# Case Study

## Boston Scientific Medical Manufacturer


# Boston Scientific's HVAC Get's Efficiency Enhancement with Aeroseal

## Overview

Boston Scientific, a leading medical device manufacturer, operates a substantial plant in Dorado, Puerto Rico. As part of their ongoing efforts to enhance operational efficiency and reduce energy costs, they partnered with Aeroseal to address issues of duct leakage within their HVAC system. This case study explores the challenges faced, the solutions implemented, and the resulting benefits of Aeroseal's innovative duct sealing technology.

## Challenge

The Boston Scientific facility in Dorado houses critical laboratory environments where precise control over air quality and temperature is essential. The HVAC system serving these laboratories was experiencing significant duct leakage, which led to inefficiencies and increased energy consumption. The primary challenges included:

- High Energy Costs: Puerto Rico's high electricity rates made energy efficiency a critical concern.
- Duct Leakage: Leakage in the ductwork caused the HVAC system to operate less efficiently, leading to higher operational costs and inconsistent environmental conditions in the laboratories.
- Maintenance and Access Issues: Traditional duct sealing methods were not feasible due to the inaccessibility of the ductwork and the need for non-disruptive solutions in the sensitive laboratory environment.

## Solution

Boston Scientific engaged Nemar Technology Group, an Aeroseal contractor, to apply Aeroseal's duct sealing technology. The project focused on two key components of the HVAC system:

1. **AHU-1500 Supply Ductwork:** Serving the core laboratory area.
2. **EF-1500 Exhaust Ductwork:** Ensuring efficient removal of air from the laboratory environment.

## PROJECT OVERVIEW

### Boston Scientific

**LOCATION**
Dorado, Puerto Rico

**AEROSEAL CONTRACTORS**
Nemar Technology Group

**GOAL**
Reduce duct leakage and improving energy efficiency.

**BEFORE AEROSEAL**
2,542 CFM of total leakage

**AFTER AEROSEAL**
115.3 CFM of total leakage

**RESULTS**
95.7% leakage reduction; ROI of 1.5 years. Significant improvements in HVAC performance, reduced energy consumption and operational costs. Total annual savings estimated at $24,386.

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### Implementation

The Aeroseal process was conducted in November 2018, during a Thanksgiving holiday to minimize disruption to the facility's operations. The project was carried out in two phases on the same day:

- **Morning Session:** Sealing of the supply ductwork (AHU-1500).
- **Afternoon/Evening Session:** Sealing of the exhaust ductwork (EF-1500).

### Results

The Aeroseal treatment delivered remarkable results in reducing duct leakage and improving energy efficiency:

| SUPPLY DUCTWORK (AHU-1500): | EXHAUST DUCTWORK (EF-1500): |
|---|---|
| **Initial Leakage:** 1,467 CFM | **Initial Leakage:** 1,075 CFM |
| **Post-Sealing Leakage:** 82.3 CFM | **Post-Sealing Leakage:** 33 CFM |
| **Leakage Reduction:** 94.4% | **Leakage Reduction:** 96.9% |
| **Annual Fan Energy Savings:** $2,004 | **Annual Fan Energy Savings:** $2,487 |
| **Total Estimated Annual Savings:** $13,634 (including cooling energy savings and peak demand charge reductions) | **Total Estimated Annual Savings:** $10,752 |

The comprehensive sealing of both supply and exhaust ductwork led to significant improvements in HVAC performance, reducing energy consumption and operational costs. The overall reduction in fan power required and the decrease in cooling loads due to less duct leakage were key contributors to the cost savings.

### Impact and Future Plans

Boston Scientific's commitment to energy efficiency and operational excellence was further reinforced by the success of this project. The impressive results have led to a broader adoption of Aeroseal technology across their facilities. The company has planned additional Aeroseal implementation for new ductwork installations and future expansions.

The positive experience with Aeroseal has also been highlighted within the industry. Boston Scientific showcased the project at a major medical devices and pharmaceutical facilities event in Puerto Rico, where it received significant recognition and accolades.

> *What I like the most is that you can get to the fine details of sealing these small holes that would cost you a ton of energy over the year... it's been great, not too difficult to execute, and we've seen instant savings.*
>
> ***Marcelino Beltran** - Facilities Manager*
> Boston Scientific

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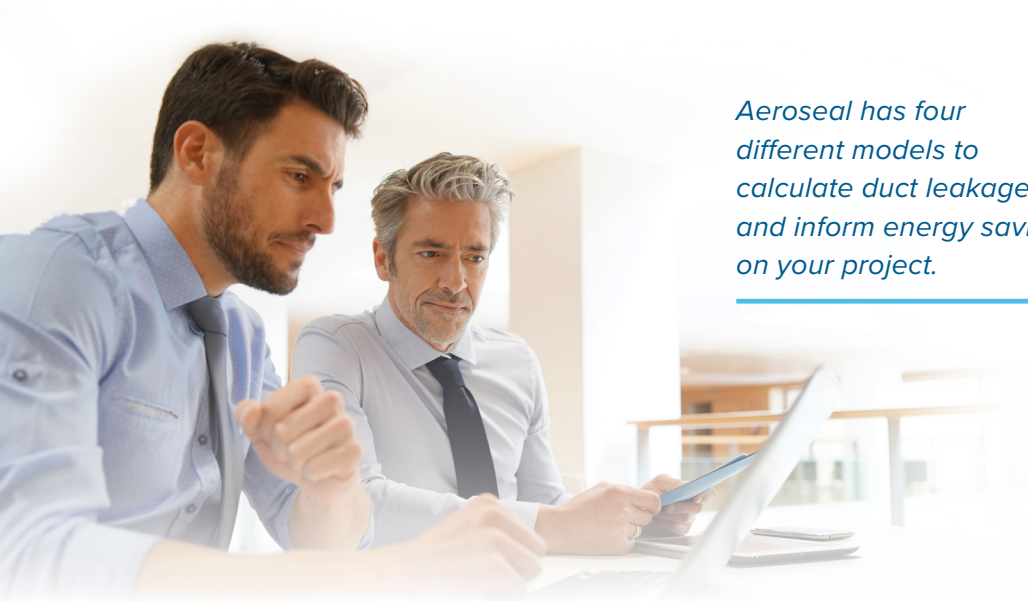
## Verifiable, Guaranteed Results

### Conclusion

Aeroseal's duct sealing technology provided Boston Scientific with an effective solution to their HVAC inefficiency challenges. The significant reduction in duct leakage, coupled with substantial energy savings, underscored the value of Aeroseal's approach. This case study exemplifies how innovative technology can drive operational improvements and cost efficiencies in critical manufacturing environments.



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

### Reduce Energy and Consumption Cost

Duct sealing addresses multiple sources of energy waste. For example, by reducing leaks by just 15%, fan requirements can drop by up to 40% This results in significant energy savings that can reduce utility costs by thousands of dollars every month.

Aeroseal 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 and 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.

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