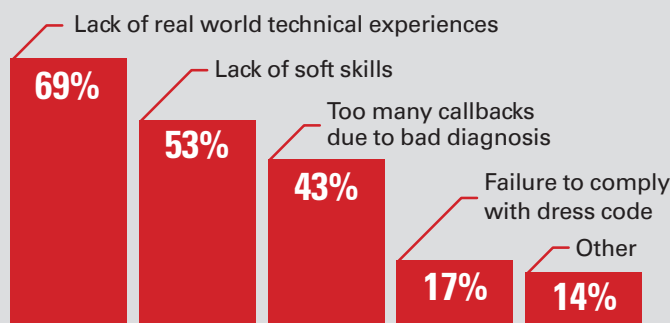
"Fan coil units make up most of the system and, fortunately, that equipment is still in good shape."

Although the design phase for the project started in mid-2010, both Husmann and school administrators wanted the retrofit to take place over

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CONTRACTOR INFOCUS

Reasons for dissatisfaction with new hires



Source: What Contractors are Really Saying about Trade Schools Survey. Results by Coscia Communications Inc.



Sustainable Village is lab for experimental building, mechanical systems

BY JOHN MESENBRINK of CONTRACTOR's staff

FAIRBANKS, ALASKA — A collaborative effort between the University of Alaska Fairbanks (UAF) and the Cold Climate Housing Research Center (CCHRC) is

getting national acclaim. The project blends the latest cold-climate technology, environmentally sound land use and sustainable infrastructure with a new

model of campus housing — students as live-in researchers, who test, interpret and help refine their building's design as part of their college education. Breaking ground earlier this year on new campus homes, the partnership consists of UAF, which will finance and own the homes, and the CCHRC, which is managing design and construction.

Unique to the project is the location. Alaska poses tremendous geographical challenges. The area is known for discontinuous permafrost — where the

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Bipartisan bills invest in industrial water and energy efficiency

SPECIAL to CONTRACTOR

WASHINGTON — Sen. Jeff Bingaman, D-NM, has introduced legislation in the U.S. Senate to create federal tax credits of up to 30% for projects that increase water efficiency in manufacturing plants.

Sens. Olympia Snowe, R-ME, and Dianne Feinstein, D-CA, are co-sponsoring the bi-partisan proposal in the Senate.

Called the Expanding Industrial Energy and Water

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spring break. Late April marks the tail end of the heating season in Southern Colorado, and after waiting more than a year to acquire funding for the project, they wanted to see the savings begin as soon as possible.

Husmann's 12-technician crew was ready for the task. The 26-year-old boilers needed to go.

"One of my kids attends Sierra Grande," said Husmann several weeks before the job began. "I've worked with the school and Merryman [Mike Merryman is with McCoy Sales in Littleton, Colo.] on this design for a year and a half, and helped the board seek funding to get it done. I think we'll easily see a 50% energy savings, but I'm hoping for 65%." In 2010, the school used 28,600 gallons of propane.

Along with his brother, Mike, and sister Monica, Matt took over the family business in 2006. Their parents started the firm in 1975, after relocating from Missouri. Today, the company is as much a supplier as a contractor.

"After working with Matt for months on the plan for the school, I was confident that Husmann could do the job well within a week's time," said Superintendent of Sierra Grande Darren Edgar.

The breakdown

The three old boilers would come out and six, 800 Mhb Burnham Commercial Apex modulating condensing boilers were to be installed. The new boilers, stacked two high, would use a third of the space required by the original propane-guzzling system.

"The new boilers have a 5:1 turndown so — altogether — we'll have a 30:1 turndown," explained Husmann. "Tied to an outdoor reset, the system will modulate precisely with the crazy temperature swings we have in this valley."

"The old pneumatic controls have been a real problem for the school, so we're using Taco's new iWorx control system to bring the building into the next century," said Mike Merryman with McCoy Sales in Littleton, Colo., the man-

ufacturer's rep firm for Taco and Burnham. "We designed a piping strategy that can keep up with the new controls and boilers."

