



Installation: **The Duke Realty Corporation of Norcross, Georgia**

Circon Integrator: **Automated Facility Systems (AFS), Inc.**

Building Type: **Commercial**

Physical Description: **56,550 sq ft office building**

Duration of Project: **Phase one – terminal unit conversion**
Phase two – new rooftop unit integration

THE CLIENT

The Duke Realty Corporation needed to provide better environmental conditions for its tenants in one of its buildings constructed during the late 80s. The original rooftop units were pneumatically controlled and had reached the end of their life. The terminal units were typical variable volume for core cooling and parallel induction for perimeter cooling/heating. The mechanical design was typical for the 80s in the southeastern United States.

THE CHALLENGE

- *lack of adequate environmental comfort control*
- *aging pneumatic control system*
- *unacceptably high energy costs*
- *existing HVAC mechanical systems needed retrofit*
- *objectives had to be met within budget constraints*

This project had the requirement to keep the building fully occupied and completely air-conditioned while the controls on the terminal units were retrofitted and while new roof top units were installed in place of the existing ones. The cost of the new terminal unit controls had to be economically advantageous over repairing the existing pneumatics.

And an effective budgetary solution and a seamless retrofit were essential.

THE SOLUTION

- *installation of Circon Building Automation System*
- *system monitoring and control for the facility*
- *open protocol system provided not only simplicity but ease of future expansion*
- *energy savings provided project savings*

Automated Facility Systems, Inc (AFS) was contracted to install Circon controllers, graphical front-end software and network management software tools. The LONWORKS® network wiring and end device wiring were roughed in to allow the controls switchover to be done expediently, to minimize the time that the building operated on both pneumatics and DDC. When the conversion of the building's terminal units was complete, the old rooftop units were replaced with new units that included factory LONWORKS controls.

AFS integrated the rooftop units into the LONWORKS network and used Circon controllers to provide operating instructions to the entire system. Circon's graphical user interface provided the customer with complete monitoring and control over the fully integrated multi-vendor system.

"We have combined decades of experience with the LON technology and partnerships with Duke Realty, the Department of Energy's Rebuild America program and ProTech Heating and Air Conditioning to provide a team approach that resulted in success." **John Durham**, AFS co-owner.

THE DETAILS

HVAC CONTROL

- *reduced energy consumption*
- *increased ability to schedule based on building occupancy*
- *increased comfort*
- *extended mechanical system life*

The facility's return air temperature is monitored constantly and as it drops the supply temperature is reset to prevent taxing the electric duct heaters. This strategy allows the space temperatures to be raised quickly and the duct heaters cycled back off to increase the energy savings.

The rooftop discharge air temperature and static pressure setpoints are integrated onto the graphical representations of the units inside Circon's Visual Integrator software. This provides the user with easy access to override points for maintenance or manual operation. Scheduling of the building is also provided through the onsite front-end computer. Circon's controllers send information to the LONMARK® certified rooftop units allowing them to be integrated into the same schedules. Unoccupied temperatures for cooling are monitored during the cooling months and when enough terminal units need cooling, the rooftop units are activated. During winter the parallel induction terminal units maintain the unoccupied heating setpoints. The ceiling plenum heaters are controlled by side loops, embedded in the Circon controllers, using integrated outside air temperature information. This results in additional savings by preventing the heaters from operating when the space is slightly below setpoint.

This building is typical of older buildings with pneumatic controls that can be retrofitted to achieve savings for the owner and improved comfort for the tenants. LONWORKS technology provides building owners with an economical way of upgrading pneumatic controls into a system that saves energy, provides better information for the maintenance staff, allows for expansion into further savings and supports technicians to monitor the system remotely via the Internet. Local integrators such as Automated Facility Systems, Inc. in partnership with Circon are the key to bringing it all together.

THE RESULTS

The resulting system saves \$54,000 annually in utility costs and provides over 56,000 square feet of comfortable work environment. A side benefit is the 35% increase in tenant occupancy realized since the retrofit. Additions to the system are either underway or planned.



For more information about this case study, please call us at 1-800-338-1866.

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