



1CLEANAIR

# COMMERCIAL SOLUTIONS

HVAC Experts  
with Proven Duct  
Sealing Technology



1CLEANAIR.CA

# Leaky Ductwork is Causing Critical Issues

To differentiate themselves in a competitive market, Energy Service Companies (ESCOs), engineers and contractors are looking for new ways to help facility owners reduce costs, modernize their infrastructure, and drive revenue. Research shows one of the clearest opportunities for improvement in commercial buildings is duct leakage.

## HVAC Uses the Most Energy, Then Wastes It

Leading organizations agree duct leakage is a critical issue.



35% of a building's energy goes to HVAC – the largest single source of consumption



75% of buildings have leaky ductwork, helping make HVAC the biggest source of energy waste



\$2.9 billion is the annual cost of energy wasted by duct leakage



## Duct Leaks Ruin the Air We Breathe

- 40% of the U.S. population risks serious health problems due to poor indoor air quality (IAQ) – Greenguard Certification
- IAQ decreases when contaminants, including dust, mold spores, mildew, noxious emissions, and germs, infiltrate leaky ductwork and they are circulated throughout the building
- Leaky ventilation shafts reduce exhaust fan effectiveness, potentially causing mold and mildew
- Improper HVAC system operation and maintenance is one of the most common problems impacting commercial indoor air quality – Center for Disease Control

## Specs & Standards are a Constant Challenge

- Building specifications, IECC energy codes, ASHRAE requirements, and LEED certification continue to change and get stricter on a regular basis
- Duct leakage can put undue stress on a building's HVAC equipment, lowering performance and making it difficult to meet requirements
- Often located behind drywall and crawlspaces, ductwork can be impossible to repair without demolition and the added expense of restoration
- Reaching SMACNA building standards for supply, return, and exhaust ductwork is difficult to achieve with traditional sealing methods, especially if it's inaccessible

Aeroseal's team of experts and network of service providers target building ventilation and airflow issues to help commercial projects reach their goals – from energy savings and code compliance to IAQ and indoor comfort. And they're backed by a comprehensive process and innovative duct sealing technology that's delivered consistent results for more than 150,000 projects nationwide.



### Hilton Hotel, Chicago

“If this new technology didn't exist, we would have had to rethink the entire project – perhaps replacing the entire duct system.”

**David Shaefer**

*Project Engineer*

*Gruman/Butkus Associates*

# The Right **People, Process & Technology** for Your Next Project

Aeroseal's trusted team of experts and network of service providers work as a seamless extension of your project team. Using our comprehensive, four-phase process, and innovative duct sealing technology, we handle your airflow issues so you can focus on other project priorities.



Aeroseal has four different models to calculate duct leakage and inform project energy savings models.



## PHASE 1 Audit & Evaluation

Data gathering and site inspection for an efficient and effective project plan.

Every building is different based on type, location and its HVAC system. With a thorough understanding of a building's current state, we ensure an efficient and effective project timeline.



## PHASE 2 Model & Plan

Quantifying ductwork leakage and running our energy model to ensure plan success.

The project implementation plan is part of each project's quotation or bid documentation and is based on input from phase one.

The plan estimates energy savings from our duct leakage reduction. It is created using one of AeroSeal's four different energy models. Duct leakage estimates can be converted for use in a project's broader energy modeling.



## PHASE 3 Repair, Clean, Sanitize & Seal

Customizing solutions to reach project goals and meet each building's needs.

- Making sure the duct system doesn't need repairs is critical to ensuring project results. Our team then determines if ductwork needs to be cleaned and sanitized before sealing.
- We pressurize your ductwork system, including ventilation shafts, heating and cooling shafts and other ductwork, to determine the amount of leakage.

- Using our non-invasive technology, we seal the ductwork to ensure the building's HVAC system can operate at peak efficiency.
- In fact, AeroSeal duct sealing often eliminates the need to replace entire ductwork systems.



## PHASE 4 Measurement & Verification

Tracking and verifying project work digitally before issuing a certificate of completion.

The AeroSeal software tracks results in real time. Once leak reduction goals have been reached, the results are recorded and a certificate of completion is printed showing before and after leakage amounts.



