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## Case Study – Morris Union

EDUCATION / HEALTH CARE / LODGING / MANUFACTURING / OFFICE BUILDING / RETAIL / SPECIAL



## Carrier Heat Pumps & Controls Enhance Learning Atmosphere for Students with Autism

### Project Objectives

The Morris Union Developmental Learning Center (DLC) in Warren Township, NJ, is an innovative new school for students with autism. Serving children from 32 school districts, the Morris Union DLC incorporates many “real world” features that enable students to acquire life skills in a structured, comfortable atmosphere. The school’s architecture incorporates many environmentally conscious design elements such as passive solar heat and clerestory lighting. In keeping with this philosophy, the specifying engineer, Gillan and Hartmann, Inc., sought an efficient heating system and controls that would provide reliable comfort to the students and a cost-effective energy strategy for the school.

### Solution

Gillan and Hartmann, Inc. specified numerous Carrier Heat Pumps, PremierLink™ Controls and Carrier Comfort Network software to provide and control heating to the Developmental Learning Center. The highly efficient water-to-water and water-to-air heat pumps are part of a geothermal heating system that employs more than 200 wells on the property as a heat sink, delivering reliable comfort at a fraction of the cost of a traditional system. The heat pump system qualified the school for a \$140,000 energy rebate from New Jersey SmartStart Buildings, an initiative of the New Jersey’s Clean Energy Program.



*The Carrier Comfort Network interface can be used to view data, troubleshoot problems and adjust individual heat pumps.*



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— Erik Hammerdahl, Director of Property Services for the Morris Union DLC

### Project Synopsis

Children with autism face many challenges in learning to navigate their day-to-day world. The recently opened Morris Union Developmental Learning Center (DLC), provides a safe, comfortable, stimulating place for 220 students with autism to acquire the skills they need for daily life, a process which enhances their self worth and independence. Special features include an entryway designed to make students feel welcome, and a "Main Street" corridor that includes learning areas in the guise of a bank, a grocery store, a hardware store, and other shops. The school cafeteria takes the form of a classic diner where children can learn to enjoy visiting a restaurant with their family. Because of the special sensitivities of children with autism, a quiet, comfortable learning atmosphere is of the utmost importance. In addition, the school has a strong commitment to the environment, and utilizes many eco-conscious design elements, including energy-minded siting, passive solar heat and clerestory windows.

Gillan and Hartmann, Inc. (G&H) located in Vally Forge, PA designed the unique geothermal heating system. The system incorporates more than 200 wells on the property as a heat sink, using Carrier heat pumps, controls and interface software to create a highly efficient heating loop. According to G&H's assessment, the system will use a third less energy than a traditional heating and cooling system. The firm also wanted a single-source supplier for the entire heating loop and its controls. Said Tom Tate, Vice President of Gillan and Hartmann, "We wanted everything in the glycol loop to be from one manufacturer. Carrier provides a full line of HVAC products with the widest variety and the most state-of-the-art efficiency, so it was one-stop shopping for heat pumps, controls and interface."

Forty-six Carrier heat pumps provide warmth to the DLC, from sixteen 50RTG AQUAZONE™ rooftop units to twenty-five indoor units, including the 50RHR horizontal and 50RVR vertical units. Each unit utilizes PremierLink™ controls. The system can be monitored via Carrier Comfort Network software. This interface provides diagnostics and graphic displays of data, and can be used to generate reports, troubleshoot problems and adjust individual heat pumps as needed.

Erik Hammerdahl, Director of Property Services for the Morris Union DLC says, "We're currently refining our graphic temperature and equipment map of the school on the Carrier Comfort Network displays. We've enjoyed Carrier's strong support since the installation. The graphic interface is well done and allows me to troubleshoot the system over the phone with my Carrier support contact. We can resolve many issues without having to call a technician to the site."

In addition to the lower operational cost of these highly efficient heat pumps, the units' efficiency earned the Morris Union Jointure Commission, which owns the Developmental Learning Center, a \$140,000 efficiency rebate from the SmartStart Buildings initiative of New Jersey's Clean Energy Program.

### Project Summary

**Location:** Warren Township, NJ

**Building Age:** Opened July 2007

**Project Type:** New Construction

**Building Type/Size:**  
167,000 square feet, 3 levels

**Building Usage:**  
Educational facility

**Major Decision Drivers:**  
Multi-part facility features numerous areas with distinct

comfort needs, such as two swimming pools, a long "Main Street" corridor of learning labs, offices and a gymnasium. Sustainable design of building mandates efficient, precisely controlled geothermal heat pump system.

**HVAC Equipment:**  
50RHR & RVR Indoor Heat Pumps (25), 50RTG AQUAZONE™ Rooftop Heat Pumps (16), 50RWS AQUAZONE™ Water-to-Water Heat

Pumps (5), PremierLink™ Controls, Carrier Comfort Network interface

**Unique Features:**  
Water-to-water and water-to-air heat pumps are part of a glycol-loop geothermal system that incorporates 200+ wells on the property as a heat sink, providing a comfortable atmosphere while using an estimated third less energy than a traditional system.

**Objectives:** To provide consistent, reliable comfort to the Developmental Learning Center's (DLC) student and teacher population; to provide energy-efficient heat consistent with the sustainability goals of the DLC; to provide facilities staff the controls needed to keep each area of the facility comfortable and the system operating at peak efficiency.

**Installation Date:** 2007

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