605 Robson Street

CASE STUDY

Downsized heat recovery chiller provides reliability and a comfortable working environment; reduces gas consumption approximately 32 percent compared to base year.

Challenge

The original equipment at the 605 Robson Street building was approaching the 20 -year mark and nearing end of life expectancy. As a result of the building's aging, inefficient boiler and chiller, building owners were concerned about comfort issues, equipment reliability, and rising utility costs.

> "The equipment was wearing out. Our government tenants had strict temperature guidelines, with only a one degree variance. We wanted to improve reliability to ensure we could continue to adhere to those guidelines."
>
> - **Harry Reck,** Vice President, Operations, Unimet Investments Ltd.

Solution

Based on a trusted equipment, controls and service relationship that began with the construction of the building, Unimet contacted Trane to discuss their challenges. Trane evaluated the building requirements, taking into account the year-round cooling load, and the need to simultaneously heat and cool the building to keep tenants comfortable. After considering the option of adding a second chiller, Trane instead recommended replacing the existing chiller with a Trane® Series R® Model RTWD Helical Rotary dual circuit chiller with heat recovery.

Doing double duty with downsized chiller

The simultaneous heating and cooling requirements of the building made it an excellent candidate for heat recovery. Trane re-evaluated the chiller size due to facility upgrades over the years that reduced the building load, including the replacement of lighting with LED fixtures. The 450-ton chiller was downsized to a Series R water-cooled chiller with 254 tons of cooling capacity. In heating mode, it provides 140°F heat recovery capabilities. The dual circuit RTWD chiller provides cooling in summer, heating and cooling in spring and fall, and heating only in winter, doing the work of two machines.

605 Robson Street

Vancouver, BC

PROJECT HIGHLIGHTS

CHALLENGE

Aging, inefficient equipment

Simultaneous heating/cooling needs

Strict temperature requirements

SOLUTION

Trane Series R (RTWD) helical rotary chiller with heat recovery

TR200™ Series variable frequency drives

RESULTS

Quiet, comfortable working environment

Reduced gas consumption approximately 32 percent compared to base year

Meeting tenant temperature requirements

Less wear and tear on existing equipment

TRANE TECHNOLOGIES

605 Robson Street

CASE STUDY

Reducing energy use with heat recovery
After obtaining the required permits from the city of Vancouver, the street was blocked off for safety purposes and a crane was brought in to hoist the chiller into place on the roof of the building. To utilize the chiller's heat recovery feature, existing piping was modified and new piping was installed to connect the chiller to the heating loop. The new piping was insulated and flushed, and three-way control valves and a new heat exchanger were installed.

The heat recovery option of the RTWD chiller, employed during shoulder and winter seasons, improves efficiency by using heat from the condenser that would otherwise be wasted to heat the building. In heat-recovery mode, the RTWD can generate condenser water temperatures as high as 140°F (60°C), satisfying building needs in all but the coldest months of the year. The combined (heating/cooling) coefficient of performance (COP) is around 12 in part load conditions when the system is recovering heat.

Providing tight temperature control and increased efficiency
With a low speed/direct drive compressor design, the Series R® chiller is reliable and efficient. The chiller also provides tight temperature control due to its infinite unloading compressor, wide operating temperature range, and advanced controls.

To further increase efficiency, Trane® TR200™ Series Variable Frequency Drives (VFDs) were installed on the chiller water pump and condenser water pumps. The VFDs continually monitor load and vary motor speed to reduce energy usage, extend motor life, maximize occupant comfort and reduce costs. The RTWD chiller was connected to the existing Trane Tracer Summit® building automation system to provide facility managers with easy access to monitor and control the systems for optimal operation.

Results

Replacing the aging chiller at the 605 Robson Street property with Trane® Series R® Model RTWD Helical Rotary dual circuit chiller with heat recovery is helping achieve building owners' comfort objectives, resulting in a better working environment for tenants. The system is also saving energy, reducing gas consumption by approximately 32 percent. With built-in redundancy, the quieter, more efficient chiller offers reliable, accurate climate control. By using the chiller for both cooling and heating, the facility has less wear and tear on other equipment in the building.

> "Heat recovery makes the building more efficient. We can operate the chiller for longer times and recirculate the heat. Plus, we don't need to run the boilers unless it is extremely cold."
>
> **- Harry Reck,** Vice President, Operations, Unimet Investments Ltd.

"We are also very happy with the reliability of the chiller," added Reck. "It enables us to meet the government's strict temperature requirements, so there is no need to send employees home due to comfort issues."

About 605 Robson Street

Unimet Investments is a respected name in real estate with an unwavering commitment to superior design, unmatched construction quality and responsible environmental stewardship. The company is known for its meticulous attention to detail and is a pioneer of initiatives to reduce our environmental footprint.

Owned and managed by Unimet Investments, the sixteen story, 150,000 sq ft property at 605 Robson Street is a Class A office building. Tenants in the skyscraper include a variety of Canadian government agencies.

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