

ENERGY STAR Building Design Profile

Lake Central High School
St. John, IN 46373



The Lake Central High School Project will be one of the largest VRF systems ever designed and installed in the country. The project was the result of a comprehensive, conditional and space utilization analysis of all of the facilities in the Lake Central Schools system. Of all of the 17 facilities in the school system, the high school had the most deficiencies and was the most overcrowded.

Because of its condition the Lake Central School Corporation embarked on a significant project. The three primary objectives that the school corporation defined for the design team were to relieve overcrowding, to produce a more aesthetically pleasing environment, and to improve the infrastructure and building systems in a way that reflected fiscal responsibility to the tax payers and the community.

Schmidt Associates chose ENERGY STAR as a guide post to establish energy usage goals and then to be able to track the potential energy consumption through the design. The project entailed a combination of renovation and new construction, retaining approximately 560,000 square feet of the original building and adding approximately 269,000 square feet of new area. The final building is approximately 30% larger than the original facility, and the goal was to hold the energy consumption at the current levels.

The VRF (variable refrigerant flow) system allowed for a phased construction process that integrated the new system within the existing structure to be able to keep the students and staff in the building throughout the entire construction process. The use of a separate fresh air delivery system allows for compliance with the new ASHRAE indoor air quality standards, while providing a continuously tempered air system to maintain a balance of humidity with temperature control, resulting in a projected 48% energy and CO₂ savings as compared to the median building. The total annual energy savings for this project is 85,675,126 kBtu with an estimated cost savings of \$695,590.

Other design features include a highly effective thermal envelope with low glazing, strategically placed to maximize the benefits of natural day lighting. The use of high efficiency lighting fixtures compliments the HVAC system to reduce overall heat gain from light fixtures throughout the building.



Architect of Record:

Schmidt Associates

Engineering Firm:

Schmidt Associates

Building Owner:

Lake Central School Corporation

Design Energy Rating:

95

Percent Energy and CO₂ Reduction*:

48

Design Year/ Estimated Occupancy Date:

2015

Space Type:

K-12 School

Floor Space:

829,036 sq ft

Estimated Energy Use Intensity:

113 kBtu/sf/yr

Estimated Total Annual Energy Use:

33,363,861 kBtu/yr

Estimated Annual Energy Cost:

\$762,079

Technologies Specified:

Water cooled VRF HVAC system with energy recovery system in place for exhaust systems. High efficiency lighting fixtures and building controls.

For More Information

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*Percent Energy and CO₂ Reductions are based on comparison to a median building of similar type.

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