



Connolly Middle School Wins Governor's Award for Energy Efficiency

Connolly Middle School, located in Tempe, Arizona has won an Arizona Governor's Award for Energy Efficiency for 2005. These coveted awards are given annually to the government facilities that show the greatest energy improvement through implementation of innovative energy applications, which not only reduce energy expenses but improve the quality and comfort within the conditioned environment.

The award received by Connolly Middle School was based upon work completed by Source Refrigeration & HVAC, Inc. using the Distech Controls easyCONTROLS™ LONWORKS solution.

The Situation

Connolly Middle School, built in 1972, is typical of many schools of this era that are struggling with the management of aged mechanical systems pieced together with an array of add-ons and repairs. Connolly Middle School was not providing the comfort and air quality desired for a learning environment nor did they meet the energy efficiency expectations of a modern facility. The School's campus consists of 184,034 sq ft of conditioned spaces arranged in 6 separate buildings.

Each building has separate mechanical systems including centrifugal and reciprocating chillers along with multi-zone, VAV and constant volume air handling units all served with electric heat. Control systems were comprised of a mixture of pneumatic and stand alone DDC. Without any centralized control and monitoring, the aged HVAC system was running inefficiently resulting in numerous comfort complaints.

In an effort to streamline the process and to ensure that the School received a solution that met their needs and budget, the school's management elected to pursue a design build process with a selected group of HVAC contracting firms. This acquisition process provided for a quick and thorough assessment of the facility's needs with detailed proposals, allowing them to make the best choice of contractor and BAS solutions.

The Solution

The School management selected the proposal of Source Refrigeration & HVAC, a Distech Controls Open System Dealer. The solution focused on the air side system and controls as the areas that would provide the greatest improvement in environmental air quality and comfort and reduction in energy consumption. The evaluation of the central chillers, cooling towers and pumping systems, concluded that these systems, other than lacking good control, were basically solid, efficient systems. Source Refrigeration & HVAC thus designed a system retrofit that entailed the replacement and modernization of all of the air side equipment, including:

- Installation of 60 VAV boxes
- Installation of an energy recovery wheel to precondition the outside air
- Repairs and cleaning of AHUs and duct work
- Valve replacement and repair
- Installation of variable frequency drives on all major AHUs

The building automation system installation using Distech Controls easyCONTROLS LONWORKS® solution comprised a total of 650 points and 112 controllers. The control system included:

- Central plant control using ECU-88, EC- 12 (LONMARK® certified programmable controllers)
- AHU control using EC-12 and EC-8 and EC-67 (LONMARK certified programmable controllers)
- 85 VAV controls using EC-VAV-L (LONMARK certified configurable controllers)
- Rooftop unit control using EC-RTU-L (LONMARK certified configurable controllers)
- BTU meters
- Lonwatcher LONWORKS network management tool

- Programming using LNS® based plug-in for configuration and custom programming
- User interface – Web browser access as well as scheduling, trending, alarm management and normal user adjustments using an Echelon® i.LON® 100

Mike Ellis, of Source Refrigeration & HVAC comments: "We encountered just about everything you could expect in a 30+ year old school, so we had our work cut out for us. When we finished, we made sure that the quality of the environment was what each of us would demand for our children. A key component of that was the control system. It was critical that the school's maintenance staff be able to monitor and control the systems to insure that good air quality was always being delivered and energy efficiency Controls easyCONTROLS system was an integral part of that solution".

There were several key factors required of the control system that the BAS solution delivered on, such as:

- Provide for programming flexibility to insure that the necessary sequences could be obtained
- The ability to monitor and control the CO2 levels for air quality and energy efficiency
- Provide for precise comfort levels with user adjustment
- Web browser access and control to all points within the system with a custom designed, simple to use interface
- Provide a completely open system from controllers to software tools

Benefits

Connolly Middle Schools now has the exceptional environmental air quality the students need for learning and a substantial reduction in energy and maintenance cost. The energy savings for the first 6 months were over \$58,000, a 34% reduction of previous costs.

John Dermer, Facility Maintenance Supervisor for the Tempe Elementary School District #3 adds: "We are pleased that we now can control and monitor the CO2 in the air at the school.... The recognition of the Governor's Award demonstrates that you can improve air quality and comfort and at the same time achieve substantial energy savings. We are very pleased with the decision we made in selecting Source Refrigeration & HVAC and Distech Controls."

Contact:

Distech Controls
Caroline Cadieux
Tel: +1 450 4 44-98 98 ext 237
www.distech-controls.com



550 Meridian Avenue
San Jose, CA 95126, USA
Tel: +1 408-938-5266
www.lonmark.org