

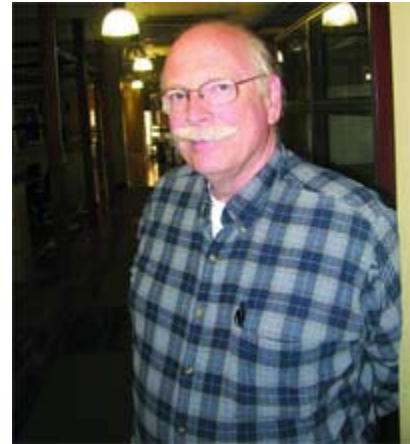


The Business of 'Earth Energy'

Florence-based Venture Wants to Warm Potential Clients to the Virtues of Geothermal Systems

By *GEORGE O'BRIEN*

Geothermal energy, or power extracted from the heat stored in the earth, has been around for centuries, but it remains a largely unknown commodity among most home and business owners. A Florence-based venture called Terraclime is trying to change all that, and is using some impressive numbers concerning the efficiency of geothermal systems to turn some heads. In the meantime, it wants to take its laboratory-like operation in an old mill, where several geothermal systems are being tested and evaluated, and use it to help train and cultivate a workforce.



Sam Johnston says that the key challenges facing the geothermal energy business, and Terraclime, are building awareness of the concept and creating a workforce.

Sam Johnson calls them the Geo Team (or G-Team) Seniors, and says an AARP card is a prerequisite for becoming one.

And he's not kidding.

These older, quasi-retired individuals are on the front lines of an effort to take geothermal energy harvesting mainstream — or at least much more mainstream than it is at present. They are the designers and installers of systems handled by a growing Florence-based venture called Terraclime Geothermal, a division of Environmental Compliance Services Inc. (ECS).

Based in the old Nonotuck Mill building, which is a home, but also a working laboratory for geothermal systems (more on that later), Terraclime is one of a handful of companies trying to sell homeowners and business owners on the concept of harnessing the earth's natural ground temperature to provide clean energy that saves both money and the environment.

In many respects, geothermal should be an easy sell, said Johnston, Geothermal Program manager for ECS, but there are some factors that make it less so. Unfamiliarity with the concept is part of the problem, he explained, and then there's the matter of the upfront cost (perhaps \$16,000, after incentives, for a typical 2,000-square-foot home, for example), and the need for those who are picking up the phone and calling Terraclime to pass what he called the "flinch test."

Meanwhile, interest in geothermal, as well as other renewable-energy sources, such as solar and wind, rises and falls in direct proportion to the cost of heating oil and natural gas, and at the moment, while neither is exactly a bargain, the prices are considerably lower than they have been in recent years.

"But we've seen what can happen ... we've seen a lot of rock 'n' roll with these fuels before," said Johnston, referring to home-heating oil prices at or near \$4 a gallon not so long ago. "So our drumbeat is to get off fossil fuels as soon as possible."

And because that message resonates, by and large, the popularity of geothermal is slowly rising, said Johnston, adding that he and other members of the Geo Team have installed nearly 60 units in the past 15 months or so (nine in the 413 area code), and the Terraclime business plan projects steady growth in those numbers as more people successfully pass the flinch test, often with help in the form of federal and state incentive programs, and as society in general becomes more green-conscious.

There are challenges, obviously, said Johnston, referring to everything from educating the public about what is probably the least-well-known and understood form of renewable energy, to cultivating a workforce that can design and install geothermal systems. Lack of such young talent makes the Geo Team a necessity.

For this 'Green Issue,' BusinessWest takes an in-depth look at an energy source as old as the earth, literally, and a local business that's trying to get potential residential and business owners to warm up to the intriguing concept known in the business as 'earth energy.'

Bringing the Heat

Johnston refers to geothermal energy as "an easy Kool-Aid to serve."

That's his way of saying that the numbers, or his numbers, essentially speak for themselves when it comes to how efficient this renewable-energy source is, and how it can help people save money for the long haul.

"Geothermal is a remarkably efficient way of moving energy," he explained. "The traditional fossil-fuel way of making energy by burning something is kind of a brute-force thing. With the traditional oil burner, for every \$1 worth of fuel, you might get 80 cents worth of heat out of that, with the other 20 cents going up the chimney as non-combustibles and excess heat. When we do a geothermal system, we can brag that we put \$1 worth of energy into the process, and we can get \$3, \$4, or even \$5 out of the process.

"And we're not converting anything," he continued. "We're taking a smaller amount of electricity to move energy from the earth to the building, and in the summer we reverse it; we move the energy from the building back to the earth. That's the carrot we use to interest people in this."