# Proven Duct Sealing Technology, **Guaranteed Results**

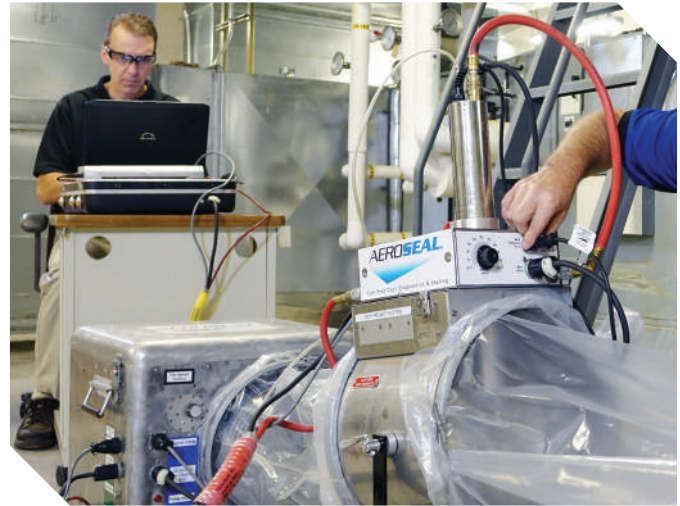
The AeroSeal system is the foundation of our comprehensive process. It was created by scientists at the Lawrence Berkeley National Laboratories, with partial funding from the DOE and EPA. With more than 20 years of use in the field, our technology has a safe solution for any building type.

## How It Works

AeroSeal's technology injects a fog of aerosolized sealant into pressurized ductwork to seal air leaks from the inside. It relies on a software-based system to continuously measure airflow and leakage throughout the sealing process.

Water-based sealant particles accumulate only where leaks are located, completely closing them off. AeroSeal is non-invasive, working from the inside of the ducts to locate and seal the leaks regardless of ductwork accessibility. This eliminates the need to tear down walls or strip off insulation.

The system records results in real-time, stopping when desired levels have been reached. Our process is more cost-effective and consistent than manual sealing. It's why we guarantee results.



## Sealant is Safe, Certified

AeroSeal's water-based sealant uses a safe, vinyl acetate polymer that gives no VOC off-gassing once dry after applying. It gives off no odor and no sealant particles are left in the HVAC system or building once the process is complete. AeroSeal and its sealant comply with some of the industry's most exacting requirements. Our sealant is specified, ranked and certified by some of the leading regulatory organizations.



# The Aeroseal Duct Sealing Process

Our teams follow a predetermined schedule to ensure duct sealing doesn't impact building operations. In fact, multi-floor buildings can be treated with Aeroseal without disruption to its occupants.

- Our project technicians block the building's diffusers, grilles and registers, isolate the air handling unit; then they connect the Aeroseal equipment.
- A pre-seal test is conducted to set the leakage benchmark.
- Sealant is then injected in precise amounts based on real-time software feedback.
- The water-based sealant uses a safe, vinyl acetate polymer that gives no VOC off-gassing once applied. No odor or sealant particles are left in the HVAC system or building.
- Once sealing is completed, we conduct a post seal test to measure final leakage.
- A certificate of completion is generated to measure and verify project results.



## Verifiable, Guaranteed Results



### Reduce Energy Consumption & Cost

Duct sealing addresses multiple sources of energy waste. For example, by reducing leaks 15%, fan requirements drop by 40% or more. This saves thousands of dollars every month.

Aroeseal increases HVAC fan efficiency and eliminates excess ventilation load to reduce energy costs. It is a verifiable and guaranteed way to offer energy savings with typical payback in three to five years.



### Improve Indoor Air Quality

Leaks in the return duct allow dust and other contaminants to be sucked into the duct system and spread throughout the facility. And exhaust fans can't remove contaminated air from the building if there are leaks in the ventilation shaft.



### Improve Building Ventilation

Leaky ductwork is the primary cause of ineffective building exhaust. In addition to causing problems with uneven and uncomfortable temperatures, this can lead to higher energy costs, and added maintenance costs.



### Meet Code & Spec

As duct leakage specifications get tighter and tighter, Aeroseal is specified as a routine component of commercial projects. Our consistent results will take you from hoping to knowing that you'll meet code requirements – the first time.



# Delivering Results for World-Class Customers

We deliver guaranteed results for some of the top ESCOs and commercial contractors. With more than 150,000 projects sealed across the nation, our team of experts and network of service providers have a deep understanding of federal, state and local codes as well as specific requirements for a broad range of industries.

