

Yamaha Motors Improves Energy Performance and Operational Flexibility with Bluetooth Mesh Controls

Maximizing efficiency at its midwestern distribution center is an important business goal for Yamaha Motors. By implementing a SIG-qualified Bluetooth mesh control network with mwConnect's TruBlu™ hardware and commissioning software tools along with its lighting upgrade, the company ensured flexibility for future operations as well as significant energy savings for today's bottom line.

Background

The Pleasant Prairie, Wisconsin facility provides a geographically central location for Yamaha Motors in final manufacture, packaging and distribution of a wide range of powersports equipment, including ATVs, snowmobiles, watercraft, Side-by-Side vehicles, and motorcycles. The facility, encompassing 175,000 square feet of rack and aisleway storage, open assembly and packaging areas and administrative spaces, employs 46 people on a 5-day/week single shift schedule.



Achieving Maximum Flexibility with Bluetooth Mesh

The company began exploring lighting upgrades in an effort to improve the facility's energy performance but also to improve light quality. The project team quickly realized that migrating from legacy light sources to LED lighting would enable them to incorporate a state-of-the-art Bluetooth mesh control network. They selected 2-foot linear high bay LED fixtures with a 5000k color temperature to replace the existing T5 HO fixtures. Then, to maximize flexibility, the project team decided to install an integrated occupancy sensor/control module on each fixture. This would enable the company to create and adjust control zones dynamically to accommodate any adjustments across the distribution center itself. While currently the facility is made up of approximately 40% aisleway and rack storage with the remaining 60% devoted to open areas for assembly and packaging operations, the need for future reconfiguration was a possibility the team wanted to accommodate.

Project partners selected a Bluetooth-SIG qualified solution, powered by mwConnect's TruBlu sensors and software developed with technology partner Silvair.

A total of 320 fixtures, with mwConnect sensors installed at the fixture manufacturer, were installed at the Yamaha Motors facility over the course of three weeks. The control network commissioning took far less time—less than a half day in fact!

While the control solution includes a web-based portal where project design can be pre-determined and control groups configured, the team ended up doing much of the design and configuration from the smartphone app while on the facility floor. As controls designer Romano Vlastelica noted, "Having the smartphone app made it easy for us to create some preliminary control scenarios to test and share with the Yamaha facilities team. We were able to customize the scenario more precisely in a matter of minutes."

“The size of the facility necessitated a large number of control zones,” said Michael Leahy, Senior Project Manager, Contemporary Energy Solutions. “For instance, we created approximately 40 zones across the rack storage and open assembly spaces. The robustness of the control network has been a critical aspect of the upgrade and the TruBlu system is performing very well.”

The sequences of operation the project team implemented included:

OPEN AREAS

100% output upon detection of occupancy. When motion is no longer detected for 10 minutes, lighting levels dim to 50%. If no additional motion is detected for another 10 minutes, lighting turns off.

RACKS/AISLEWAYS

Lighting turns on to 100% output upon detection of occupancy. When motion is no longer detected for five minutes, lighting turns off.

EMERGENCY CIRCUITS

Lighting is zoned separately and set to 100% output at all times.



Commissioning the project was swift and easy using the intuitive TruBlu app, developed with technology partner Silvair.



Lessons Learned

Project installation and commissioning concluded shortly before Christmas 2019. “One of the most valuable benefits,” noted Vlastelica, “was the simplicity of commissioning. For instance, we could easily train the installing contractor to commission the installed sections at the end of every work day, so that it could be completed along with the physical installation. This would save a significant amount of labor and cost to the customer.”

Early savings estimates project the facility will save nearly 250,000 kWh annually, for a cost savings of \$32,415 annually. The team projects that approximately 25% of this total savings is attributable to the mesh control network.

Project Participants

Contemporary Energy Solutions

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