

Modern mountain men explore the challenges and opportunities of the Vail Valley

Radiant in the Rockies (Part 1)

BY MICHAEL WEIL, EDITOR-IN-CHIEF



Tim Rosen, P.E. (front), and Dave Slick are two of three principal owners of Concept Mechanical, Inc.

The legends of the Rocky Mountains date back to times immemorial. Many of them stem from the mountain men of the early 1800s — rugged men who shunned the trappings of society to live on their own, to embrace the dangers of the mountains, and make their way trapping beaver and selling the pelts. They were entrepreneur pioneers.

The mountains today may not be as dangerous and rugged as they were 200 years ago, but from a business standpoint, they still pose great challenges to the modern HVAC and plumbing contractor.

Concept Mechanical, Inc. is a 13-year-old residential contracting firm located in Avon, CO, at the base of Beaver Creek mountain. The company serves the Vail Valley, a resort area that includes Eagle County, the towns of Avon and Vail, and the subdivisions of Beaver Creek, Bachelor Gulch, and Mountain Star. In these areas, new construction is booming and the average price on a new home is in excess of \$1 million.

Concept Mechanical, which has grown steadily each year of its existence, boasted around \$1.8 million in billing in 2004 and is able to keep its 13 employees very busy.

Tim Rosen, P.E., is one of three principals in the company. He describes the “ruggedness” of doing business in the mountains as follows:

“One of the biggest problems we face working in the Vail area is square footage constraints. With sale prices of \$1,100 to \$1,500+ per square foot, at the upper end (typically where they find themselves), homeowners and architects are always trying to maximize space and tend to be reluctant to turn over floor area for a mechanical room.

“Anything 5 ft. high, or under, isn’t considered to be part of the *gross residential floor area* (GRFA), so a lot of our mechanical rooms need to be designed around the space we’re given.”

Dave Slick, master plumber and another company principal says, “If you can’t fit the mechanicals in the space they give you — tough. So, we tend to work within the space we’re given, like it or not.”

Which explains why the company takes a Design/ Build approach. The firm specializes in hydronics work, though they also do forced air heating and air conditioning. According to Rosen, Concept Mechanical does all its own system design work, sizing, and analysis. “We also spec all of the equipment ourselves,” he adds.

Most of their work is with four custom builders in the Vail Valley, where the average home size in this market is between 8,000 and 10,000 sq.ft.

Why Hydronics?

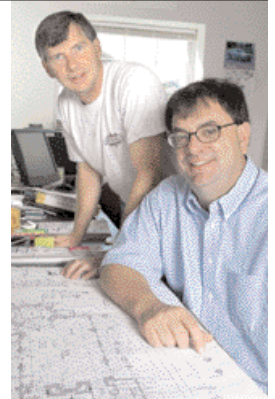
Because of the space issues, Rosen says they need compact equipment that put out a lot of Btus. “We need large BTU input boilers in small spaces. And the systems must be reliable. The people are buying the best because they want absolute reliability, no hassles, and no noise from the mechanicals. These complex systems are installed to satisfy amazing energy loads, and yet remain entirely invisible in most cases.”

To that end, the company employs a recipe that will provide comfort and take up as little space as possible. The recipe consists of these criteria: size and shape, dependability and availability, and price.

According to Rosen, they’ve found only one boiler system that meets that criteria and they design their systems around this platform. **CB**

Next month we’ll examine the Concept Mechanical system design platform in more detail and discuss how this contractor applies these systems in ways that work best in the Rocky Mountains.

Radiant in the Rockies (Part 2)



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Last month, (*CB*, July 2005, p. 76) we introduced Concept, Mechanical, Inc., a \$1.8 million residential and light commercial contracting firm doing business in the mountain towns near Denver, CO. Headquartered at the base of Beaver Creek mountain in Avon, CO, the company serves the Vail Valley, a resort area that includes the towns of Eagle and Vail, as well as a number of sub-divisions of Beaver Creek, Bachelor Gulch, and Mountain Star.

