Q-TON BY MHIAA: FUTURE-PROOFING COMMERCIAL HOT WATER SOLUTIONS

As energy costs soar and sustainability goals become central to building design, Mitsubishi Heavy Industries Air-Conditioners Australia (MHIAA) is leading the charge with its cutting-edge commercial hot water solution—Q-ton. Using CO_2 as a natural refrigerant, Q-ton is a revolutionary air-to-water heat pump system that offers high energy efficiency, outstanding environmental performance, and long-term cost savings.

Designed to meet the growing demand for sustainable hot water solutions, Q-ton offers a market-leading coefficient of performance (COP) of 4.3, translating into lower energy consumption, reduced operating costs, and shorter payback periods.

When compared to traditional systems, Q-ton delivers:

- 76% fewer CO_2 emissions than gas boilers
- 74% fewer emissions than electric immersion heaters
- Up to 100,000 litres of hot water daily across 16-unit configurations
- Reliable operation in ambient temperatures as low as -25°C

With a capacity range from 3,000L to 100,000L per day, Q-ton is suitable for a wide spectrum of commercial applications—from boutique operations to large-scale facilities requiring high volumes of hot water.

Its patented two-stage rotary scroll compressor technology enables it to produce sanitary-grade water at temperatures between 60°C and 90°C, making it ideal for processes like cleaning, sterilisation, and bottling. This high-temperature capability is also essential for domestic hot water supply in healthcare, aged care homes, hotels, and gyms, where hygiene and consistency are paramount.

Q-ton's operation is underpinned by a highly efficient air-to-water heat transfer system. It extracts ambient heat—even in sub-zero conditions—and transfers it to a natural CO_2 refrigerant through a two-stage compression process. The refrigerant, which has negligible environmental impact, boasts zero ozone depletion potential and a low global warming potential, making it a far superior choice to synthetic refrigerants.

This compressed, high-temperature CO_2 refrigerant is then used to instantly heat water—delivering a reliable 90°C output even when ambient temperatures drop to -25°C, and maintaining 100% capacity at temperatures down to -7°C. The flexible system also allows for precise temperature adjustment, ensuring optimal performance for varied use cases.

Q-ton is modular, allowing it to be used as a standalone unit or scaled up to a 16-unit system. This flexibility supports everything from small boutique operations to large commercial or institutional builds—ensuring hot water demands are met with minimal environmental impact.

Thanks to its adaptability, Q-ton has become the go-to solution for a wide array of commercial applications, including::

- **Aged Care & Hospitals** – Hygienic, reliable water for sanitation and patient care
- **Hotels & Resorts** – High-volume hot water for guest facilities
- **Multi-residential Apartments** – Economical and consistent domestic hot water
- **Breweries, Distilleries & Wineries** – Process heating with reduced emissions
- **Gyms & Recreational Centres** – Reliable supply for showers, pools, and spas
- **Food & Beverage Processing** – Steady, sanitised water for production lines

With sustainability increasingly tied to property value and government regulation, Q-ton helps projects meet higher NABERS ratings, contributing directly to reduced carbon footprints and improved environmental performance.

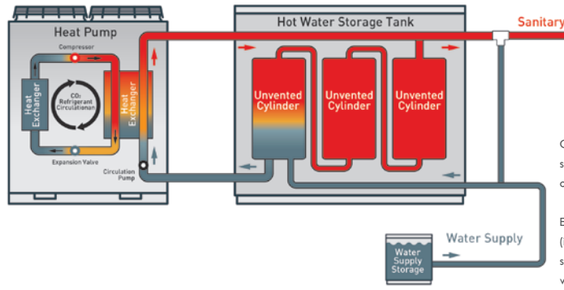
For developers and facility managers focused on ESG objectives, Q-ton offers a future-proof solution that aligns with net-zero targets.

As industries across Australia shift toward clean energy and cost efficiency, Q-ton by MHIAA stands out as the gold standard in commercial hot water systems.

Offering high performance, lower emissions, and broad application flexibility, Q-ton enables businesses to meet modern energy demands while contributing to a more sustainable future.

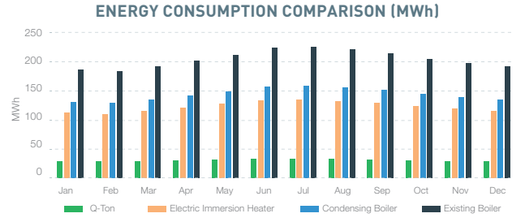
In addition to performance, Q-ton is WaterMark certified, meeting stringent Australian Building Codes. This certification ensures compliance with Australia's safety and performance standards.

For more information contact Mitsubishi Heavy Industries Air-Conditioning Australia, Pty Ltd., phone 0406 765 774, mhiaa.com.au



Q-ton seeks to provide energy, cost and carbon savings. It is most efficient when cold water is used to supply the heat pump. For that reason the cold feed water is provided to the heat pump, via the base of the storage stratified vessel.

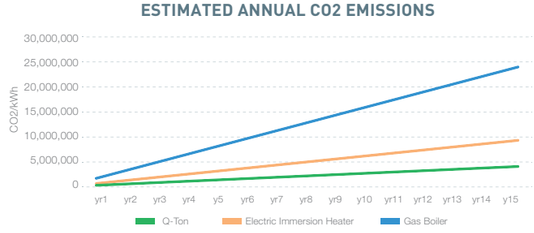
Each storage vessel has five pockets into which temperature sensors can be fitted to detect the volume (in % terms) of hot water held in the vessel at any particular time. The programming of the control system to hold specific volumes of hot water at different times of day is based on a balance of hot water demand and electricity tariffs, to ensure security of supply at minimum cost.



The graph above illustrates estimated monthly energy use for Q-ton versus alternative hot water systems, based on the typical usage of a large-scale hotel in Melbourne. While the figures are indicative only, they offer a strong representation that Q-ton can reduce energy consumption by up to 75% compared to electric heaters and up to 85% compared to gas boilers. These savings highlight Q-ton's potential to deliver efficient, dependable hot water throughout the year at a significantly lower energy cost.

For businesses seeking to improve efficiency, Q-ton provides consistent performance year-round, regardless of seasonal temperature variations.

^The above graph is an estimation only, based on an electricity tariff of 7.01 cents per kWh (off-peak) and 10.45 cents per kWh (peak) and a gas tariff of 17.37 cents per kWh. Actual energy costs will vary depending on site-specific factors, energy usage patterns, plus several other factors. Annual running cost ($AUD)



Based on the same large scale hotel, the graph illustrates an example of the potential emissions savings over a 15-year period, showing that in this particular application, Q-ton is estimated to produce up to 81% fewer emissions than a gas boiler and 75% less than electric immersion heaters used by many hotels.

By switching to Q-ton, businesses can not only cut operational costs but also significantly reduce their carbon footprint, supporting long-term sustainability goals.

^These above CO_2 emissions estimates are only to be used an example and are based on calculated energy consumption of a typical large schole hotel in Melbourne over a 15-year period and assume current grid conditions. Actual emissions may vary depending on site-specific factors, energy usage patterns, and future grid decarbonisation.