

Cape Girardeau School District – Phase II Central High School Cape Girardeau, Missouri



Customer Concerns

The building was constructed and first occupied in 2002. Even though the facility had energy saving features built in, comfort problems and high energy costs had been a major concern from the beginning. CTS performed a complete analysis of the building and HVAC equipment and determined that, based on system design and operation, Central High School was operating at approximately a 20% higher cost per square foot than similar high schools in the Midwest. CTS concluded that the temperature control system was not designed to be the most energy efficient; the chiller and boiler plant were both running year round based on design; both the hot and chilled water pumps were running at full speed year round when the load on the building was not constant.



Project Overview

A complete facility review and analysis by CTS resulted in the implementation of the following solutions:

- Modification to the boiler plant with bypass loops to reduce runtime to minimal use in conditions above 55 degrees.
- Installation of Variable Frequency Drives (VFDs) on Energy Recovery Units (ERUs) and the hot and chilled water pumps to allow the system to modulate pumping based on necessary requirements versus maximum load conditions.
- To prevent overheating and damage to coils, automatic drains were installed. Because of the change in the operation of the ERU's, it will eliminate the need to reheat coils below 55 degrees and they can be permanently drained and abandon their use. This will prevent overheating from occurring and will provide an excellent source for "free cooling" in the heating season, minimizing the running of the chiller in the winter.
- CO2 sensors were added to minimize the 100% outdoor air being brought in by the ERUs also reducing the run times of the boiler and chiller plants.
- Control points were added to VFDs and ERUs to better control runtime and changeover operation.
- Programming modifications helped tighten runtimes and provide tighter control for systems which helped minimize electrical and gas usage.
- Rob Huff, CFO of Cape Girardeau Schools, reports that the project has been a success with an improved building climate, lower energy costs and fewer staff complaints. The energy savings can now be applied to instructional programs.
- **The improvements will result in over \$734,030 in energy savings over 10 years.**

Project Results



"The district had positive experiences with CTS in the past and have been very satisfied working with the company. I would choose to work with CTS on future projects. CTS has consistently provided quality workmanship at a competitive price while keeping the district needs as the primary concern."

Rob Huff, Chief Financial Officer