

# Gabrielle H. Reem and Herbert J. Kayden Center for Science and Computation Phase I & II

## Bard College - Annandale-on-Hudson, NY



**Novus Engineering, P.C.** served as a NYSERDA Technical Assistant consultant for the Bard College Reem and Kayden Center for Science and Computation. The project was built in two phases: Phase I is a 47,360 square foot academic building including science classrooms and laboratories; Phase II is a 22,200 square foot addition containing additional research laboratories and faculty offices. Both phases are heated and cooled with a four-pipe geothermal system. The

geothermal system is composed of seventy-two 450-foot wells, 15, 25-ton and 5, 50-ton water-to-water heat pumps. The building has a 100% outdoor air ventilation system, with run-around coil heat recovery systems and multiple variable volume laboratory fume hoods.

A number of energy measures were evaluated, using both a Custom Measure approach and a whole building model, developed using Carrier's Hourly Analysis Program. These included the following:

- High efficiency geothermal heat pumps
- Variable speed drives on eligible fans and pumps
- Variable flow geothermal well-field
- Enhanced glazing
- Demand controlled ventilation in lecture rooms
- Heat recovery by run-around coils and heat wheels
- Differential enthalpy economizer controls
- Upgraded building insulation
- Variable flow fume hood fans and controls
- Premium efficiency motors

During the project, Novus worked closely with the mechanical design firm on the design of the geothermal source system and the system controls. The engineer had not previously designed a geothermal system and benefited from Novus' experience in this area.

Novus also acted as the commissioning authority for both phases of the project. Construction for Phase I started in 2005 and completed in September 2007. Construction for Phase II started shortly thereafter and the addition was occupied in January 2009.

**Project Timeline:** 2005-2009

**NCP Incentive:** \$546,301

**NOVUS**  
ENGINEERING, P.C.

25 Delaware Avenue  
Delmar, NY 12054  
P: 518.439.8235  
F: 518.439.8592  
[www.novusengineering.com](http://www.novusengineering.com)