Kent State University (KSU) has worked with the Brewer-Garrett Company (BG) to complete a multitude of energy conservation projects across all campuses for over a decade. This partnership continued with the renovation of the College of Podiatric Medicine and the installation of a new solar array. It has since expanded into a second phase that continues to significantly enhance the health and comfort of all occupants, while reducing energy costs with less maintainable parts and a higher efficiency rating. This project will refurbish and modernize four, large central air handlers and transition from DX cooling to chilled water.

**Rebuilding Air Handling Units**

The College of Podiatric Medicine is currently served by four air handling units (AHUs), which provide the heating, ventilating, and air conditioning for the majority of the building. These units are over 40 years old, and well beyond their useful life. In addition, the units are cooling-only units with direct expansion (DX) cooling coils that have rusted to the point of imminent structural failure.

Brewer-Garrett is removing and replacing the existing coil and fan sections of the four existing AHUs, including the return, outdoor, and relief dampers to ensure that unit operations are correct. This is important to note as the completion of the AHUs is more time consuming due to the process of rebuilding each unit as opposed to replacing them. In this particular instance it is more beneficial to perform a rebuild as the existing systems are built directly into the building and would require a massive demolition in order to remove each unit. This would cause an extreme disruption to the students and staff, and significantly increase the cost of the project.

**Replacing DX Cooling with Chilled Water**

The existing condensing units are comprised of R-22 refrigerant—a cooling compound that is harmful to the ozone layer when released in the air. Manufacturing of this product has since been abolished and no new equipment using this product may be installed. Because of these issues, the existing rooftop units will be removed and replaced with two packaged air-cooled chillers that use a 40% propylene glycol solution for freeze production. This is a non-toxic material and safe for both the occupants and the environment.

This system offers numerous other benefits, most notably the ability to significantly reduce airflow rates across the chilled water coils, significantly enhancing the efficiency and adding redundancy. This new system will allow the AHUs to provide a full range of cooling safely and effectively.