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## Florida State Capitol Project

“The built-in verification aspect of AeroSeal is a real time and cost saver...It was pretty clear that there was going to be substantial savings with AeroSeal.”

**Jeremy Parker**  
*Mechanical Contractor*  
*Parker Services*

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“Aeroseal’s solution was part of a very creative design approach to meet critical facility needs and reduce energy consumption.”

**Tom Brisbin**

Chairman and CEO, Willdan Group, Inc.

# Government

Federal, state and local government projects rely on Aeroseal to help buildings meet strict energy efficiency and system performance requirements through better airflow and ventilation.

## Elihu M. Harris State Office Building

- GOAL** ..... Help building achieve energy savings performance goals by sealing ductwork system
- BEFORE AEROSEAL** ..... 79,956 CFM of total leakage
- AFTER AEROSEAL** ..... 3,966 CFM of total leakage
- RESULTS** ..... A more than 95% leakage reduction; along with other facility improvements, helping the project achieve \$717,000 in annual energy savings
- LOCATION** ..... Oakland, California
- ESCO** ..... Willdan Group, Inc.



“The Aero seal team’s communication was excellent! They were good at listening and giving us feedback. This helped us coordinate the job with the rest of the subcontractors and beat our schedule by six months.”

**Rob Lester**

Senior Project Manager, Ameresco

## Government

Federal, state and local government projects rely on Aero seal to help buildings meet strict energy efficiency and system performance requirements through better airflow and ventilation.

### Federal Bureau of Prisons Facility

- GOAL** ..... Avoid replacing ductwork system by repairing and seal existing system
- BEFORE AEROSEAL** ..... 49,147 CFM of total leakage
- AFTER AEROSEAL** ..... 5,731 CFM of total leakage
- RESULTS** ..... An 89% leakage reduction and \$140,000 energy savings achieved six months ahead of schedule
- LOCATION** ..... San Diego, California
- ESCO** ..... Ameresco Inc.

# CASE STUDY



“We now have the necessary building enhancements to position our district for a successful future and make a positive, long-term impact on our funding efforts.”

**Amanda Whitlock**  
Superintendent, Clinton Prairie School Corporation

## K-12 Education

From large, growing school districts to small local schools, Aroseal helps learning institutions comply with safety regulations, reduce energy costs and avoid costly demolition.

### Clinton Prairie School Corporation

- GOAL** ..... Reduce duct leakage as part of \$4.7 million in infrastructure upgrades as part of an energy performance contract
- BEFORE AROSEAL** ..... 20,948 CFM of leakage
- AFTER AROSEAL** ..... 2,033 CFM of leakage
- RESULTS** ..... A 90.2% leakage reduction leading to a \$1,748 rebate incentive from Duke Energy
- LOCATION** ..... Frankfort, Indiana
- MECHANICAL CONTRACTOR** . . . Johnson Controls, Inc.



“Aeroseal was the only viable option for fixing this problem. We are pleased with the results and I wouldn’t hesitate to recommend it to others.”