Johnston brings an intriguing background, one based in engineering and business, to the task of popularizing and selling geothermal systems — or getting people to chase that aforementioned carrot. He has a bachelor's degree in Business Administration, and can claim the still-rare title of 'geothermal veteran,' having installed numerous systems for residential and commercial use.

In a wide-ranging interview, he told BusinessWest that there is certainly no shortage of suitable candidates for geothermal systems, perhaps used in concert with other forms of renewable energy, such as solar and wind and recently developed natural-gas mini-turbines. The list includes everything from homes (millions of them) using comparatively inefficient fossil-fuel burning systems that are almost always bigger than they need to be, to ski resorts; from over-55 communities held captive by fluctuating oil and natural gas prices, to the Woods Hole Oceanographic Institute, which has recently expressed preliminary interest in geothermal as one renewable-energy option.

To date, most of the work within the geothermal realm has been with residential customers, with both new installations and retrofits, Johnston explained, adding that they involve projects from single homes to condominium projects and elderly-housing complexes. Larger, commercial applications have been fewer in number, but they are gaining traction as well, especially as more businesses and institutions seek to go green.

And there are now some attractive incentives in place for making such moves, he said, noting that the federal government has a 30% tax credit for installation of such systems, and the state of Connecticut put in place some sizable incentives (\$2,000 per ton for 12,000 BTUs, \$6,000 maximum) last December, and other states, including Massachusetts, are expected to follow suit.

ECS's Terraclime division was created in early 2009 to tap the growing interest in geothermal energy, said Johnston, adding that the business plan is based on optimistic, yet realistic, projections about geothermal power, which is certainly nothing new — the Romans used it for bathing 2,000 years ago — but remains a mostly foreign concept to both homeowners and business owners.

Recent technological advances have expanded the range and applicability of geothermal power for uses such as home heating, said Johnston, adding that the primary challenges to doing business in this industry, if one could call it that, are simple to list — educating the public about the concept, and building an infrastructure that can meet the needs of a growing clientele — if not easy to overcome.

Climate for Growth

Terraclime is taking on these assignments on the third floor of an old mill, parts of which date back as far as 1835, that is a brownfield site with PCB contamination currently being remediated by ECS, which now owns the structure. The mill has taken on the additional role of demonstration site for competing geothermal systems, said Johnston, adding that testing and evaluation has been ongoing for several months.

"We took three competitors, each with a different system with a different design, and put all three in, side by side, to essentially let the games begin," he explained. "And we're taking the data from those three installs and revealing it all."

The systems have been in place for nearly a year now, and those watching the numbers can see how the installations, which represent the very latest in geothermal technology, fare during different seasons.

Meanwhile, this laboratory-like environment creates some intriguing possibilities for getting young people interested in the technology — and the business, said Johnston, and building

the workforce that will be needed if geothermal enjoys the kind of growth he and others hope and expect it will.

“When I go to hire, when I say I want to add some geothermal talent, I get a very small group of applicants; there aren’t a lot of people who really know what they’re doing,” he said, adding that this phenomenon has created the need for the Geo Team Seniors. “You get a few people from the HVAC trades, but no one who is really seasoned all the way around.

“By working more closely with the colleges and the technical schools, we can start to grow some of that talent that we need so critically for the future,” he continued, adding that relationships have been established, and talks are underway with the University of Hartford, UMass, UConn, Asnuntuck Community College, and area vocational high schools.

“The goal is to get students involved, let them have access to the data, let them have access to the systems, and be a part of experiments and variations that we might be able to do, and share all that with them,” he added.

“I call this legitimacy through awareness — we can be part of a solution to get people off fossil fuels in the Northeast.”

Building awareness of geothermal, while also building the Terraclime brand and cultivating greenworkforce talent, are all assignments that go hand-in-hand, said Johnston, who’s calling on his business background to devise programs that address all three concerns.

One is a planned demonstration project at Asnuntuck, which will hopefully not only expose young people to career possibilities, but possibly convince school officials that geothermal would be an efficient, cost-effective way to cool the college’s 18,000-square-foot manufacturing section, where future workers for Connecticut-based defense contractors, among other employers, are trained.

Room for Improvement

Meanwhile, the company is trying to tap into other commercial client bases, such as ski resorts — including Vermont’s Stratton Mountain, which Johnston visited recently — which are currently dependent on oil.

“They’re a great candidate for geo-processing and that formula — putting \$1 in and getting \$4 or \$5 back out,” he said. “That would be a huge savings over what they’re paying now, and it would really help that industry.”

Conveying that message to ski-area owners is just a part of Johnston’s multi-tiered mission, which, as he said, also involves brand-building, amassing a workforce, and creating awareness of a new, yet quite old, method of energy creation.

Putting it all another way, his job is simply to create more work for the Geo Team.