



FERNWOOD BOTANICAL GARDEN: SIMS EDUCATION CENTER



A VRF system that blends in with the natural wonders of Fernwood Botanical Gardens.

Fernwood Botanical Gardens was in need of an HVAC solution for its Sims Education Center. Hitachi's VRF System was the perfect solution to provide heating and cooling that is energy efficient, reliable, quiet, and allows for minimal disruption to the design aesthetic of the space.

- **Adaptable**
Configure our heat recovery systems in multiple ways and design systems up to 36 tones
- **Efficient**
Get the precise capacity you need with the fewest possible modules
- **Reliable**
Relax with energy efficient systems that are easy to maintain

Solution & Application



VRF BOTANICAL GARDEN

Stakeholder requirements

- **Low-Ambient Heating** — Provide an HVAC solution that can withstand the extremely cold winter temperatures of the area.
- **Maintain Visual Aesthetics** — Work within the design constraints to allow for maximum viewing.
- **Single-Phase Power** — Utilize existing single-phase power.

Solution

Hitachi's VRF system offered the best solution to meet our stakeholder's requirements.

- The operating range makes VRF systems a suitable choice for nearly every climate
- Connection ratios up to 150% and vertical piping lift up to 360 feet provide ultimate design flexibility
- Capacities from 6 to 36 tons meet diverse application requirements
- Dual inverter-driven compressors increase efficiency (in 8, 10, 12, 14 and 16 ton models)
- Compact design makes installation easy and provides design flexibility
- Advanced inverter compressors modulate refrigerant flow, offering precise solutions for maximum comfort
- Systems feature higher capacities at low and high ambient temperatures
- Smooth drive control improves comfort and efficiency
- Operation is whisper-quiet with sound ratings as low as 51 dBA

Project summary

Sims Botanical Garden Education Center is a uniquely designed building, set in a 105 acre nature preserve. It is built to optimize the observation of nature in a teaching environment with an emphasis on hands-on learning.

The design of the building utilizes numerous windows to create viewing areas of birds and a local ravine. The design optimizes viewing of surrounding landscape and sky by making the best use of natural light.

The open-concept classroom area was in need of an HVAC solution that could operate on the existing single-phase power and provide minimal disruption to the design aesthetic of the space.

A phase converter was used to allow the three-phase VRF outdoor unit to operate on single-phase power. Refrigerant piping was then run against the ceiling trusses, and a combination of cassettes and wall-mount indoor units were utilized for minimal disruption of the viewing space.

Outcomes

The Hitachi's VRF System addressed all stakeholder requirements.

- ✓ Full satisfaction of stakeholders
- ✓ Visually appealing, non-ducted system
- ✓ An HVAC system that provides energy efficiency, reliability, and comfort
- ✓ Low ambient heating down to -13°F

GENERAL INFORMATION

Customer

Fernwood Botanical Society

Location

Fernwood Botanical Society , 13988 Range Line Road Niles, Michigan 49120, USA

Project

Installing a VRF system

Date of installation

April 2018

SYSTEM DESCRIPTION

Outdoor Units

24 Tons Hitachi VRF Heat Recovery Systems

- 2 units, each at 12-Ton with Snow kit (HVAHR_B32S)



Indoor Units

4/3 Tons Hitachi VRF Wall Mount Indoor Units

- 2 Units, each at 2/3-Ton (TIWM_B21S)



22 Tons Hitachi VRF 4-Way Cassette

- 3 units at 3-Ton, 1 unit at 1½-Ton and 1 unit at 2½ Ton (HIC4_B21S)



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