**Gary Tarbe**

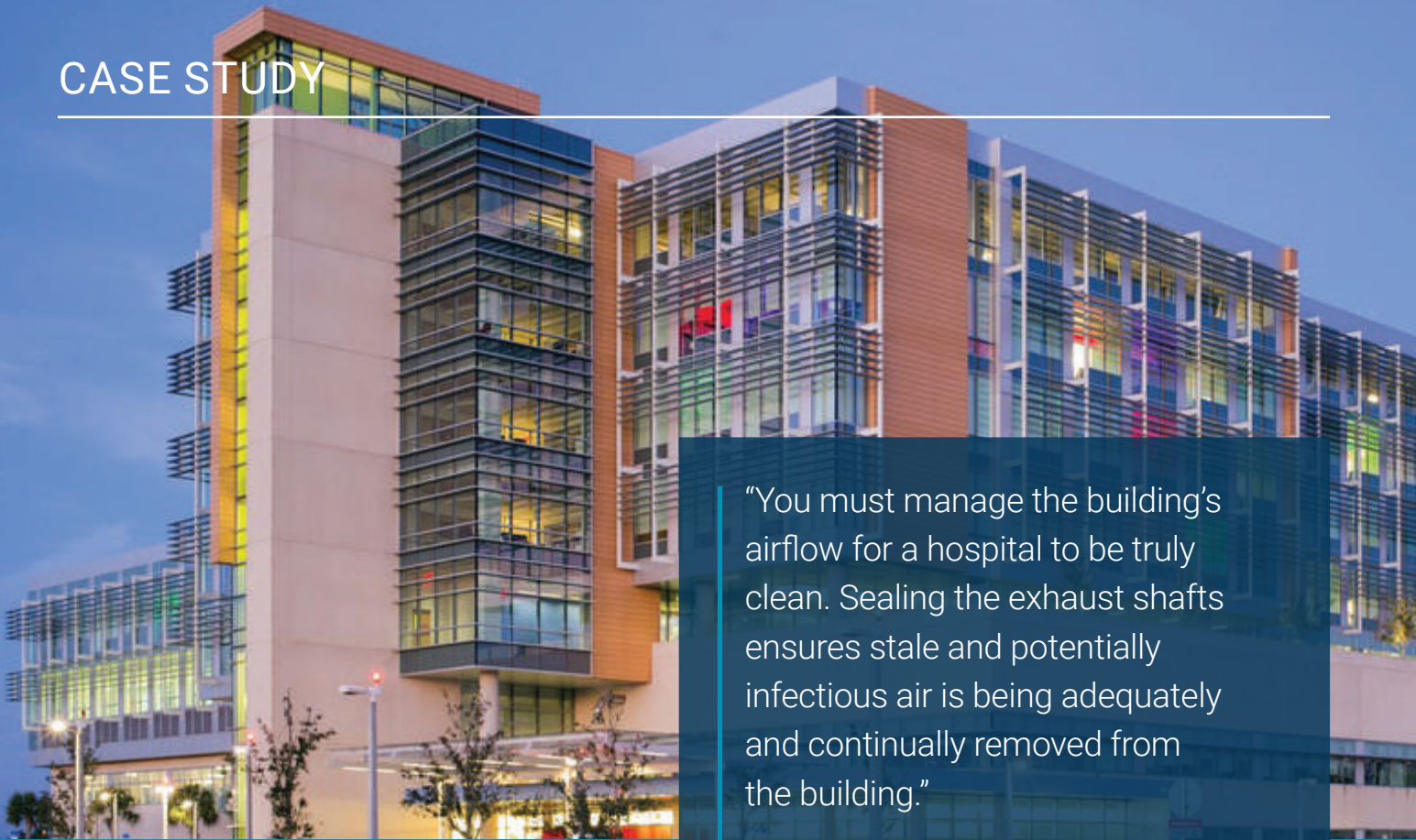
Senior Project Manager, University of Miami (Florida)

# Higher Education

From ivy league universities to small college campuses, Aeroseal helps learning institutions comply with safety regulations, reduce energy costs and avoid costly demolition.

## University of Miami’s Cox Science Building

- GOAL** ..... Reduce duct leakage to get all laboratory fume hoods code compliant
- BEFORE AEROSEAL** ..... 1,000+ CFM of leakage
- AFTER AEROSEAL** ..... 215 CFM of leakage
- RESULTS** ..... With 80% leak reduction, all 20 fume hoods were retested and successfully met safety requirements
- LOCATION** ..... Coral Gables, Florida
- MECHANICAL CONTRACTOR** .. SmartAir Systems



“You must manage the building’s airflow for a hospital to be truly clean. Sealing the exhaust shafts ensures stale and potentially infectious air is being adequately and continually removed from the building.”

**Derrick Rhodes**  
President, Aroseal Southeast

# Healthcare

We understand what it takes for healthcare facilities to meet exacting IAQ standards and provide a more comfortable environment without disrupting their 24/7 operations.

## Nemours Children’s Clinic

- GOAL** ..... Improve HVAC system airflow; reduce the risk of nosocomial infections from germs distributed through leaky ductwork
- BEFORE AEROSEAL** ..... 4,912 CFM of leakage
- AFTER AEROSEAL** ..... 723 CFM of leakage
- RESULTS** ..... Duct leakage reduced 85%, stopping the spread of germs and improving airflow throughout facility
- LOCATION** ..... Jacksonville, Florida
- MECHANICAL CONTRACTOR** .... Aroseal Southeast



“The results speak for themselves. AeroSeal’s certificate of completion, with before and after measurements, reassured us our energy models would be accurate.”

