

Augustana Lutheran Church



In the summer of 2017 Augustana Lutheran Church in Portland, OR was looking for a way to improve their lighting system and move to energy efficient LEDs. This century old place of worship with seating for 400 people seemed dark even with all the lights turned on. In the nave are ten pendants, each with 150 watt incandescent downlights and three 40 watt uplight bulbs providing all the light in this 40 foot high space. Additionally, fourteen PAR can fixtures with 300 watt bulbs were being used to provide front lighting to the sanctuary area.

When Luxium was contacted, the church leadership wanted to reduce energy use and maintenance costs while improving the illuminance level to make hymnal reading easier in the pews with the ability to control dimming levels in the house. They also expressed an interest in adding adjustable color lights for the chancel area to spotlight the alters and increase overall lighting quality at the front of the church.

With a small budget and a desire to make use of the existing fixtures and electrical systems the approach that made the most sense was to do an LED retrofit of existing pendants and PAR can fixtures, and by using wireless technology they could avoid the cost and complexity of adding control wires. Another benefit is that with smart LED lights that have built-in dimming capability the old dimmer racks could be removed from the load center.

After investigating several options, retrofit PAR lamps from Luxium Lighting were chosen because they would fit into existing fixtures and provide wireless DMX control capability with ease of configuration. The picture shows a ZOBO SH selectable white PAR30 lamp with a wide-angle diffuser adaptor to soften and broaden the beam for uniform coverage of the seating area below the pendant lights.



For the 10 downlights in the pendants the ZOBO-ZR30-SH, with the selectable-white LED engine, was used along with a two-stage diffuser to uniformly spread the beam to 80 degrees. These lamps feature smooth dimming down to 0.1% and include a mix of white and amber LEDs with two-channel control to be able to adjust the CCT in the range between 2700K and 3250K to emulate the warmth of the original tungsten lights. The ZR30-SH outputs 2,700 lumens of high CRI white light while using only 24W of power. Using Luxium's wireless DMX control system, with the ZMX transmitter and a unique combination of DMX and BLE receivers inside each lamp, it's possible to use a simple DMX control console to adjust the lights from up to 1,000 feet away. With this approach the lights can be grouped as desired and controlled for dimming and CCT temperature using DMX512 protocol.



Before the retrofit. Using halogen floods with poor lighting uniformity.



After with LEDs. bright and uniform lighting for all the pews.

The result of the pendant retrofit is that now Augustana Lutheran Church has uniform high CRI lighting in the nave with up to 50 lux of illuminance in all seating areas. Now the congregation does not have to be selective about which pew to sit in just to be able to read the hymnal. And for special occasions or during a service it is easy to dim the lights to create the desired mood.

For the chancel the choice was made to use the color-adjustable ZOBO-Z2 PAR30 lamps and the TRIUMPH-TR40 fixtures with Bluetooth and wireless DMX control. The Z2 full-color lights have up to 1,800 lumens of high CRI white output, while using 24 watts, to wash the space and the TR40s can output up to 3,000 lumens for spotlighting the alter areas while using just 30 watts of power.

For this theatrical style application Augustana used 14 ZOBO lamps and 2 Triumph fixtures. These lights can be adjusted to any color and dimming level to create dazzling effects on the stage. By locating the lights in the ceiling rafters and aiming from both sides, the shadows are eliminated. With a careful choice of diffuser lenses the correct beam shape was achieved without glare. The lights can be turned on and off from the breaker panel. A wireless DMX console is used to control both the chancel and nave lights.

The upgrade to Luxium LED lights produced an increase of 50% in total illuminance for front, back and top lighting. For the stage, the lights are no longer limited to a single color, as they can be adjusted over a full range of colors to create a desired mood for any service.

By taking out a total of 24 old incandescent bulbs the Augustana Lutheran Church was able to decrease their power load by 89% and reduced the need to climb ladders or rent lifts for fixture maintenance. The old lights needed 5,700 watts of power and with these incredibly efficient Luxium lights the max power consumption will now be under 640 watts – and with over 40,000 hours of expected life compared the 2,000 hour life of the incandescent bulbs. Over five years of operation, these LEDs will save about 100,000 kilowatt hours of energy!

“with the new LED lights we have had many compliments about the improved brightness and how easy it is to now read the hymnals” said Glen Jacobs, church project leader. “I look forward to using the wireless controls to quickly change the mood in the church with smooth dimming and a pick from a full range of color choices to give the space many different looks for all our occasions.”

The value of the Luxium lights was about \$8,000 and turned out to be far simpler than a full lighting makeover, which an architect had estimated would cost \$150,000 with an additional \$100,000 for installation expenses. The new LEDs, in place just before the 2017 Christmas season, brought a level of capability and depth to the services and events produced by the congregation of the Augustana Lutheran Church. The next phase is expected to double the number of LED lights to highlight the stained-glass windows, organ, choir loft, entrance area and outdoor architectural features.



Change the mood with color effects



Use high CRI white for a traditional look

PROJECT: Augustana Lutheran Church – Phase 1, 2017

LOCATION: Portland, OR

LIGHTING SUPPLIER: Luxium Lighting

EQUIPMENT: replaced 10-150W pendant downlight bulbs with 10-24W selectable white LED lamps; (model ZOBO-ZR30-SH). Replaced 14-300W PAR can bulbs with 14-24W full-color LED lamps; (model ZOBO-Z2). Added 2-30W full-color PAR can fixtures; (model TRIUMPH-TR40), 2-24W full-color Mini-PAR fixtures (model ZIGI-ZG20). All LED lights include internal wireless DMX receivers controlled with a Luxium ZMX-W1 DMX transmitter.

Luxium Lighting Products used in this project:

ZOBO-House White



TRIUMPH TR40



ZIGI ZG20



ZOBO w/CAGE



ZMX-W1 transmitter