The key to working in the mountain communities, according to Tim Rosen, one of three owners of Concept Mechanical, is working within very strict space constraints. "To do that requires creating a design platform and designing and installing systems around this platform."



This 10,500 sq. ft. home in Bachelor Gulch has 22 zones of hydronic heat, including a 1.2 million BTU snowmelt boiler.

Rosen adds that it's for this reason that his company uses the Design/Build project delivery method on nearly all the new construction projects they work on.

According to co-owner Dave Slick (a master plumber), space issues are also a reason that the company focuses on comfort systems solutions using hydronics technology.

The typical customer in this area are among the wealthiest people in America. In Vail, many of the homes are second or third residences in the \$5 million to \$15 million range. Homeowners may spend \$5,000 to \$6,000/month for fuel in winter and may have \$25,000 to \$50,000/year property taxes. And it appears that Vail may track Aspen's recent adopting of minimum AFUE ratings, mandating higher energy efficiency.

"We need large BTU input boilers in small spaces. And the systems must be reliable," Rosen says. "These complex systems are installed to satisfy amazing energy loads, and yet remain entirely invisible in most cases."

To accommodate these requirements, Concept centers their design platform around the Laars Penant boiler line. Says Matt Kelsall, the third owner of Concept Mechanical, "There's no other boiler that provides so many BTUs in such a small package."

"This equipment is among the most flexible modular designs we've seen. The fan-assisted units are easy to install and maintain for large residential and light commercial hydronic and hot water applications from 500,000 to 2 million BTUH. And in our area, they're designed to work effectively in altitudes up to 10,000 feet."

Kelsall adds that the Penant boiler's Lo-NOx emissions and 85% efficiency enables Concept to help customers meet legislated efficiency standards.

"The sealed combustion chamber can employ either ambient or outside air ducted directly to the unit. And this boiler can be vented either vertically using standard B-vent, or horizontally for up to 50 ft., using three elbows made of AL29-4C stainless steel. Vent and combustion air connections can be located on the top or back of the unit in any combination.

"Units are even stackable on Laars racks to maximize water-heating capacity in the smallest

possible footprint. And to keep installation simple, we can select six different modes of operation with the press of a button to exactly match application requirements.”

In addition, the company has standardized on the circulators they use. Rosen points out that one of the most important facets to optimal circulation for hydronic systems is the ability to match a pump’s performance, or flow characteristics, to the specific job that it needs to perform within the system.

Rosen explains, “A single-speed pump has one performance curve — a measurement of head (ft) and flow (gpm) — and operates at that level only.

“But Grundfos’ new three-speed VersaFlo and SuperBrute circulators offer a much broader range of performance. We can easily choose a speed, changing head and flow to meet the specific needs of the system. This gives us greater control and versatility.”

He adds that Concept has developed a recipe where they use motorized, four-way mixing valves rather than injection piping.

Concept routinely does large radiant installations where multi-speed circs give them the ability to balance water flow to each manifold, regardless of how many loops are on it. With multi-speeds, they can deliver as much water as they need to each manifold.

“We can make injection pumping work,” adds Slick, “but prefer to do our installations this way. We still use conventional Honeywell zone valves, build our own control panels, and assemble all the components — though we find many others have moved to pre-packaged systems. And we always use outdoor reset controls.”

“The guiding philosophy is that we use what works,” says Rosen. “If an obvious improvement comes along, we’ll make adjustments. But we don’t change to something entirely new



For controls, Concept Mechanical typically uses four-way, motorized mixing valves to temper radiant floor systems. At this home, they installed four large, multi-speed “VersaFlo” circulators by Grundfos.

based on a sales pitch or professed enhancement. The old adage applies: ‘If it isn’t broke, don’t fix it.’”

For contractors who work in the Rocky Mountains, this philosophy works. After 13 years, the company continues growing.

Like the mountain men of old, the environment is rough, but not insurmountable. For Tim Rosen, Dave Slick, Matt Kelsall, and the team at Concept Mechanical, Inc., the mountains pose challenges that makes doing business very interesting and fun. 🏠