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the NEWS

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focus

Regional Standards Lawsuit Still in Limbo

By Herb Woerpel
Of *The NEWS* Staff

A 30-day mediation period has passed and the discussions have yet to yield a resolution, leaving the HVACR industry on hold regarding a decision on the pending regional energy-efficiency standards lawsuit.

The U.S. Department of Energy (DOE) issued a status report Thursday, Dec. 13, through the U.S. Court of Appeals for the District of Columbia Circuit that grants both parties in the American Public Gas Association (APGA) v. DOE lawsuit more time to hash out the details behind a possible settlement agreement.

The court-issued status report states that the two parties "remain engaged, with the assistance of a mediator, in negotiations concerning settlement and implementation."

The document further reveals that the DOE will file a further status report by Jan. 14, 2013, and will file a motion to govern future proceedings within 30 days of the conclusion of mediation proceedings.

The Dec. 13 document comes on the expiration date of a 30-day consent motion, filed Nov. 13, which allowed the parties to mediate without the pressure of a potential trial.

Heating, Air-conditioning, and Refrigeration Distributors International (HARDI) and Air Conditioning Contractors of America (ACCA) joined the case as intervenors in January 2012, on behalf of the APGA, on the premise that the DOE failed to follow proper procedures in issuing the rules for regional efficiency.

The case entered mediation in early November. ACCA and HARDI submitted proposed changes and additional matters they deemed necessary to any settlement agreement on Nov. 21. ACCA and HARDI representatives met with DOE on Dec. 7 to discuss these requests.

Due to a confidentiality clause, HARDI and ACCA representatives were limited in what they could share, and were unable to provide *The NEWS* the details of their

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Construction Recovery Predicted for 2013

By Angela D. Harris
Of *The NEWS* Staff

The final construction numbers for 2012 aren't all tabulated yet, but the Associated Builders and Contractors Inc. (ABC) is making predictions about what some sectors of the construction market will look like in 2013. Nonresidential construction is predicted to expand by 5.2 percent next year according to Anirban Basu, chief economist for ABC.

"Given the remarkably deep reductions in nonresidential construction spending since the onset of the downturn, one would expect more robust growth during the fourth year of broader economic recovery," he said in an early December release.

"Despite ongoing slowdown in many of the world's largest economies, ABC anticipates many investors will opt to invest in hard assets as a way to avoid volatility in equity and bond markets."

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a perfect match

Did you know that energy recovery ventilators and ductless mini-splits go together like peas and carrots? A Maryland church celebrated increased efficiency and savings after pairing the two technologies together. See story on page 12.

fyi hvac briefs

Price Increase

- **Baltimore Aircoil Co.** (Jessup, Md.) will increase rates by up to 3 percent on open-and-closed circuit cooling towers manufactured in North America, effective immediately.

Manufacturers

- **Enertech Global** (Greenville, Ill.) acquired the assets and intellectual property of **GeoSystems LLC** (Maple Grove, Minn.) from **Research Products Corp.** (Madison, Wis.).
- **Tecumseh Products Co.'s** (Ann Arbor, Mich.) AE2 compressor is now available to authorized wholesalers.

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note to readers

Due to this year's schedule, *The NEWS* will not publish a Dec. 31 issue. The HVACR Directory will be published Jan. 7 and the next regularly scheduled issue will be published Jan. 14.

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Church Benefits From ERV and Ductless Mini-Splits

Every once in a while two separate technologies come together so fluently that they dramatically improve the other's performance and application possibilities. Such is the case with a commercial rooftop energy recovery ventilator (ERV) and a ductless mini-split heat pump system. The real benefactors of the union are the 350 members at the Cornerstone Presbyterian Church in the town of California, Md.

The design phase for a new wing of the church was a six-month process. Several contractors, reps, and engineers brought different views about how to condition the single-story, 14,000-square-foot addition, mainly comprised of classroom space.

After careful consideration, church members settled on a unique hybrid system that would tap an ERV to supply make-up air to mini-splits equipped with make-up air collars.

started as a sheet metal shop in 1987. In 1997 the company began equipment installations as well, now including geothermal. Since then, the company has focused mainly on the southern portion of the state, east of Chesapeake Bay. Simmons currently employs 11 people, all of whom started out working in the duct-fabrication shop before becoming mechanics.