The high pressure drop associated with the commercial modulating condensing boilers requires a high-head pump. Husmann is using six Taco 1900 series pumps to move water through each boiler and into a short primary boiler loop. Two big, closely spaced tees act as a hydraulic separator, tying the boiler loop into the existing 5-in. steel secondary loop.

Six zones branch off the big secondary loop, each pressurized by one of Taco's new ECM, variable-speed Viridian pumps. The pumps were chosen mainly for their ability to

the action." When he arrived, he saw that the boilers were literally being pulled out. Through a set of double doors in the mechanical room, Husmann's crew was using a chain and a skid-loader to drag the boilers out of the building.

While three techs worked at removing the old boilers, three more unpacked the new units and got them ready for installation. Apex boilers, from the factory, run on natural gas. Burnham did a special build for the Sierra Grande project because only propane was available to the school.

Once inside, the boilers were stacked two-high on the concrete boiler pad. Plenty of space was left between stacks for ease of servicing and maintenance in the future.



Mike Merryman (left) and Mike Husmann (right) level a Taco in-line pump on the supply side of the boiler.

the boilers quickly, knowing that the time to fire the boilers would come in the next few days.

Tuesday, March 20

With the end clearly in sight, the 6-in. supply and ex-

spaced tees to tie into the 4-in. copper loop to complete the primary-secondary system. The copper and steel met at noon on the third day. Before leaving, the welder installed a 5-in. Taco 4900 series air and dirt separator.

Wednesday, March 21

First thing on Wednesday morning, Mike and his apprentice, Jerry Houser, ran gas lines to the new boilers; the very last component to the extensive, break-neck speed installation. Like all the other facets of the project, the gas lines went in without any trouble.

To read the entire Setting the Pace at a Boiler a Day article go to www.Contractormag.com and click on the article link. **C**

'After working with Matt for months on the plan for the school, I was confident that Husmann could do the job well within a week's time.'

ramp up and down, perfectly matching the needed flow rate regardless of how many classrooms call for heat.

Anywhere between four and 10 classrooms are tied into each secondary loop. Given the variation in the number of terminal units, the zone piping ranges between 1½-in. to 3-in. in diameter.

At each classroom, a ¾-in. line tees off to supply a fan coil unit or short baseboard run. Although the existing fan coil units were left in place, each now has a Taco Zone Sentry valve controlled by iWorx, in place of the old pneumatic zone valves. At the time, the pneumatic controls remained in place, to be replaced during summer break.

Friday, March 16

"I'm on my way to the job-site now," said Merryman. "Husmann is already there, pulling the old boilers out." Merryman's commute is more than three hours, while the Husmann shop is about 30 minutes away.

"I'll be staying in Fort Garland a few nights next week," continued Merryman. "With as much buildup to this as we've had, I'm not missing

Monday, March 19

"The challenge on Monday was staying out of each others' way," said Mike Husmann, Matt's older brother, who was onsite for the duration of the project. "There was a welder, two electricians, Merryman, myself and another technician there the whole day."

The welder worked to prepare the existing 5-in. steel secondary loop for connection to the new boilers and pumps. The big pipe runs the whole way around the building, and with the use of six 15-HP Viridian pumps, six zones deliver heat to the fan coil units.

Meanwhile, the Husmann crew went flat out on the boiler loop. The primary loop starts with 2-in. copper at the first stack of two boilers, jumps to 3-in. as it reaches the second stack, and when it passes the third stack, the copper is 4-in. in diameter.

Next to the boilers, two stainless steel coil, 119-gal. indirect water heaters now handle the school's domestic load. The near-boiler piping was almost complete Monday; the only thing that remained was tying into the steel loop. Electricians wired

haust vent PVC was installed on Tuesday.

With six boilers in such close proximity, the venting looks like a white and gray PVC forest as it reaches up to exit through the roof.

The 5-in. steel pipe required a welder to install two closely-