

Media Contact:
Brad Brenner
(503) 736-0610
brad@brennerassociates.com



≡ CASE STUDY ≡

SEALING LINED DUCTWORK WITH AEROSEAL PROVES KEY TO SUCCESSFUL HVAC RENOVATION AT GLENWOOD SCHOOL

With Upgrade To A Variable Air Volume System, Sealing Ductwork From The Inside Ensures Maximum Efficiency, Increased Comfort, and Improved Indoor Air Quality

The HVAC system at Glenwood Junior High School in Princeton, West Virginia is more than 30 years old and was in need of an upgrade. Teachers complained about inadequate heating and cooling in some of the classrooms, and the school board was looking to reduce overall energy use. So the engineer on the project decided to replace the current constant air volume with a variable air volume (VAV) system reusing the existing ductwork. He called in the duct specialists at Air Duct Solutions for their expert advice.

In Brief

Building: Glenwood Junior High School
Location: Princeton, West Virginia
Engineer of Record: ZMM Architects & Engineers
Aeroseal Provider: Air Duct Solutions, Roanoke, VA
Goal: Reduce duct leakage for maximum efficiency
Before Aeroseal: 5,131 CFM of leakage
After Aeroseal: 2,359 CFM of leakage
Results: Aeroseal eliminated 2,772 CFM of leakage – or 6.93 tons of cooling – well below the leakage rates demanded by building code.



An inspection of the ductwork revealed that the interior was lined with insulation and included more than a dozen reheat coils located throughout the system. It was also the dirtiest ductwork the team had ever seen – an indication that there was significant duct leakage.

Faced with this reality, the engineers knew they had to seal the ductwork in order to maximize the efficiency of the new VAV system, minimize energy loss and keep air contaminants from entering or exiting the ductwork where it could spread throughout the school building. The ductwork was hidden above ceiling, so the prospect of manually sealing was logistically and economically daunting. Then Air Duct Solutions suggested they aeroseal the duct system instead. With aeroseal, they could reach hard-to-access leaks without removing the interior lining or damaging the heating coils. Most importantly, Air Duct Solutions promised it could have the entire 161,096 CFM duct system sealed over the week-long Easter break and have the school ready for students the following Monday.

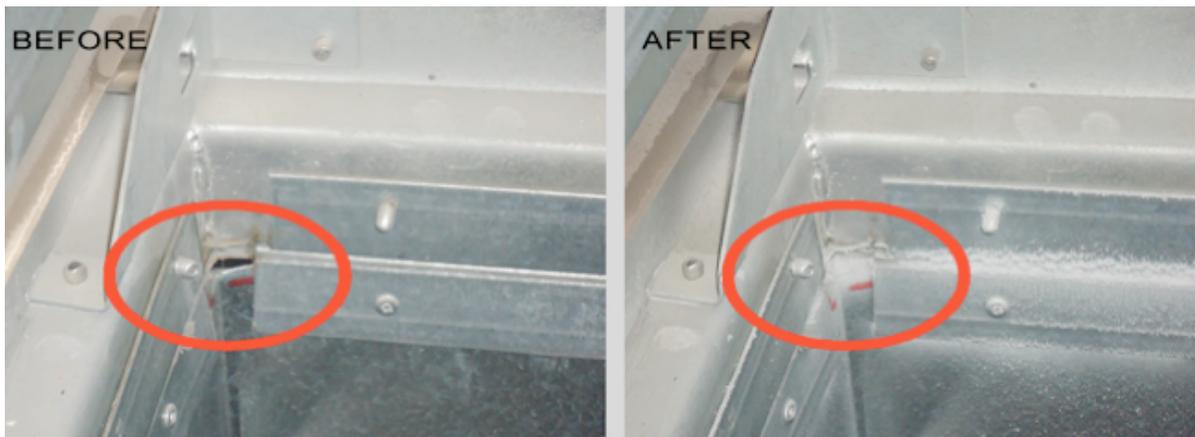
Testing revealed pre-seal leakage at 5,131 CFM. When the project was finished, Air Duct Solutions had reduced leakage by 2,772 CFM or 6.93 tons of cooling. The team finished work on a Sunday evening and students were back in the class on the following Monday morning. The ductwork was cleaned and sealed and ready to provide maximum efficiency for the new HVAC system upgrade.

"As 2010 ASHRAE code kicks in, this is the only way to go. I'm not going to have someone try to find and seal all the little holes manually. With aroeseal, you don't have to take off the insulation or uncover hidden ductwork. On this project, the aroeseal process saved tons of air that was being cooled and then lost through leaks in the ductwork. Now we have a more efficient system, using less energy, doing a much better job of heating and cooling the building. When it comes to remodel or renovation projects, there really isn't an alternative."

San Butzer
Project Engineer
ZMM Architects & Engineers

"There were a lot of questions beforehand regarding the use of the spray sealant in a classroom setting, but the results proved any prior concerns unnecessary. The sealing was completed in the evening and the school was open for business the next day. I have not heard of any complaints whatsoever regarding the smell or the possible spread of sealant in the classroom. Everybody was satisfied."

Gary Bailey
Mercer County Maintenance Director
Mercer County Office of Education



Aroeseal – The Technology

- Developed at Lawrence Berkeley National Laboratory in 1994.
- Research for aroeseal technology was partially funded by the U.S. Department of Energy.
- Aroeseal is the only duct sealant technology that is applied from the inside of the duct system. It is delivered as a non-toxic aerosol mist that seeks out and plugs leaks.
- Aroeseal has proven to be 95% effective at sealing air duct leaks.

For more information on this sealing project or about Aroeseal in general, contact Aroeseal at (937) 428-9300. You can also visit the Aroeseal website at www.aroeseal.com.

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