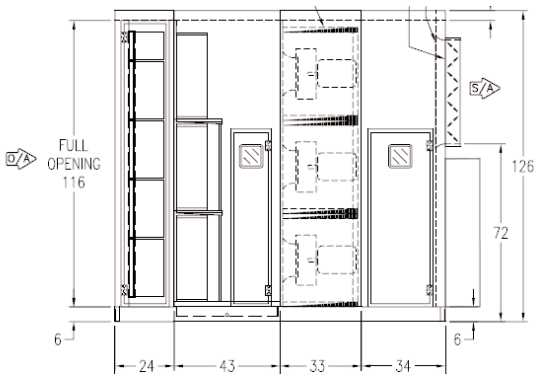
Offices

FANWALL TECHNOLOGY® *Case Study*

A Retrofit Solution For Old AHUs

How do you get a 125-ton, 50,000 cfm air handling unit (AHU) through a 36-inch wide door? The answer, of course, is that you don't—not without extensive demolition and lengthy interruption of business operations. That all-too-common problem was recently faced by RDK Engineers at the Marlborough, MA facility of a large commercial client. In fact, six AHU's and return fans, all located in interior mechanical rooms in the 350,000 SF building, needed to be replaced, and the work had to be completed over three-day weekends with no disruption to the client's staff. The solution, developed by RDK's Vinny Bettano, employed one of the first uses of innovative FANWALL TECHNOLOGY® in New England.



Space saving elevation view of 33,000 cfm knock-down Ventrol® air handler with filter bank, coil bank, FANWALL array, and access sections. Note that the FANWALL array occupies only 33-inches in unit depth.

At a Glance

- Owner of 350,000 sq ft building needed to upgrade six aging air handling systems located throughout the building
- Replacement air handlers or fans were too large to fit inside the building without demolition
- Solution: FANWALL TECHNOLOGY and knock-down air handler construction, which allowed the large single fans to be replaced with a multi-fan array and the air handler to be disassembled and reassembled inside each equipment room
- Units move from 33,000 to 50,000 cfm at a total static pressure of nearly 5 inches
- Additional benefits include lower acoustic levels, increased airflows, and improved airflow through coil and filters.

Office Building Upgrade Made Easy with FANWALL TECHNOLOGY®

Specifying knock-down construction for the air handler with FANWALL TECHNOLOGY makes it easy to fit the pieces inside an existing building and avoid expensive demolition. Disassemble the AHU on site or have it arrive already disassembled as shown above. FANWALL cells fit through standard width doorways.

Money-Saving Ways To Upgrade Fan and Air Handling Systems

Developed by HUNTAIR® and applied in Ventrol® air handlers for this project, FANWALL TECHNOLOGY® replaced the traditional large single or dual fan AHU's with a custom-engineered "wall" of smaller high-efficiency fans assembled into a rectangular array. The array can contain 2 to 300+ direct drive fans, all controlled by a single variable speed drive, that discharge into a single plenum. Because the array can be configured into virtually any arrangement, it can be designed to fit into spaces that would be impossible for traditional systems. And since it is modular and final assembly is done entirely on site, installation in formerly-impossible locations is no longer a problem.

The FANWALL® systems designed by RDK for the Marlborough project, for example, each comprised of six AHUs configured with a 3x3 supply FANWALL array, and six air handlers configured in a 2x2 return FANWALL arrays, were carried into the building thru conventional doors and installed on week-ends with no disruption in service as required by the client.

As advantageous as these benefits are, FANWALL TECHNOLOGY also delivers a number of other benefits that have generated equal interest from building owners, design engineers and architects. For example, redundant fans mean increased reliability, since even if one fan fails, the rest of the system remains operational. The elimination of belts and sheaves and use of direct drive fans with sealed bearings dramatically reduces maintenance time and expense. Expensive sound attenuation can often be eliminated because FANWALL units are significantly quieter than traditional systems. Last but not least, FANWALL arrays can save valuable facility real estate, with unit footprint reductions of 30-50%.

FANWALL TECHNOLOGY Benefits

Originally developed for demanding, critical industrial applications like electronics cleanrooms, the benefits of FANWALL TECHNOLOGY for use in a wide range of other facilities, including commercial buildings, hospitals, museums, and academic facilities, has become increasingly obvious. Since RDK's initial use of the technology in Marlborough in 2006, the company has designed FANWALL systems for a number of additional retrofit and new construction projects, prompted by the success of the Marlborough installation and the enthusiasm of clients who have viewed it in operation.

Other Applications

For example, the Federal Reserve Bank of Boston (FRBB) had a custom 56,000 cfm AHU in the basement that had been assembled in place while the building was being constructed 30 years ago. The existing supply fan could no longer generate sufficient static pressure after the AHU was converted from constant to variable volume to conserve energy. Replacement with a traditional fan unit would have required prohibitively- expensive demolition. Instead, RDK designed an array of ten smaller high-efficiency supply fans to replace the old fan, which was demolished. The new supply fan section was easily brought in and assembled in the basement mechanical room, and delivers the performance needed by FRBB.

Big Savings for New Construction

For new construction, the attractiveness of a FANWALL system is often based on features beyond ease of installation in tight spaces. The same client for whom RDK designed the retrofit FANWALL system in Marlborough subsequently requested that they also use the technology for a new 550,000 SF building in Smithfield, RI. The selection of FANWALL TECHNOLOGY for the cutting-edge facility, which is aiming for LEED Silver certification, was driven by the system's ease of maintenance; energy efficiency; built-in redundancy; and ultra-quiet operation. The system is so quiet, in fact, that $350,000 in sound attenuation equipment was eliminated from the final design.

Says Rob Proctor, CES Group's New England representative Alfieri Proctor Associates, "People who have seen the installed system in operation have been instantly impressed with the technology's benefits and potential. Right now, it's under evaluation or in design for use at several area hospitals, laboratories and office buildings, and we expect that number to grow quickly as word gets out about the system's advantages."

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