

FUEL-SWITCHING HYDRONIC SYSTEMS TO LOW-CARBON WITH AIR-TO-WATER HEAT PUMPS



CHILLER SYSTEMS – LOOKING AT THE COST AND ENVIRONMENTAL BENEFITS OF HEAT PUMP TECHNOLOGY

Spring has sprung and commercial and industrial building owners are starting maintenance and startup of their cooling systems for the warmer weather that is just around the corner. Many of these buildings in Canada use chilled water systems for cooling (e.g., chillers) coupled with hot water hydronic systems for heating.

In some cases, the maintenance and startup process for chillers will bring to light the need to assess the building's chiller system to determine whether it should be replaced. Three key issues need to be reviewed to determine if a chiller is nearing the end of its useful life; maintenance and repair costs, the age of the system and its energy usage.

Escalating maintenance and repair costs typically indicate the chiller system is becoming unreliable which can seriously affect comfort and impact industrial processes in buildings. From an age standpoint, there is no precise method of determining how long a chiller will operate. However, many manufacturers use a benchmark of 20 to 30 years when a chiller should be assessed for replacement. A chiller system in a commercial or industrial building consumes a significant amount of energy and as chiller systems age, their energy costs escalate as the system becomes less efficient.

THE MITSUBISHI ELECTRIC ALTERNATIVE

Whether it is a new installation or replacement of an existing chiller, Mitsubishi Electric Sales Canada offers a chiller alternative that uses air-to-water heat pump technology that provides both heating and cooling year-round. This chiller option is particularly effective when replacing aging chiller and boiler systems in commercial and industrial buildings.

The Mitsubishi Electric heat pump alternative goes hand in hand with the Canadian government's net zero strategy to reduce carbon emissions as well as being a defence against the escalating federal carbon tax. Using highly efficient air-to-water heat pumps for heating and cooling reduces energy consumption, lowers carbon emissions and helps limit the use of fossil fuels.

A Mitsubishi Electric-sponsored energy study of air-to-water heat pump systems with auxiliary natural gas boilers compared to traditional chiller/boiler systems was conducted by Intertek Laboratories. The study was done between 2018 and 2021 on comparable commercial buildings in Toronto, Montreal and Vancouver. The study found that the heat pump systems achieved an average carbon-emission reductions of 23%, energy savings of 49% and cost savings of 44% compared to the chiller/boiler systems.

CLIMAVENETA AND TRAINING

Mitsubishi Electric's Climaveneta series of heat pumps provide energy efficient heating and cooling to commercial and industrial buildings, increases the profitability of the buildings and reduces carbon emissions. These systems are the perfect fit for use in combination with any hydronic equipment which makes them "ideal for retrofits and energy efficiency upgrades."

Climaveneta systems also can be used as stand-alone systems in light commercial applications right up to centralized district heating and cooling plants. The NX-N series provides high performance in Canada's extreme weather conditions from -15°C to 46°C.

Mitsubishi Electric Sales Canada is committed to providing their contractors and distributors with resources and training so they can do their work safely and efficiently. The company provides Commercial and Applied Training and Certification Programs including the Applied Diamond Designer Program; a number of half day workshops covering Climaveneta air-to-water technology and equipment for new builds and retrofits.

Click [here](#) for more information on chiller replacements and Climaveneta systems.