

# ***L Series<sup>®</sup> Packaged Units with Humiditrol<sup>®</sup> Option***

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BASE STUDY  
QUALITY & INNOVATION

## **Lennox Receives High Marks in the Classroom**

**A favorable learning environment for the students and faculty at the Chisolm Trail Middle School was achieved with Lennox' L Series<sup>®</sup> units with the Humiditrol<sup>™</sup> option.**

### **The Challenge**

Shuttling more than 1,000 students and faculty from room to room, several times a day can create a comfort challenge for any HVAC system. The demands of each classroom vary, depending upon the occupancy and activity level inside. The computer lab and the gymnasium require vastly different loads, as do the lunchroom, band room and administrative offices.

It takes a sophisticated comfort system to receive a passing grade. That is why the Chisolm Trail Middle School in Round Rock, Texas, turned to Lennox for help.

***LENNOX***<sup>®</sup>

Their primary goal was to increase the fresh air to conform to the 15 cfm per student required by ASHRAE 62.89. The old system consisted of water source heat pumps that couldn't address the ASHRAE guidelines. Corroded drain pans were causing water leakage problems.

There were noise issues with ceiling-hung blowers in the classrooms, and the school district needed a more energy efficient system to service the school's 120,000 square feet. In an effort to improve the Indoor Air Quality (IAQ), humidity control became a major consideration.

"The old system was nearly 25 years old, and it simply wasn't up to the task," said Les Reddin, Maintenance Director for the Round Rock Independent School District.

Poor IAQ in educational facilities can lead to short and long term health problems, such as headache, allergies, and asthma. It also promotes the spread

**Good Indoor Air Quality is essential for students and teachers.**

of infectious diseases, increases absenteeism, creates an unfavorable learning environment,

and deteriorates the physical building and equipment, leading to costly renovation.

According to the Environmental Protection Agency: Good IAQ contributes to a favorable environment for students, teachers and staff, which increases productivity and promotes comfort, health, and well being.

These elements combine to assist a school in its core mission: educating children.

## The Solution

After investigation various options, such as replacing the PVC piping throughout the building, school district officials determined that it would be more practical and cost-efficient to install individual units in each room.

The new system features 3, 4, and 5 ton L Series® units

**Humiditrol™ controls your humidity levels.**

with the Humiditrol option to handle the classroom loads and two

15-ton units to handle the cafeteria and band hall.

The Humiditrol™ option controls humidity within the space, especially when internal loads are not sufficient enough to create a cooling demand but humidity levels are high.

The Humiditrol option will go into the reheat mode, removing moisture from the space, based on a call from the humidity sensor independent of the room thermostat. To further enhance humidity control and balance energy costs, the units were equipped with differential enthalpy economizers.

In an effort to further improve IAQ, ventilation and CO<sub>2</sub> ratings were also looked at. Knowing that people are the main contributors of CO<sub>2</sub> – the occupancy in the space can be directly correlated to the CO<sub>2</sub> level and the fact

that the occupancy of various rooms changes dramatically throughout the school day, the decision was made to install Demand Control Ventilation.

CO<sub>2</sub> Sensor Ventostats<sup>®</sup> were installed in the ceiling of each classroom with a

**Reduce energy costs without compromising Indoor Air Quality.**

thermostat and a humidity sensor on the wall. Modulating ventilation based on actual

occupancy rather than design occupancy enables you to reduce energy costs without compromising IAQ.

Reddin explained, “The idea was to bring in outside air and condition it, then deliver it into each classroom. The Lennox equipment allowed us to do that.

The advantage of package units versus a chilled water system centers not only around control, but also service.

Understanding that service is required and inevitable during the life of the system, it is more convenient and practical to have multiple units so that it is possible to have partial cooling in most service situations.”

In order to provide greater temperature control, a CSI MR88R controller was installed in each unit. The controller can be installed at the factory, but in this case, each one was installed on site. This control system provides limited control (+/- 3° F) of the space temperature set point.

The equipment arrived on time and installation went according to schedule. We started the project on May 25, 1999, right after school let out, and finished it in time for the August 16 start date. From start to finish, Lennox ranked at the top of its class.

### **Project Update**

After six months of equipment operation, Reddin reported the school had not experienced any humidity problems since the Humiditrol units had been installed.