**Edward Aviles**  
Project Engineer, Pfizer

# Manufacturing

Manufacturing facilities with clean rooms and other specialized production areas rely on AeroSeal to ensure their duct systems can maintain extremely low levels of particulates like dust and other airborne contaminants.

## Pfizer Pharmaceutical Dry Compress Facility

- GOAL** ..... Achieve level of extreme humidity control required when dry pharmaceutical products are compacted into pill form and reduce energy usage
- BEFORE AEROSEAL** ..... 2,424 CFM of leakage
- AFTER AEROSEAL** ..... 77 CFM of leakage
- RESULTS** ..... 96.85% leakage reduction, achieved required specifications while saving \$35,000 in annual energy costs
- LOCATION** ..... Vega Baja, Puerto Rico
- MECHANICAL CONTRACTOR** . . . . Nemar Technology Group



“We identified multiple segments of ductwork with major leakage issues— including smoke exhaust ductwork spanning more than 30 stories. Manual sealing was impossible, so we needed an innovative solution to solve the issue.”

**Mohammed El Omla**

Project Director, El Seif Engineering Contracting Co.

# Corporate Office

IAQ and comfortable airflow is critical to office employee health, safety and comfort. Duct sealing improves air quality and eliminates uneven and uncomfortable temperatures.

## King Abdullah Financial District (KAJD) Towers – Parcels 3.04 and 3.05

- GOAL** . . . . . Reduce duct leakage to pass inspection and turn over these mixed-use high-rises on schedule
- BEFORE AEROSEAL** . . . . . 15,289 CFM of leakage
- AFTER AEROSEAL** . . . . . 257 CFM of leakage
- RESULTS** . . . . . Duct leakage reduced 98.3%, buildings pass inspection to allow construction to resume
- LOCATION** . . . . . Riyadh, Saudi Arabia
- CONTRACTOR** . . . . . AWT Services

## CASE STUDY



“The positive impact that aroosealing the shaft had on system performance was clear and immediate. We are now looking at using Arooseal elsewhere throughout the hospital to improve the efficiency of our ventilation system.”

