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Reinvented one light-emitting diode at a time

Johnathan Sparks



The sanctuary of The North Church in Carrollton, TX, is lit almost entirely by LED lighting.

Photos courtesy of Rodney Minks of LSP Creative.

Dr. Lawrence Kennedy, senior pastor of [The North Church in Carrollton, TX](#), builds on the strong biblical and doctrinal heritage of the church's past and looks to the future to embrace the trends and ideals that will perpetuate sustainable growth.



Dr. Lawrence Kennedy, senior pastor of The North Church, and in the future.

The North Church recently celebrated its 16th anniversary as a congregation, 14 of which it had occupied its current facility converted from a large industrial warehouse and office complex in 1991. In 1999 the ministry expanded its campus to include a family life and education center, a new gymnasium, kitchen and sports and recreation facility to encompass a total of more than 120,000-square-feet. Although the multi-story structure was almost 25 years old, it was in reasonably good condition.

### Did not reflect vitality

However, the facilities did not reflect the vitality and energy the growing congregation exuded in their worship due to its dated architecture, older mechanical and lighting systems and outdated AV arrangement.

Simply replacing the carpet, upgrading the sound system and splashing some new paint on the walls would not be enough to rally the support of congregation members and make a statement to the surrounding communities that the church is committed to maintaining an effective ministry for today

The pastor enlisted services of the professional design and building firm, Trinity Group International Inc., Dallas, TX. Working together along with his staff they formulated a plan for an extensive campus renovation and a strategy and vision that would go hand in hand with the building project to increase the broad appeal of the church facilities, programs and community outreach.

A new architectural design emerged along with a complete paradigm shift for the ministry. It was a chance for the church to reinvent the way it interacted with its parishioners and how it influenced local residents.

After analyzing its historical performance and growth patterns the team working with the church decided it needed to actively attract and retain the younger generations. It was decided the church would have to expand its appeal while being cautious not to alienate any of its existing members or disregard its traditional values and ideals. The renovation included a redesigned sanctuary and stage. The layout and function of all the church facilities was also redesigned in a manner that would encourage more intimate interaction and fellowship in all departments of the church.

### New philosophies and concepts

The project scope went beyond the expected common integration of digital multimedia and AV to include entirely new philosophies and concepts embraced by the younger generations. A green building approach long supported by proponents of environmental friendliness in other sectors of commercial construction was used in conjunction with the latest in technological and architectural trends in today's contemporary churches.

This provides an environmentally friendly building capable of more effective and purposeful ministry; one that significantly reduces the church's overall operating budget and helps secure the participation and involvement of a younger age group and the future success of the church.

The scale and scope of the master plan was divided into phases to minimize disruption to ongoing church activities and facilitates and pay for renovations with cash as it was raised during each phase. The first step was to generate a plan that would combine the segmented feel of the different campus buildings that had been constructed during a period spanning a decade into one fluid and easily accessible church facility.

The new plan focused on updating existing mechanical and electrical systems, retro-fitting energy saving alternatives where possible, installing centralized energy management control and monitoring, and using recycled environmentally friendly green building products and technology.

The first phase replaced the worn and aging roof with a new more durable, energy efficient and environmentally sensitive roofing system. The concept of "cool roofing" was brought to the forefront of the building and architectural communities in the 90s by agencies like the EPA as a viable option to replace more traditional and less efficient roofing methods.

Companies such as **DuPont** manufacture light colored roofing membranes that reduce the heat retained and generated through the roofing envelope. These space age materials increase surface reflectivity and the ability of the material to release gained heat (its emissivity).

Next, the team tackled the issues of energy management and centralized automation and control of electrical, lighting and HVAC (heating ventilation and air-conditioning) systems. When questioned about energy conservation efforts Kennedy says, "Energy management is important to our church, not only because it is a large portion of our operating budget, but also we have to be good stewards of our resources and our environment."

The construction team installed new centralized digital HVAC and lighting management software and wiring, rezoned existing systems and made it accessible via the Internet to monitor and adjust the settings from any location at any time by the maintenance personnel. The team evaluated the church's energy use needs for each room and area and programmed the system to maintain comfortable operating environments during the scheduled hours of operation while reducing energy consumption during peak hours and during unoccupied times.

### **Broader spectrum of energy efficiency**

Following the success of the roofing and energy management systems the construction team was commissioned to research and incorporate an even broader spectrum of energy efficient design and components in the extensive renovation of its sanctuary, foyers and common areas. The existing sanctuary was reminiscent of the average large church warehouse trend that was prominent in the late 80s and early 90s.

The sanctuary renovation included new sub-foyers and entries, sound/video booth and baptismal relocation, two large built-in projection screens, new seating and sanctuary furniture. The church also added a new stage, speaker enclosures, scrims, pulpit, band/choir risers and the largest all LED (light emitting diode) church lighting installation of its kind in the United States.

While exploring green building alternatives the construction team went beyond the standard materials and challenged the status quo by replacing all traditional fluorescent, halogen and incandescent lighting fixtures in the 30,000-square-foot sanctuary with LED lighting.

The existing fluorescent and incandescent house lighting system in the church was completely removed and replaced with more than 400 LED pendant lights equipped with 100 watt equivalent LED bulbs that only consume seven watts each.

### **A lighting alternative**

The resulting product was exactly what Kennedy and his staff had been looking for — a progressive yet inviting lighting alternative that was environmentally conscious, unique in its market place yet warm and inviting, leaving an unforgettable impression on worship participants.

Although the initial price tag for the LED conversion seemed more expensive than traditional lighting, when the life cycle of the LED system was evaluated the church discovered the initial cost was recouped within three years at which point it outperformed alternative systems in maintenance, life span and overall energy reduction. With typical lighting accounting for 30 percent of its total utility expenditures, a reduction of more than 80 percent in this area was a welcome benefit for the church.

### **Continues to push forward**

With extraordinary success in the first phases of its construction renovation the church's leadership continues to push forward and explore environmentally responsible building and energy alternatives.

In addition to a water reclamation and gray water irrigation recycle project [The North Church](#) just finished with its on site lake; they are exploring the possibility of adding wind generators, solar power and other renewable energy resources to the campus in an effort to further promote good stewardship of natural and monetary assets while capitalizing on wide reaching favor among the increasingly active and involved younger generations.

When questioned about the initial cost and the expected long term savings Kennedy says, "The financial gains and overall cost savings alone is enough to implement an energy management program and major church renovation but the real blessing is in the intangible benefits you gain and share with your congregation; they are limitless."

***Johnathan Sparks is president of Trinity Group International Inc., Dallas, TX, a commercial design/build firm specializing in religious facilities, hospitality and commercial construction. [[trinitygroupinternational.com](http://trinitygroupinternational.com)]***

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