

## RETROFIT CASE STUDY

*Providence United Methodist Church  
Charlotte, NC*



**United Mechanical Corporation**

*The Leader in Comfort and Process Mechanical Solutions*

### Background

Providence United Methodist Church in south Charlotte was installing a new pipe organ; a new pipe organ with a famous background. The organ was an Aeolian-Skinner, what some people call “the Rolls Royce of organs,” and its previous home was the Kennedy Center in Washington, DC. Hand-in-hand with a very complex organ installation job was the challenging HVAC task of an integration into a 50-year-old system to maintain extremely consistent temperature and humidity in the sanctuary. Consistent temperature and humidity were a requirement so as to not wreak havoc on the organ tuning.



### Results

Because United Mechanical was able to handle the entire project in-house, they had control over all aspects of the timing and deliverables. The project took place during the summer months and was completed with minimal disruption to the Church occupants; the facility was not without cooling for one single Sunday. Whereas the old two-pipe HVAC system used to require 4-6 hours to switch from heating to cooling, the new one made the transition instantaneous! Also, the Variable Fan Drive installed with the controls upgrade not only ensured proper control of the air handling unit, it also helped the Church reduce their energy usage.

### Testimonial

*My experiences of working with United Mechanical for the PUMC organ installation were excellent. What I really valued most was their understanding of the situation and the flexibility of the design/installation team to make the final transitions around the actual organ installation seamless. Unfortunately the organ tuning was down to the wire before the grand presentation day and United Mechanical cheerfully modified their schedules to make the final installation date work. Thanks for the great support and a job well done!*

**Brian Crutchfield, PE, GC - Crutchfield Homes**

### UMC Approach

Having a long-standing relationship with Providence United Methodist Church, United Mechanical Corporation was called in to tackle this delicate job. Because of their engineering background, United Mechanical knew that simultaneous cooling, dehumidifying, and reheating of the supply air would be the key to achieving the very specific temperature and humidity range requirements. Already in place was a 60-ton air handler, chiller, and boiler and United Mechanical wanted to save the Church money and make use of them. Other contractors, however, might well have suggested ordering all new equipment and substantially increased the overall cost of the project.

An upgraded controls system turned out to be central to the proposed design. New controls were installed on the air handling unit to replace the old pneumatic ones, and control of the unit was added to their existing Building Automation System. The upgraded controls system was then programmed to maintain the required temperature and humidity range. Demand Control Ventilation was also added to manage the amount of outside air being treated.

The United Mechanical in-house staff handled all the design work, engineering drawings, equipment procurement, controls programming, and installation—providing a single source solution for this critical project.

