



Today's Agenda



- **Ductwork Construction and the impact on Indoor Air Quality and Proper Ventilation**
- AeroSeal Duct Sealing Solution
- JW Marriott: Musty odors and little ventilation
- Nemours Children's Clinic: Inadequate ventilation and the spread of nosocomial infections
- Miami Valley Crime Lab: Smells of the morgue throughout the entire building
- University of Miami- Fume Hoods not up to code
- Q&A

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Ductwork Construction and the impact on IAQ



- According to the EPA and others, 80% of today's buildings have ventilation shafts that leak an average of 15% or more. These leaks are the primary cause of ineffective building exhaust.
- Like sucking air through a straw with holes in it, no matter how hard you try, getting the straw to work can be an impossible feat...until you seal those holes.



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Ductwork Construction and the impact on IAQ



Research has clearly linked faulty building ventilation to higher energy costs, added maintenance costs, chronic health issues, reduced worker productivity, increased absenteeism, lower student scores, and indoor comfort problems. Some common signs of poor ventilation include:

- Persistent Mold & Mildew – Especially in Bathrooms
- Chronic Odor Issues
- Higher than Normal Energy Bills
- High Rate of Worker Illness & Absenteeism
- Noisy Exhaust Systems



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Ductwork Construction and the impact on IAQ



- Light commercial duct leakage is typically 30% or more
 - 2 independent studies – 100s of buildings – 1 conclusion
- 75% of ducts leak 10-25%
- Leaks in the return duct allow contaminants from one part of the building to be sucked into the duct system and then spread throughout the rest of the facility.



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Aeroseal Solution



- Proven, patented technology
- Seals HVAC ducts from the inside out
 - Reduces 90% of leakage
- Overcomes human shortfalls
 - No access limitations
 - Finds and seals all leaks
- Payback usually 2 to 7 years
- Verifiable & guaranteed



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Application FAQs



- Does not coat the ductwork
- Only sticks to the holes
- Will span hole up to 5/8" in diameter or a seam 5/8" wide



Video Demonstration



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Sealant



- Vinyl Acetate Polymer:
 - Base for chewing gum, hair spray and water-based paints
 - Keeps elasticity – life expectancy over 30 years
 - No VOC off-gassing after curing – 2 hours to cure
- UL certified and in ASTM compliance for:
 - Surface burning
 - Mold growth and humidity
 - Interior duct burning
 - Leakage reduction
 - Durability
- Meets NFPA 90A standards
- Uses only one gallon for every 2,000-3,000 CFM of leakage



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Why Seal Ducts?



- **Energy conservation**
- Indoor air quality
- Comfort
- Avoid cost of replacing ducts
- Eliminate unsightly mastic on architectural ducts
- **Familiar, Important Issues**
 - High energy costs: 20-40% loss
 - Cold room at the end of the hall
 - Complaints about odors and illnesses
 - Renovation: need to buy new ducts
 - Building ventilation does not meet spec
 - Airborne contaminants – close building?
 - High fan speeds due to poor air flow
 - New air handler due to poor air flow

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JW Marriott Atlanta Buckhead



- Exhaust levels an issue since construction 28 years prior
 - Top floors of 23 story building pulling 40 CFM as designed
 - Bottom floors only pulling ~5 CFM
- Musty odors one of numerous complaints in the upscale hotel due to poor ventilation



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JW Marriott Atlanta Buckhead



- "We looked at several options and the Aroseal technology stood out as being the most economical and non-intrusive process," said Frank Atkins, the hotel's director of engineering.
- Average leakage was reduced from 397 CFM down to 62 CFM.
- The musty odors that plagued the hotel for years are now gone – the facility managers
- Their energy bill reflects thousands of dollars in annual savings.
- "Aerosealing the ductwork proved to be a significant aide in improving the overall ventilation of the building," said Atkins. "I think it's a good technology, and it proved to be a key component of the overall strategy used to solve our ventilation issues."



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Nemours Children's Clinic



- Negative pressure and inadequate ventilation could support the spread of nosocomial infections
- Numerous retrofits and extensions added to ventilation system caused engineers to be unsure of where problems were coming from
- Bottom floors not as well ventilated as the top



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Nemours Children's Clinic



- Contaminated air is now being removed from the building
- Engineers were able to optimize the exhaust system after ducts were sealed
- Bottom floors are as well ventilated as the top



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Miami Valley Crime Lab



- Smell of the rotting corpses would permeate the building
- Multiple remediation techniques were not successful. These included:
 - New HVAC system
 - New high-efficiency fans
 - New exhaust system incinerator,
 - Insulating the walls or any other strategy used so far.



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Miami Valley Crime Lab



- 98% reduction of duct leakage
- The facility director and building occupants declared the issue with odors 100% solved!
- " I knew we had leaks in the ventilation system that allowed the spread of odor throughout the entire building, but there was no way we could access and seal the ductwork without completely tearing down the entire structure. Over several years, we spent well over a hundred thousand dollars in new equipment and outside consultants trying to solve the problem, but nothing worked. Then we tried aereosealing, and the problem was solved". – Bill Epperson, Associate Engineer Montgomery County Government

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University of Miami Science Laboratories



- Fume Hoods not providing sufficient exhaust in science laboratories
- Traditional duct sealing methods would require a near demolition of 50- year old building
- Not solving the issue would mean that fume hoods would not meet safety requirements and labs would be inoperable



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University of Miami Science Laboratories



- "Research showed that aereoseal has been successfully used at a number of other universities, science laboratories and hospitals. But the bottom line is that there was no other viable option for fixing this problem... We were pleased with the results and I wouldn't hesitate to recommend it to others."- Gary Tarbe, Senior Project Manager, University of Miami
- All 29 fume heads were retested and met safety requirements



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Installation Examples



- Federal /Military
- Healthcare
- Higher Ed
- Multi-Family / Hospitality
- Critical Applications
- Light Commercial



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Awards/Certification/Recognition



Questions?

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Thank You!

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