



A specialized heat transfer system, turning waste heat into hot water for domestic use and space heating.



MAKING NET ZERO POSSIBLE TODAY

At Green Matters Technologies Inc., our goal is to be the driving force behind energy conservation and the preservation of natural resources through significant reductions in energy consumption within the HVAC marketplace.

We know innovation is the path to solving climate change. That’s why we are creating disruptive technologies that are both environmentally sustainable and commercially viable.

Traditionally, it’s fossil-fuel powered water heaters and boilers that provide domestic hot water for hotels, hospitals, sports arenas or high-rise buildings.

With our proprietary heat recovery systems, we create an endless supply of hot water by capturing and transferring waste heat from sources such as a building’s air conditioning system, district energy, or ambient air.

By utilizing heat that would have simply been wasted, we are providing commercial and residential facilities an efficient, cost-effective, energy-saving and emission-free green solution, while saving significantly in net energy costs.

Our “Zero Emission” product lines easily retrofit into existing facilities or can be directly implemented into new development, enabling businesses to reduce their carbon footprint while at the same time, delivering substantial energy savings.

Not in the near future. Today.

Captive Energy K500



475 kW
RATED CAPACITY

6.1 COP_H
610% EFFICIENCY

11
PATENTS

DUAL
REFRIGERATION CIRCUITS

DOUBLE
WALLED CONDENSERS

HERE'S WHAT MAKES OUR TECHNOLOGY SPECIAL

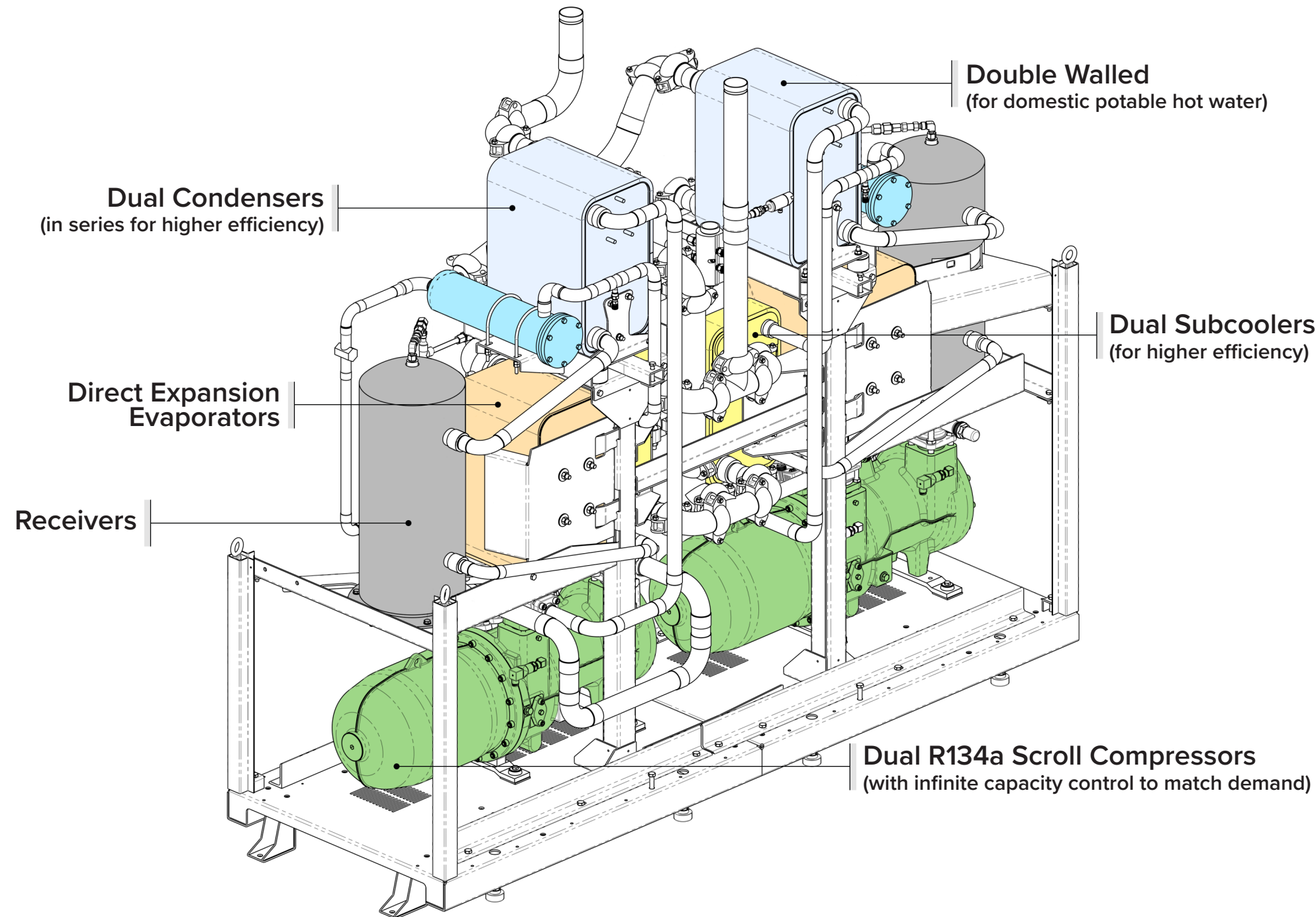
Green Matters' CE-K500 is purpose-built to heat domestic potable hot water and provide space heating using any available waste heat: from a water chiller cooling loop, district energy, ambient air, or even low temp boilers. It is designed to heat incoming make-up water directly from the source for highest efficiency.