**Michele Emond**

Project Manager, University of Ottawa Heart Institute

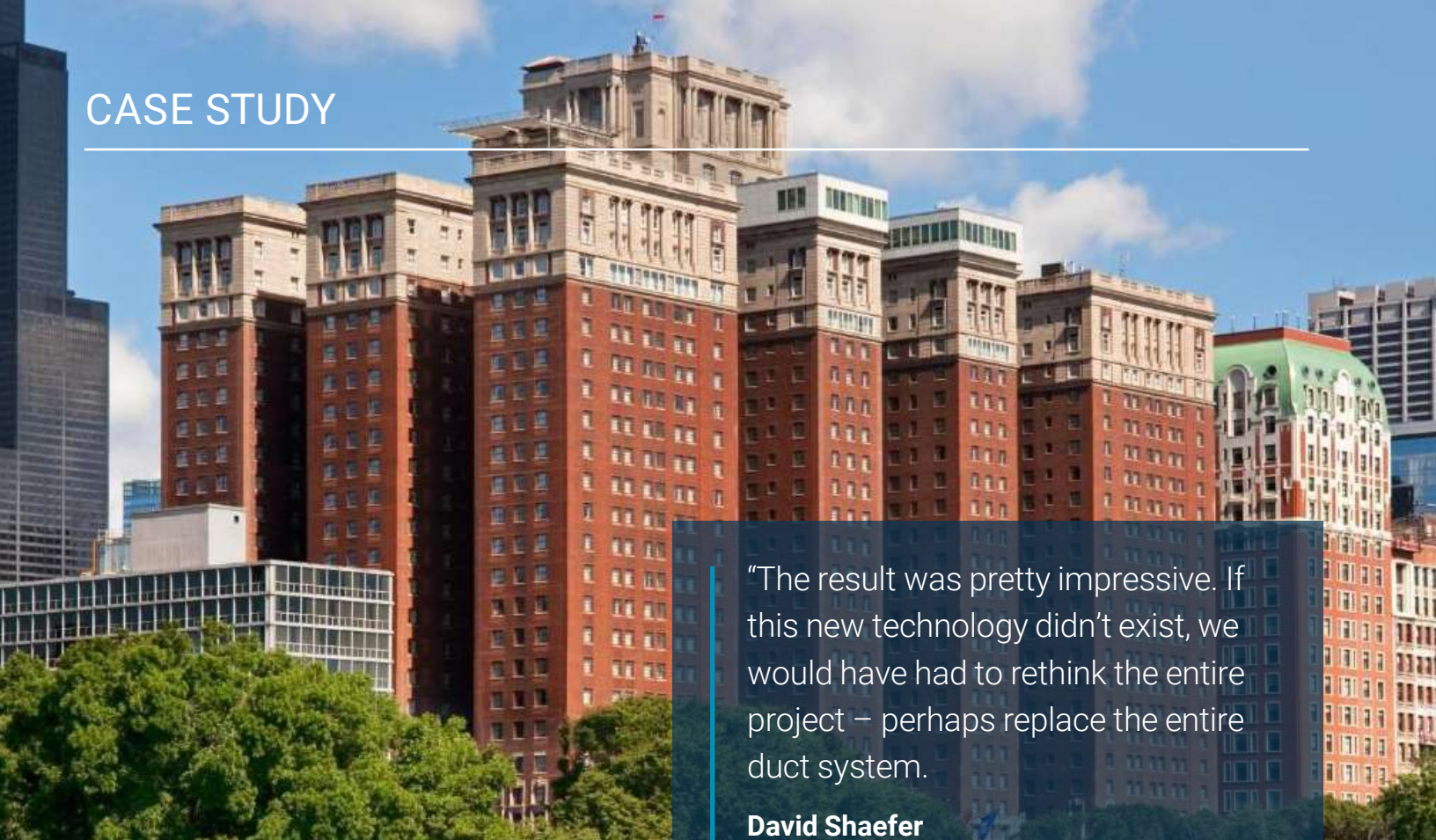
# Education

Hospitals and medical facilities are typically “on-call” 24 hours a day, 7 days a week. The significant quantities of outside air necessary for proper ventilation requires an increased amount of energy to condition the air properly.

## University of Ottawa Heart Institute

- GOAL** ..... Eliminate duct leakage as a cause of building-to-building air contamination
- BEFORE AEROSEAL** ..... Up to 800 CFM of leakage
- AFTER AEROSEAL** ..... 10 CFM of leakage
- RESULTS** ..... Virtually eliminated ventilation leakage; Improved system efficiency, Reduced utility costs
- LOCATION** ..... Ottawa, Ontario





“The result was pretty impressive. If this new technology didn’t exist, we would have had to rethink the entire project – perhaps replace the entire duct system.

