



## **Amity Regional High School**

Amity Regional High School is a 2-story brick building built in 1950. About 30% of the school is used during the summer for classes and recreational use. In 2007, all computers were programmed to shut-off at 5:00pm, with an individual computer manual override capability. IT servers were optimized for energy and have downsized from 26 servers to 2 servers. In 2012, all T8 lights were upgraded to high performance T8 lights and all exterior lighting was upgraded to induction lighting. The school is currently in the process of upgrading all interior lighting to 14W LED bulbs and all outside lighting to LED technology. Lights in the theater were changed from 500W halogen bulbs to 18W LED bulbs to reduce energy usage and increase the life of the bulbs. Streetlights on the property that are powered by the main electric meter were changed from time control to sensor control in order to reduce electric usage.

The entire building is ventilated, and all portions have air conditioning except two gymnasiums, stairwells, and the garage. The building is tightly controlled for energy efficiency by a full-time HVAC technician who monitors and adjusts controls for the building through its Siemens Building Management System (BMS). Terminal reheat strategies were implemented to reduce heating costs and chiller optimization programming was performed to reduce cooling costs. The building was converted from oil to natural gas and uses 3 natural gas boilers to heat the building. A cooling tower, 2 chillers, and 41 AHU's are used to cool and ventilate the building. Tubular solar collectors are used to heat water at the field house. Variable frequency drives (VFD's) were installed for all motors in the building. A fuel cell is currently being installed as part of micro-grid project for the municipality and is planned to go online at the end of 2016.



## **Amity Middle School – Orange Campus**

Amity Middle School – Orange Campus is a one story brick building built in 1959. The Amity Middle School – Orange Campus upgraded all fluorescent lights to high performance T8's in 2012. Parking lot lights were upgraded to LED fixtures in 2012. Canopy and wall pack exterior lights were upgraded to induction technology in 2012. The domestic hot water boiler and the heating boilers were converted to natural gas from oil in 2015. The kitchen equipment was converted to natural gas from propane in 2015. The science room gas supplies were converted from propane to natural gas in 2015. Terminal reheat strategies were programmed to vary the temp of the heating loop per the needs in the field. Chiller optimization programs were implemented to vary the temp of the cooling loop per the needs in the field. Computer shut-down programs were implemented to shut down all computers not currently off at 5:00 PM. All air handlers are actively programmed and monitored weekly according to building needs. Motion sensors were installed on all lighting circuits inside the building in 2012.

Amity Middle School – Orange Campus is currently in the process of revamping the HVAC system controls to better control the amount of outside air that is brought in and how the air is distributed throughout each room to maximize energy efficiency. All lights except parking lot lights are currently being upgraded to LED technology.

## **A DECADE OF ENERGY CONSERVATION**

The recognition of Energy Star Certification in two schools in the Amity Regional School District, and expectations for the third school to be recognized in the near future, is the result of a decade of leadership, Board of Education support for energy savings initiatives, and a staff geared toward maximizing cost savings and efficiencies. The Director of Facilities, Jim Saisa, arrived in the District in December of 2006. He immediately began reviewing operations, making recommendations, and garnering support for energy saving projects. His vision has been shared by the District's Administration and the Board of Education. Every Superintendent of Schools has been promoting the methods to save energy and ultimately dollars for the District in both the short term and the future. Most recently Dr. Charles Dumais was instrumental in working with the Towns and utilities to implement a fuel cell on the Amity Regional High School campus. The following list of energy initiatives is the foundation for the most recent accomplishments.

### **ENERGY SAVING INITIATIVES IMPLEMENTED SINCE 2007**

- Commissioning of new equipment to ensure the new Energy Star equipment is operating at its designed parameters to save energy
- Installing energy efficient equipment during the construction projects resulted in \$186,797 in rebates from the electric companies
- Retro-commissioning the older HVAC equipment identified many changes that were ultimately implemented to upgrade equipment and save energy
- Motion sensors were installed in all rooms to ensure lights would shut off automatically when nobody is present
- A Variable Frequency Drive program was implemented to ensure large motors and pumps only run at RPM's needed, not at 100% all day long
- We signed up for and participate in the Load Shed Program, which has saved \$92,834 to date
- Building Management Systems are used to their fullest to ensure equipment is operating properly. Equipment Maintainer programs units on a weekly basis to only serve areas of the building being used instead of turning on the whole building
- The Preventive Maintenance program is fully utilized, ensuring equipment is properly lubricated, cleaned, and serviced to obtain optimum performance, maximizing energy savings, and ensuring less down time and repair costs
- Participating in consortium bids for energy has allowed us to obtain the best available rates on the market, thus saving money on energy and more accurately budget for these costs
- A program was written to shut down computers at 5:00 PM, thus not running 24 hours per day and uselessly wasting energy

- A “Close the Window” program was implemented. After peak usage times, the buildings do not need as much fresh air, so the dampers are closed to allow less outside air in (according to need). We have recognized significant energy savings by not heating or cooling all of that outside air
- Lighting retrofits were done at all three buildings
- We had meters installed on the irrigation system and the cooling tower system to track the water being used by those systems. We then provide the readings to the sewage commission and get credits on our bill for the amount of water not going down the drain
- Chiller optimization programs were implemented to limit the temperature of the chilled water loop. Instead of always running 44-degree water, once the building is satisfied, the loop temperature is allowed to rise to 52, thus saving energy on not keeping the loop temperature at a constant 44 degrees
- A terminal reheat strategy was implemented for the boiler plants. Once the buildings are satisfied, the hot water loop is able to be dropped from 180 degrees to 140 degrees or somewhere in between depending on need. Excellent energy savings have been recognized by not keeping the heating loop at a constant 180 degrees
- Natural gas was installed at Amity Regional High School. This resulted in large savings over the use of oil and propane
- We are changing out certain lighting fixtures to LED fixtures to decrease electricity usage and maintenance
- We installed automatic air hand dryers at the field house and inside the high school restrooms to eliminate the need for paper towels and waste associated with using paper towels
- Natural gas was installed at Orange Middle School, resulting in large savings over the use of oil and propane
- All lights in the District that were not currently LED technology are being replaced with LED technology, which will result in large savings on the electric bill
- A heat exchanger is being installed at Amity Regional High School to capture the waste heat from the new fuel cell, which will greatly eliminate the natural gas costs associated with heating the building and domestic hot water