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## Arcadia University Commons

Geoexchange system provides sustainable,  
renewable energy source to university student  
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# Student center reduces carbon footprint with REHAU geexchange system

The Commons is Philadelphia-area Arcadia University's 62,000 ft<sup>2</sup> (5,760 m<sup>2</sup>) addition to its Kuch Athletic and Recreation Center. Featuring student lounges, activity and dining areas and flexible meeting rooms, the Commons has also been designed with several energy-saving elements. These include maximized daylighting via windows with low-emissivity glass, and reduced solar heat gain and loss from aluminum sun shades and roof overhangs. In addition, the building incorporates both solar and geothermal systems to provide sustainable, renewable energy sources.

While original specifications for the geothermal piping system called for traditional HDPE ground loops, Arcadia University was encouraged to switch from HDPE to RAUGEO PEXa pipe from REHAU.

"Though HDPE is more familiar to those in the geothermal industry, PEXa pipe offers superior physical properties that allow for a better overall system design, and can also contribute to installation labor cost savings," said Mike Maher, sales manager for renewable energy technologies at REHAU. "After seeing the data that supports this, Arcadia and the project's mechanical engineering firm, Pennoni Associates, Inc., felt it made clear sense to change their spec to PEXa."

The geothermal field includes forty-two 296-ft (90 m) boreholes and is designed to supply 92 tons of cooling and 874 MBtu/h of heating to the Commons. More than 50,000 ft (15,240 m) of 1 in. RAUGEO PEXa pipe and 17,000 ft (5,182 m) of 1 1/4 in. pipe was installed and, by using a loop configuration with REHAU's unique Double U-bends, the size of the geothermal field itself was reduced by more than 20%. Furthermore, the system was designed so that each borehole is individually connected to a series of central manifolds, located in an easily accessible vault for enhanced control of each borehole.

As an early adopter of the REHAU PEXa loop system, geothermal installing contractor Jake Kocher of Kocher's Water Pumps and Tanks, Inc. has noted some key advantages. According to Kocher, "The PEXa pipe is definitely more flexible than HDPE, and the fittings are very quick to make. Also, being able to isolate individual boreholes on the manifold is a great advantage. With HDPE we were connecting five or eight boreholes together, either in a circuit or in parallel. But with the way the PEXa system is designed, we have a lot more control in the initial balancing of the system, and will also have more control over its operation."



**Project:** Arcadia University Commons, Glenside, PA  
**Construction type:** Educational Facility, completed in 2012  
**Project scope:** 67,000 ft (20,421 m) of pipe; 42 geothermal borehole  
**Architect:** Kliment Halsband Architects  
**Mechanical engineer:** Pennoni Associates, Inc  
**General contractor:** Delran Builders Company, Inc.  
**Drilling contractor:** Kocher's Water Pumps and Tanks, Inc.  
**REHAU systems used:** RAUGEO™ geexchange system

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