**David Shaefer**

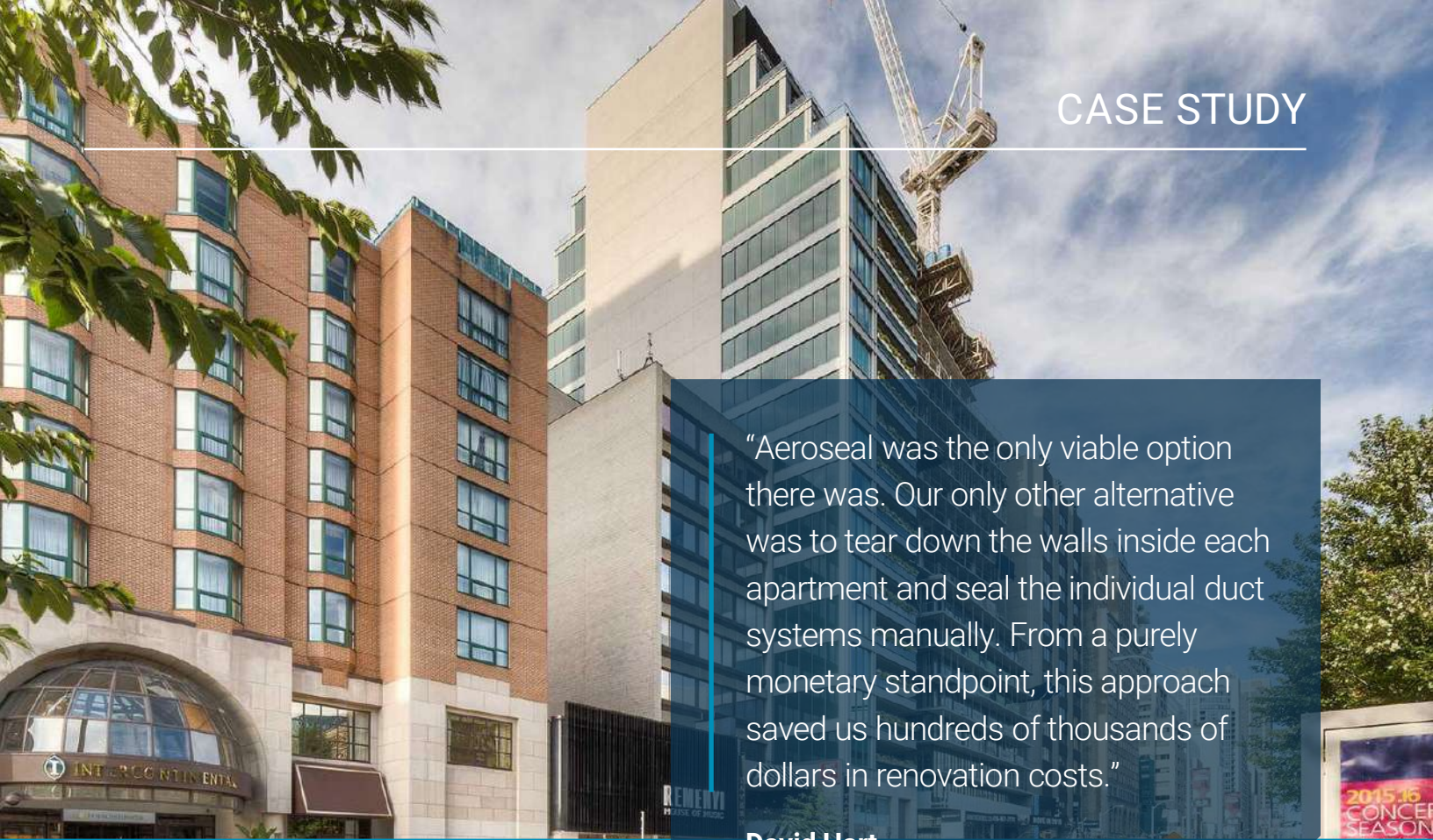
Project Engineer, Gruman/Butkus Associates

# Hospitality

From global hotel chains to local inns, AeroSeal supports the hospitality industry in meeting air quality standards, reducing energy consumption, and averting expensive overhauls.

## Hilton Chicago Hotel

- GOAL** ..... Repair leaks in the hotel’s air duct system to improve new HVAC equipment install performance
- BEFORE AEROSEAL** ..... 12,414 CFM of leakage
- AFTER AEROSEAL** ..... 613 CFM of leakage
- RESULTS** ..... Sealed ductwork with a 95% reduction of leakage in only three days;  
Fixed air duct system to comply with new HVAC system requirements
- LOCATION** ..... Chicago, IL



“Aeroseal was the only viable option there was. Our only other alternative was to tear down the walls inside each apartment and seal the individual duct systems manually. From a purely monetary standpoint, this approach saved us hundreds of thousands of dollars in renovation costs.”

**David Hart**

Project Manager, Yorkville Construction

# Condominiums

From luxury high-rise condos to family-friendly townhouses, Aeroseal supports residential living by enhancing air quality, reducing energy bills, and avoiding expensive maintenance.

