



## Dramatic Indoor Air-Quality Improvement for Large K-12 Public School District

### Executive Summary:

#### Air Purification is a Priority for School Districts

School districts across the nation are challenged to improve student enrollment and maintain student and teacher retention rates amid increased environmental risks and air quality issues. The Federal Government's American Rescue Plan (ARP) Act has provided three rounds of investment in the elementary and secondary school emergency relief (ESSER) fund, with ESSER 3 specifying investment for improving indoor air quality in order to maintain healthy learning environments.

One of the largest school districts in Texas, Round Rock Independent School District (RRISD), began a comprehensive search for the right technology and solution to improve air quality in its some 60 schools. As part of this evaluation, it piloted the INVZBL N-Air ceiling mounted air purification system. It conducted this pilot in its Caraway Elementary School, where N-Air units were installed in the school's 300 wing. The results exceeded expectations, with INVZBL significantly reducing mold, pollen allergens, and culturable fungi in the air up to 99%.

**Organization:**  **ROUND ROCK**  
INDEPENDENT SCHOOL DISTRICT

**Website:** <https://roundrockisd.org>

**Industry:** K12 Education

### Goals

- Vastly improve indoor air quality in order to support RRISD's overall goals of:
  - Increased or maintained enrollment levels
  - Increased student productivity
  - Reduced teacher and student absenteeism

### Challenge

- Evaluating multiple possible solutions from hiring more maintenance staff, upgrading HVAC systems, or using new technologies
- Requires non-toxic, safe and, ideally, quiet solution
- Wants to leverage ESSER 3 funding; affordability important

### Solution

- 51 INVZBL N-Air UV-C air purification units - both ceiling and wall mounted
- Baseline and ongoing testing by OnSite LLC
- Installation by Alterman

### Results & Benefits

- Up to 99% reduction of mold, pollen allergens, and culturable fungi in the air
- More than 90% reduction of total particles and bioaerosols
- One-day installation
- Quiet, easy to maintain units

**The results exceeded expectations, with INVZBL significantly reducing mold, pollen allergens, and culturable fungi in the air up to 99%.**

### The Challenge:

#### How to Affordably and Effectively Improve Air Quality

David Hoedebeck, the Director of Maintenance and Facilities for RRISD, was looking at all options to improve the air quality in the 60 schools in the district. Like many of his peers, Hodebeck evaluated multiple solutions from bi-polar ionization to dry hydrogen peroxide, new HVAC units, and off-the-shelf air purifiers. He also tried increasing maintenance staff and the use of cleaning and disinfection chemicals. However, this introduced new cost and safety issues. The school district wanted a solution that was both non-toxic and safe for its students and staff but also highly effective.

In order for RRISD to optimize their available federal funds, they needed a solution that met both their short and long term budgetary parameters. In addition, they wanted to find a partner, not just a vendor to help them clean up the air. Hoedebeck was familiar with UV-C technology but had not evaluated any relevant products until he met with INVZBL. The key differentiators that attracted him to INVZBL were its use of UV-C technology and nano-material filters, and how its ceiling air purification units pull air up and away from people and surfaces instead of just moving air across the room.

## The Solution:

### INVZBL N-AIR UV-C Air Purifiers Installed in Pilot Program

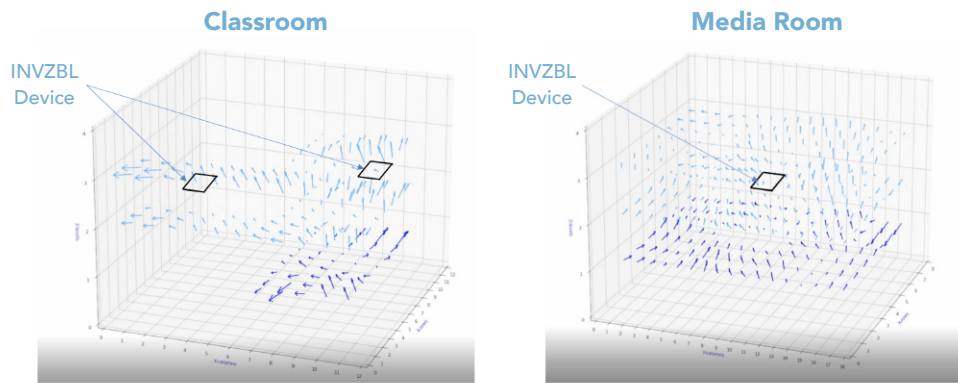
RRISD followed best practices in conducting this pilot program, starting with obtaining baseline data for its air quality in the 300 wing of Caraway Elementary School. Working with OnSite, a research and consulting group focused on testing indoor environmental qualities, RRISD established baseline metrics for the air quality across five areas in the 300 wing: Classrooms, Science Lab, Media Center, Hallways, and Storage Rooms.

The OnSite testing consisted of Airstat 3D Mapping, Surface Sampling and Bioaerosol monitoring for multiple pathogens, including: Mold Spores, Culturable Fungi, SARS-CoV-2, and others.

Alterman, a leading contractor for the district, installed fifty-one (51) INVZBL N-Air units across the five areas in the 300 wing. The installation was completed in just one day, as the N-Air units fit into existing ceiling tile infrastructure, greatly expediting installation.

## The Results:

### 3D Air Flow Mapping



OnSite tested the air quality using the same parameters and methodologies as its baseline testing at three different time frames, 24 hours, 48 hours, and 60 days after installation of the INVZBL N-Air units.



Overall, the results showed **dramatic improvement in the air quality across all areas, with removal of pathogens as high as 99% in some areas of the 300 wing.** In addition, INVZBL significantly reduced total particles and bioaerosols in the classroom and media room for all five particle size channels by **more than 90%.**

## Future Plans:

Moving forward, the RRISD team will be working with INVZBL to determine how this pilot could be applied across the county to meet their district-wide goals of increased student productivity, reduced teacher and student absenteeism, and increased or maintained student enrollment. In addition to the INVZBL N-Air ceiling mounted units, RRISD is evaluating INVZBL's Air Base One mobile units, which would augment air purification across large areas.



After 60 Days, up to **99%** reduction in:

1. Mold
2. Pollen Allergens
3. Cultural Fungi



Significantly reduced total particles and bioaerosols for all particle size channels:

0.5	3.0
1.0	5.0
2.0	10.0



**No SARS detected at ANY POINT** in the duration of the testing.

