

## PROJECT PROFILE

Cebula Hall  
Saint Martin's University

### PRINCIPAL USAGE

Education

### LOCATION

Lacey, Washington

### CONDITIONED SPACE

25,310 ft<sup>2</sup>

### OCCUPANCY

248

### PROJECT TYPE

Geothermal

### EQUIPMENT

22 Carrier AQUAZONE™ 50PTH  
water source heat pumps  
1 Carrier AQUAZONE™ 50PSW  
water source heat pump; additional  
pumps, air-to-air heat exchanger

### INSTALLATION DATE

2012

### AWARDS/CERTIFICATIONS

LEED®-NC v2009 Platinum,  
September 2013

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## Geothermal System Provides Cost-Effective Comfort plus Education for Engineering Students

### PROJECT CHALLENGE:

Saint Martin's University, a Benedictine college in Lacey, Washington, sought to replace the outdated facilities of the Hal and Inge Marcus School of Engineering. The new facility was intended to be both notably energy efficient and an inspirational environment for engineering students and faculty. The college hoped to obtain a LEED®<sup>1</sup> Platinum rating for the hall.

### SOLUTION and BENEFITS:

The new 26,900 ft<sup>2</sup> facility, Cebula Hall, contains classrooms, laboratories, faculty offices and collaborative work spaces. The building is heated and cooled by a Slinky-shaped geothermal loop installed below the new quadrangle lawn in front of the facility. The geothermal system incorporates 22 Carrier AQUAZONE™ 50PTH water source heat pumps, one Carrier AQUAZONE™ 50PSW water source heat pump, additional pumps and a high efficiency air-to-air heat exchanger.

The Slinky-shaped geothermal loop, which uses 31,750 ft<sup>2</sup> of ground surface area, was more cost-effective than a typical vertical loop system. The Carrier heat pump units were selected because they provide efficiency and reliability.

This energy saving performance, plus the use of methanol rather than the usual glycol in the geothermal loop, enabled engineers to design a smaller than average geothermal loop, lowering first costs.

In spite of its reduced size, the geothermal field provides seasonal entering water temperatures of 38 °F to 65 °F, as compared to the average range of 30 °F to 95 °F, allowing for more efficient heat pump operation.

Finally, the mechanical systems of Cebula Hall are exposed so that engineering students have the opportunity to learn from these real-world examples of sustainable technology.

Cebula Hall attained the LEED Platinum rating goal. The Carrier AQUAZONE heat pumps contributed to the achievement of the LEED Energy and Atmosphere Credit 1 (Optimize Energy Performance). The facility attained the maximum of 19 points for this credit by reducing total energy consumption by over 48 percent. At the time of certification in September of 2013, the facility was the third highest ranked LEED building in the world.