## MuseumHouse Luxury Condo

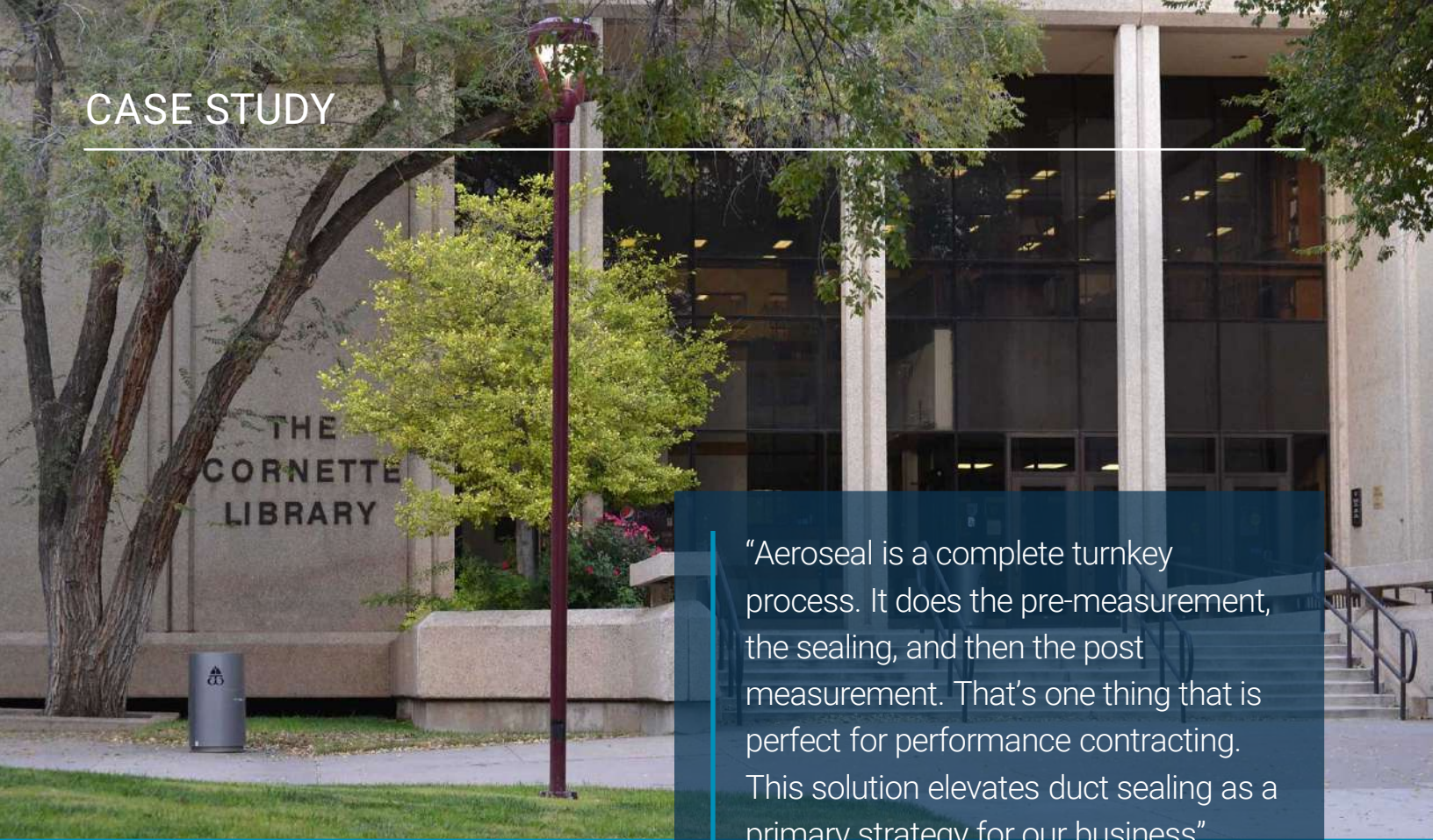
**GOAL** ..... Meet air handling unit (AHU) specifications for allowable duct leakage

**BEFORE AEROSEAL** .....300+ CFM of leakage

**AFTER AEROSEAL** .....6,5 CFM of leakage

**RESULTS** ..... Sealed ductwork to 90% average leakage reduction; Achieved compliance with duct sealing codes and improved HVAC performance

**LOCATION** ..... Toronto, Ontario, Canada



THE  
CORNETTE  
LIBRARY

“Aeroseal is a complete turnkey process. It does the pre-measurement, the sealing, and then the post measurement. That’s one thing that is perfect for performance contracting. This solution elevates duct sealing as a primary strategy for our business”

**Brad Kondrach**

Engineering Project Manager, Ameresco

# Education

From city libraries to local bookstores, Aeroseal aids in maintaining air quality, reducing energy expenses, and avoiding costly repairs. It provides a comfortable reading environment while preserving the establishment's structure.

## Cornette Library

- GOAL** ..... Reduce energy use / Guarantee savings
- BEFORE AEROSEAL** ..... 17,413 CFM of leakage
- AFTER AEROSEAL** ..... 1,271 CFM (92,7%)
- RESULTS** ..... Provided University with \$30,000 in annual energy savings
- LOCATION** ..... Texas A&M University, Canyon, TX

# Contact The **HVAC EXPERTS**

From better energy efficiency and IAQ to meeting code and increasing building comfort, learn how our team can deliver results for your project backed by our comprehensive offering and proven technology.

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