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By Jim Cavan - New Hampshire alternative energy co. takes aim at new technology

December 22, 2011 - Green Buildings

What if you were able to heat a building using little more than a small array of solar panels? Until recently, such options were virtually non-existent. But one New England company aims to change the way we think about the sun; what it can provide; how; and what it might mean for the future of solar energy.

Launched in 2008, the Dover, N.H.-based Revolution Energy has since installed nearly a half-dozen solar systems, in the process becoming the single largest owner of on-line solar equipment in the stat. As such, their expertise ranges from standard alternative energy systems to lesser-known, burgeoning technologies - one of which they're betting will become a game changer in their ever-changing industry.

It's called solar hot air technology, and it's poised to redefine how we think about heating large-scale buildings. Here in New England, where upwards of 85% of homes are heated with fossil fuels - and where clean, green heating alternatives have traditionally been hard to promote - the timing couldn't be better.

Of course, an overview of the technology itself. Think of a hospital, or any building that has to have a constant flow of fresh air. Typically, these structures draw in cold air during the winter months - air which subsequently must be heated up to room temperature. That, in turn, requires more oil or propane. Makes sense, right? Well, imagine if you could install a solar array which connected directly into the fresh air intake that already exists. Only, instead of cold air that then must be heated up, you'd be taking in air that was already warm, thereby reducing your use of fossil fuels and, by deduction, your heating bill.

"The true payback or savings for a system like this would be in a reduction of oil use of 20 or 30%," said Mike Behrmann, one of the principles of Revolution. "This technology really is a sleeping giant." While solar hot air has indeed become more recognizable in recent years, it's the financial aspect of the system that aims to boast the real coup. Called a "power purchase agreement," or PPA, the mechanism provides a means by which to purchase energy without a significant, upfront capital investment - such that the buyer purchases energy generated on site from a third party partner (in this case, Revolution).

The actual equipment, however - as well as any subsequent maintenance - is handled by the contracted company (again, Revolution).

What's more, the terms can be adjusted depending on the project; monthly, bi-monthly, or annual payments are all commonplace. To date, Revolution has initiated several large scale PPAs throughout the state, including installations at Exeter High School and, more recently, East Kingston Elementary School.

As Mike Behrmann said "Just as oil or propane can be delivered to your home or business, we're

basically generating thermal energy through a collector, and delivering it to you right on-site. "So not only are we cutting out the transportation aspect of it, but it's something that's being created on your property."

Come this winter, Sanborn Regional High School, similarly located in Southern New Hampshire, will become the first test case for the combined technology and financing mechanism. Not the first in the state; not even the first in the country - the first in the world. As of this writing, the town board has unanimously approved moving forward with the project, with a PPA between Revolution and their distributor having been signed. While the company has spearheaded three other large-scale PPAs in the recent past, the Sanborn array will be the first to utilize the burgeoning hot air technology.

The panels themselves will be provided by Enerconcept, a Quebec-based firm specializing in solar heating technologies. Launched in 1998, today Enerconcept represents one of North America's foremost providers of solar hot air technology. Having begun as a purveyor of all things renewable - solar PV, wind, geothermal, you name it - by 2002 the company had begun honing in specifically on non-residential solar hot air.

The technology itself, meanwhile, is as straightforward as it is reliably effective: Solar collector panels are mounted, typically on the outer walls (although the roof - albeit slightly more expensive - is also an option); sunlight then feeds into the panels - just as it would on your standard PV or hot water array - moving through rows of perforations before being fed through a fan and ventilation system which helps force the air into the building. The result is not so much a stand-alone heating system as it is a dependable augmentation - a way to bring enough "free" heat into the building to significantly reduce the space's need for conventional, fossil-based fuels.

After great success in their native Canada, Enerconcept was eager to expand their operations into New England -- through U.S. based Shift Energy - where new forms of had managed to make significant headway in the wake of green-friendly renewable energy incentives. Enter Revolution Energy and their unique financing mechanism.

The partnership will be officially consummated later this fall, when Revolution and Enerconcept put online the world's first PPA-inspired solar hot air system. For Carol Coppola, Business Administrator for SAU17, the project promises to be as big of a game-changer within the school district - and in the classroom - as it will be for the world of alternative energy writ large.

"The school district is incredibly excited," said Coppola, who - as it turns out - knew Revolution principle Clay Mitchell from back when the two worked for Municipal Resources, a private firm. "It's a great opportunity for the school district, and we're all looking forward to the start of construction as well as developing the educational component."

It's a sentiment Mike Behrmann wholeheartedly echoes.

"Our demand for energy is continuing to increase, along with our continued reliance on fossil fuel" says Behrmann. "We must adjust the current prism we view our energy habits through and become open to a more sustainable, independent and reliable energy future.

"We see our work as one of many ways we can reach this energy future and we are proud to help push that frontier forward."

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