

# CASE STUDY

## Glenwood Junior High School

### Glenwood Junior High School Fixes Hot/Cold Spots In Classrooms Using Aroseal

Facility engineers replaced the 30-year-old HVAC equipment and sealed the ductwork with Aroseal to fix HVAC issues, increase energy efficiency, and meet building codes.

For the teachers at Glenwood Junior High School in Princeton, West Virginia, it was all about comfort. Depending upon the time of the day, classrooms on one side of the building were either sweltering hot or frigid cold – and with only a few thermostats controlling the entire building, it seems like a constant fight to stay comfortable.

For the engineers, however, it was all about efficiency. The school administrators were looking to save money and the 30-year-old HVAC system was just not cutting it anymore.

To fix the heating and cooling issues (e.g. hot/cold spots in classrooms), it was decided to replace the existing constant volume (CV) HVAC system with a more efficient variable air volume (VAV) HVAC system using the existing ductwork.

However, an inspection of the ductwork revealed duct issues that hinder performance of the new HVAC equipment install. Specifically, the interior of the air duct system was lined with a fiberglass insulation and some of the dirtiest ductwork the contractor had ever seen. They could clean the ducts, but chances were good that air leaks in the ducts were responsible for the dirt get there. If the school hoped to keep the ducts cleaned and get the level of energy efficiency and performance promised by the new VAV HVAC system, then they would need to test and seal the ductwork too.

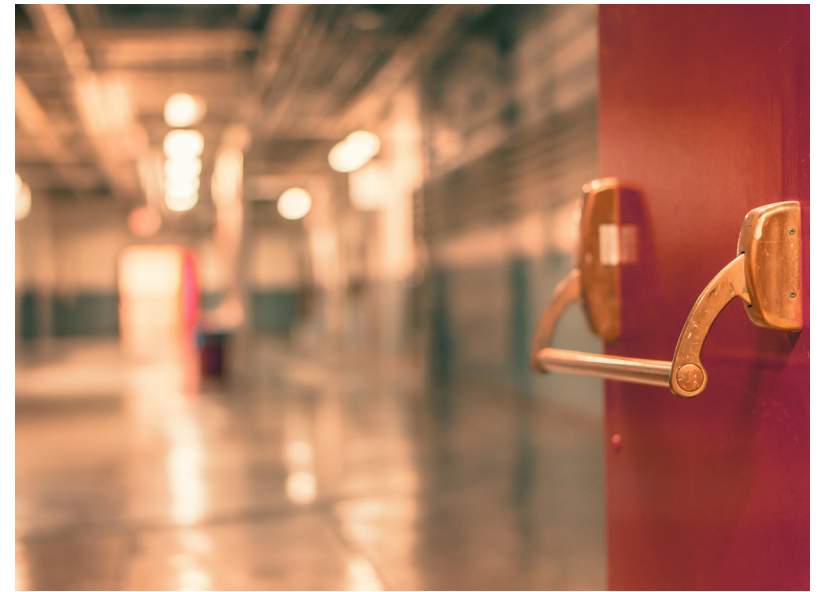
After lengthy research to determine the best approach to sealing the ducts, Aroseal duct sealing was added to the scope of work (SOW) performed by Air Duct Solutions. It would work to seal the entire air duct system from the inside – despite the fact that it was lined with insulation. Using the Aroseal technology also meant that they wouldn't have to tear into the ceilings to access the ducts or spend time and labor trying to locate and seal the leaks by hand.

Plus, the duct sealing time using Aroseal is quicker than hand sealing alone. In fact, Air Duct Solutions promised they could seal the entire system over Easter break and have the school ready for the students' return immediately following the project. The Aroseal crew began duct sealing at the beginning of the holiday.

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#### PROJECT OVERVIEW

**BUILDING**

Glenwood Junior High School

**LOCATION**

Princeton, West Virginia

**AEROSEAL CONTRACTORS**

Air Duct Solutions

**CONTRACT ENGINEER**

ZMM Architects & Engineers

**GOAL**

Reduce duct leakage for maximum efficiency

**BEFORE AEROSEAL**

5,131 CFM of leakage

**AFTER AEROSEAL**

2,359 CFM of leakage

**RESULTS**

Aroseal eliminated 2,772 CFM of leakage – or 6.93 tons of cooling – well below the leakage rates demanded by building code

They divided the system into several sub-sections, sealing each one individually. They were finished on a Sunday and the students returned to class the following morning.

The computer-controlled AeroSeal process generates a Certificate of Completion at the end of each job showing the pre-seal and post-seal duct leakage (CFM). Before sealing, the air duct system had a whopping 5,131 CFM (cubic feet per minute) of leakage. After sealing with AeroSeal, the leakage was reduced by 2,772 CFM, and the leakage rate was also made compliant with current new construction duct sealing codes.



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 by hand. With AeroSeal, you don't have to take off the insulation or uncover hidden ductwork. On this project, the (patented) AeroSeal process saved tons of air that was being cooled and then lost through leaks in the ductwork. Now we have a more efficient (HVAC) 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

"On this project, the AeroSeal process saved tons of cooling," said Sam Butzer, project engineer, ZMM Architects & Engineers. "We'll have a more efficient system using less energy doing a much better job heating and cooling the school building. When it comes to remodel or renovation projects, there really isn't a (better) alternative."



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**  
Maintenance Director  
Mercer County Office of Education



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