

White Paper Report

Project: Macon County School District
Franklin, North Carolina

Public School Systems Present Environmental Control Challenges Operating Cost Savings While Increasing Classroom Comfort & Environmental Control Efficiency



Macon County Schools, Franklin, North Carolina

Located in the scenic southwestern part of North Carolina, Macon County is one of the fastest growing counties in North Carolina. The county is home to approximately 27,750 full-time residents. The public schools serve almost 4,000 students and are housed in 55 buildings on 9 campuses. As is typical with many school systems throughout the state, constrained budgets results in a mixture of environmental control systems, ranging from manual to simple thermostat, time clocks to full DDC control. Some schools were running 24/7 with no environmental controls at all.

Macon County attempted to improve the environmental controls by installing DDC (Direct Digital Control) systems in 9 school campuses, but unfortunately ran into difficulties. The expected degree of control, along with the capability of central monitoring was a hope for improvement. After several visits from the

manufacturer's service team, they realized the system could not effectively control the buildings, not to mention the school staff had great difficulty in "learning how to use the computer interface". These systems "never controlled" the environment and at one of the schools the 60 ton McQuay chiller appeared to "run when ever it wanted". The schools were forced to revert back to time clocks, and even went so far as to install pneumatic controls in two new school buildings.

In 2002 the newly appointed Maintenance Director David Curtis, quickly realized the installed systems were plagued with numerous problems. Dozens of calls came in each day from the staff and students regarding improper heating & cooling conditions. Not only was this a challenge due to the school campuses being as far apart as much as 75 miles over mountainous roads but was extremely time consuming, costly and disruptive to the teachers as their service requests could not be investigated in a timely manner. Not to mention the safety of personnel by physically going onto the rooftops to maintain the heating and air conditioning units in various weather conditions, day and/or night resetting the controls.

"I stepped into a nightmare. I didn't need cost savings as much as I needed relief from the dozens of daily service calls"

Shortly after the management change, a meeting was scheduled with Morgan Jones, of YAMAS Carolina's Inc., to review the present situation and to hopefully develop a plan as to what steps could be implemented to improve the environmental control situation all within tight school budgets.

Recognizing that considerable funds had already been spent on ineffectual controls Mr. Curtis was understandably hesitant to jump right into installing new DDC control equipment. With that in mind, YAMAS Controls arranged a demonstration of the BASYX DDC control system, manufactured by Triangle MicroSystems, Inc. of Raleigh, North Carolina. Yamas allowed them to take the controls and check out the software, control screens, internet connectivity, etc.



After evaluating the simplicity of the controlling interfaces, hardware and the smooth fit with the school's IT program the decision was made to go ahead with an evaluation system. Again, the question of funding was raised and it was arranged for only the basic hardware, instead of assembled panels to be delivered. To save additional cost to Macon County, David and his staff of 12 technicians decided they would assemble their own panels. To date this successful effort continues, having 22 of the 55 buildings under BASYX DDC controls. The overall simplicity of the hardware and control interfaces facilitated the school's maintenance department to easily assemble their own panels while saving the school system many thousands of dollars.

Currently it takes only a few hours to build the control panel, and two days or less to install the system in each building using the existing wire runs. All operating software is included at no charge with each system, and was easily installed on many of the service technician computers for remote connection. IT connectivity has not been a problem as the Macon County school system has an IT department and each campus has up to 100 IP addresses. The ease and simplicity of using the new BASYX TriComm control interface is underscored by the confidence of the present maintenance technicians who are using the system. This contrasts to the earlier installed DDC systems where no one knew how to use it and was hesitant to learn how.

Early in the first cold season at the Nantahala campus, which had the newly installed BASYX control system, the Farrell Gas Company delivery man happened to run into Mr. Curtis and said, "What's going on with this school? I only made HALF the normal propane delivery?" It seems that during the heat season of October through April only 50% of the normal propane gas was delivered, yet all the proper heating levels were maintained throughout the school year. Although this school happened to have the highest heating costs, this savings translated into a cost savings of \$900 every two weeks. The other schools with the new controls have achieved savings of approximately \$350 and more every 1 ½ weeks.

As of 2005 the calls from teaching staff have fallen from a dozen calls a day to virtually zero, with the 22 buildings to support, this has been a big advantage. Allowing the maintenance staff to concentrate on more important projects instead of "taking the time to handle the call backs". Now calls can be handled directly from the maintenance department rather than sending a technician to the school site. If a site visit is required the ability to remotely diagnosis the situation prior to the service visit is more efficient, time wise and budget wise.

Almost half of all the Macon County school buildings under DDC control, and are providing intelligent solutions to the complex controls of educational facilities while saving energy, manpower and safety.

David Curtis says, *"I am extremely pleased with the system reliability"*.