Simmons took his idea to Ken Herne, at manufacturer's rep firm Harry Eklof & Associates Inc., in Landover, Md., and the company has 10 years of experience with ductless heat pump applications.

Pat Cosgrove, of Northeastern Supply, in Leonardtown, Md., and was also involved with the design. Together, the group found a way for the church to dramatically lower installation and operating costs.

"Frank and I designed the system together," said Herne. "Pat and I

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Looks Good On Paper

Initially, using an ERV to supply outside air to ductless mini-splits was Frank Simmons' brainchild. Simmons, owner of Simmons Heating and AC in Hollywood, Md., knew he'd need some expertise onboard to design and refine the system. Although he had the tools and the know-how to tackle the project, Simmons knew the hybrid system he was hoping to install was, for the most part, uncharted water.

Simmons Heating and AC

have worked with him on other challenging projects, so I knew he could handle this one."

They proposed using Fujitsu HFI (hybrid flex inverter) ductless heat pumps with ceiling cassette evaporators equipped with outside air collars. The quandary came when it was time to select the ERV. At the beginning of the design phase, there weren't any obvious best options. No single ERV manufacturer had exactly what they were looking for.

In the time it took for the project to

come together on paper, a new player came onto the field; one that seemed as if it had been custom tailored to the needs of Cornerstone Church.

The product chosen to work in concert with the Fujitsu mini-split systems was a 15-ton Modine Atherion, offering ERV, air conditioning, and heating system capabilities in one compact rooftop package. At Cornerstone, the Atherion supplies ERV-conditioned air to the collars on the cassette units, in turn reducing the required capacity of the heat

pumps. The unit's ERV is rated at 65 percent "effectiveness," term used by the Heating Ventilation Institute to describe how effectively an ERV transfers energy from the exhaust air to the supply air.

"Add the ERV's efficiency to the rated efficiency of the Fujitsu HFI system and you've got a combination that's real tough to beat," said Herne. High SEER and EER ratings and the advantage of modulating operation combine optimally with the capabilities of the Atherion, he said.

"We won twice with the mini-split approach, considering that when the split systems were sized, the availability of supplemental capacity from the Atherion was taken into consideration," said Herne. "We reduced the ductless system load by 35 percent because of the Atherion.

"Should the heating or cooling capacity of the Fujitsu units be exceeded, we capitalize on the modulating ability of the Atherion's heating and cooling elements, delivering only the capacity needed to meet the

❶ Ken Herne (left), manufacturer's rep with Harry Eklof & Associates Inc., speaks with Pat Cosgrove (right) of Northeastern Supply Co. and Frank Simmons at the nearly-complete Cornerstone Church project. ❷ Jose Cortes and Scott McGuire install filters on the Modine Atherion unit which — among other things — preconditions make-up air for air collars installed on Fujitsu ceiling cassette units. ❸ Scott McGuire connects refrigerant lines to a ceiling cassette unit in a classroom at Cornerstone Church. ❹ Mechanic Mike Blaylock prepares a flare fitting for connection to a ceiling cassette unit.

demand, and no more," added Herne.

Equipped with 20-kW backup heat and CO_2 sensors, the Modine unit will also run whenever the building's air needs exchanging.

Light Years Ahead

"Simmons keeps up with the newest technology, and has never led us astray," said Wayne Davis, owner of W.M. Davis, Leonardtown, Md., the general contractor. The design-build firm does $12 million to $15 million in business annually in the tri-county area. According to Davis, hiring local subcontractors has been a recipe for success. They're more accessible for warranty work, and stand behind their products and services. Davis' many repeat customers stand as a testament to that business model.

"I brought Simmons on as counsel during the design phase," continued Davis. "He knows his equipment, and his projects always deliver good value, sensible design, and reliability."

"I think, as a professional in this industry, it's my job to keep pace with rapidly changing technologies and installation techniques," said Simmons. "There's a learning curve that comes with being an early adopter of any new technology, but there's no reason to be installing equipment that's obsolete."

