

PROJECT BRIEF

Jamestown S'Klallam Tribe Variable Refrigerant Flow



June 2012

Project Description

To meet the needs of their members, the Jamestown S'Klallam Tribe built a new medical clinic in Sequim, Washington in 2010. To reduce the environmental footprint of the new clinic, a Variable Refrigerant Flow (VRF) was chosen for the heating, ventilation and air conditioning (HVAC) system. The 33,000 square-foot, medical clinic is open from 6:00 a.m. until 8:00 p.m., Monday through Saturday.

Choosing a VRF System

The VRF system was estimated to cost \$2 more per square foot, than a variable air volume HVAC system, while using 41,400 kWh less per year. Energy Pro modeling software was used to estimate these savings. The Jamestown S'Klallam Tribe chose the VRF system, because it will provide the following benefits:

Heat recovery, optimized performance and better temperature control

The VRF system will re-use heat whenever possible, rather than rejecting it, like traditional air conditioning systems. The VRF system is also designed for individual temperature control in 48 areas, while delivering up to 84 tons of cooling capacity. Because all of the areas will rarely need cooling at the same time and because the VRF system can ramp up to provide more cooling when needed, a 78 ton outdoor unit was selected. The rest of the time, the system inverters and electronic expansion valves, ramp down to optimize capacity and energy use, while maintaining temperatures in each area and increasing the system part load efficiency.



Jamestown S'Klallam Medical Clinic, Sequim, WA

Reduced Ventilation Costs

In addition to the VRF system, the clinic also has energy recovery ventilators (ERVs), which efficiently provide fresh air. Not only do the ERVs separate the ventilation system from the heating and cooling system, which is a good strategy to save energy, but they also recover heat from the exhaust air. So cold outside air is preheated by the exhaust air, significantly reducing the cost to heat the code-required fresh air.

Energy Savings

Based on energy simulation models, the Jamestown S'Klallam Tribe VRF system is expected to use 41,400 kWh less than the same building would use with a variable-air volume (VAV) system. VAV systems can also provide individual temperature control, but with an energy penalty due to re-heating air that was previously cooled.





Feedback

Utility:

“VRF systems are an exciting new HVAC system and this may be the first one in the County.”

—Mattias Jarvegren, Utility Services Advisor with PUD
No. 1 of Clallam County

Engineer:

“The success of the project is attributed to the contractor who was familiar with VRF systems and had engineers on staff to help with the design.”

—Fintak, Mechanical Engineer with Tres West
Engineering

Mechanical Contractor:

“VRF is not like your mother’s HVAC systems.”

—Don Radtke, Merit Mechanical