One design submitted by another subcontractor included a 4,000-pound ERV unit the size of a utility van, connected to two 10-ton a/c units, all stuffed into the church's attic. The design also included 80-kW electric heat, and extensive ductwork.

Another design suggested the use of more than 30 ductless units; two per classroom, with compressors scattered about in landscaped beds and public access areas. With Herne and Simmons' design, the extended line set length available with the Fujitsu HFI equipment allowed for each of the eight compressors to be mounted on the roof.

Regulatory Advantage

The need to meet ASHRAE 62.1 fresh air requirements was a critical design factor. CO_2 levels needed to be kept in check. Body count and interior square footage is calculated; the system needs to provide x number of air changes per hour (ACH) accordingly.

Another ASHRAE-approved method to reduce CO_2 is the sensor-based IAQ method. With sensors inside the building, the Atherion unit provides ERV-tempered exchange air whenever measured CO_2 reaches a maximum set level. Only then will the Atherion increase fresh airflow.

"Using sensors instead of the prescribed calculation method to determine required ACH reduces the amount of air we need to move by 60 percent or more," said Herne. "That alone substantially shrinks energy costs to circulate, heat, and cool the air."

"We were glad to hear that mingling the Fujitsu units with the Atherion meant less total installed capacity," said Scott Hoffman, head of the church's building committee. "But the ductless units are also great because of their ability to condition the church on a room-to-room basis. That way we aren't heating or cooling any rooms that aren't in use."

Hit the Ground Running

In September 2011, ground was broken for Cornerstone Church's long-anticipated addition. "We've talked about the need for more space since 2002," said Hoffman. "Our fundraising kickoff started in April of last year."

The new portion of the church includes 18 classrooms, a kitchen, and gymnasium. Each classroom can be divided in half by a floor-to-ceiling partition. Two thermostats and two cassette units allow the separate portions of the room to be conditioned individually if the partition is drawn.

The dual-cassette approach also permits redundancy, and allows for system modulation down to less than 10 percent of their combined capacity to further reduce energy consumption. One air handler is always available to maintain temperature so that all spaces may remain in use if a cassette fails.

"Usually a church kitchen requires commercial equipment, requiring a lot of cooling capacity to offset heat produced by ovens, freezers, dishwashers, and refrigerators," said Simmons. "Here, it's considered a warming kitchen, with any real cooking being done in the existing kitchen." The small kitchen only calls for the use of one 3-ton ceiling cassette.

"Contractors can select 18-, 24-, 36- or 48,000-Btu Fujitsu condensing units combined with wall-mounted, cassette, or slim duct evaporators," said Herne. "All told, 35 indoor units were used at Cornerstone Church, ranging in size from 9,000 to 18,000 Btu."

The HFI systems also permit up to eight indoor units to connect to a single outdoor condensing unit, providing connectible capacity from 80 to 130 percent.

The indoor units at Cornerstone Church are connected to eight 48,000-Btu Halcyon Flex Inverter heat pumps. Mounted on the roof of the addition, the units are safe from would-be vandals, lawn mowers, and low-flying balls.

The gymnasium is the only portion of the project that doesn't use the ductless/ERV system. Two 20-ton rooftop units use Simmons' custom-made ductwork to deliver conditioned air to the gym.

Good Match

Herne and Simmons both attribute the project's success to the other. "Ken stands behind all the products on his line card 110 percent," said Simmons. "We've installed Fujitsu with minimal problems for five years. The versatility is hard to beat.

"The job moved right along, since we started preliminary work there in March," continued Simmons. "We hustled to stay ahead of the electricians and drywall crew."

According to Herne and Simmons, the only challenge was working around the overhead clearance for the air collars on the evaporators, which need an extra 4 inches when compared to a unit without a collar. Although there isn't a second story, there's a sheetrock firewall above the drop ceiling that limits the space above.

"The framers just left a little cavity to allow us to install the cassettes," said Simmons. The grid work that suspends the drop ceiling was squared off of the cassette in the center of each room.

The Cornerstone Church project not only showcases how a mid-sized HVAC firm can handle intricate jobs, but also how a solid dealer/rep relationship is a key to success for everyone involved.