Our patented condenser piping arrangement raises the incoming municipal cold-water supply from 12°C/54°F to 60°C/140°F at full load in a single pass. The CE-K500 is optimized to capture waste heat from a water chiller condenser, producing 60°C/140°F potable hot water at efficiencies of up to 610% (COP_H of 6.1).

Existing heating equipment can be removed, or remain in place for additional redundancy. The CE-K500 can also produce hot water up to 65°C/149°F and incoming water can reach 60°C/140°F to maintain tank temperature when demand is low.

A significant advantage of the CE-K500 is the use of a doubled-walled condensing heat exchanger, allowing potable water to be heated directly without the requirement of a secondary heating loop.

The CE-K500 has two independent compressors and isolated refrigerant loops for increased reliability. If maintenance is required, one side can be worked on while the other half continues to provide hot water.



AND WE'RE AN EASY FIT

With a compact design and piping layout, its minimal footprint makes it ideal for new construction, or easily retrofitted into existing mechanical rooms with limited space, without requiring the removal of existing boilers.

PRODUCT FEATURES

UNIQUE TECHNOLOGY

- 11 Issued Patents
- Two independent compressors
- Eliminates the need for a boiler

INCREASED ENERGY SAVINGS

- Captures thermal waste
- Heats water directly from the source
- Over 6 times the efficiency of a gas boiler

ENVIRONMENTALLY SUSTAINABLE

- Eliminates the burning of fossil fuels
- Overall reduction in CO₂ emissions

EASE OF IMPLEMENTATION

- Seamlessly integrates with existing HVAC systems such as air conditioner/chiller units
- Smart remote system monitoring and control
- Compact for easy logistical transport, installation and maintenance

WHAT OUR CLIENTS ARE SAYING

The initial operating performance of our CE-K500 at the San Juan Marriott hotel, a 525-room facility, has resulted in significant reductions in energy costs per month and up to 75% reduction in net CO2 emissions.

The hotel was so impressed with the CE-K500 performance that it has removed all of their natural gas fired water heaters.

With the implementation of Green Matters' CE-K500, the Marriott hotel saves 340 tons of CO2 every year, the equivalent of taking 75 cars off the road or planting 1,600 trees per year.

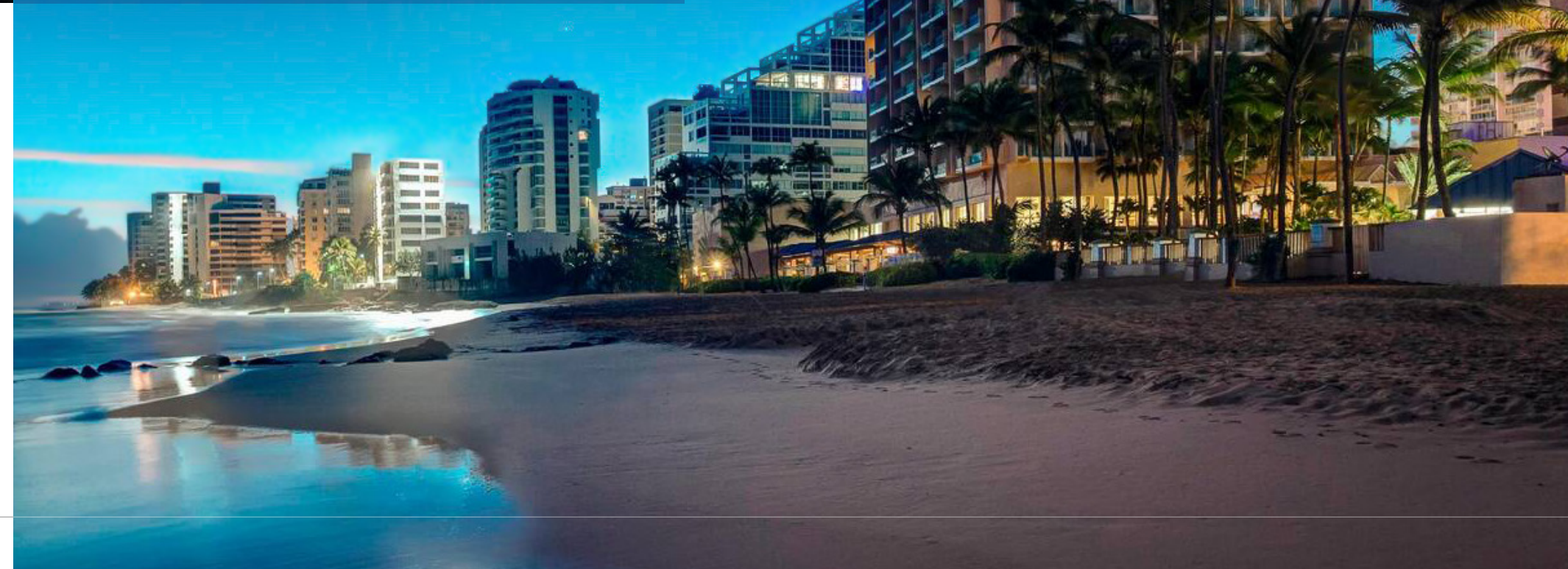
Most significantly, over the first 4 years the Marriott hotel has saved over a half million dollars in energy costs.



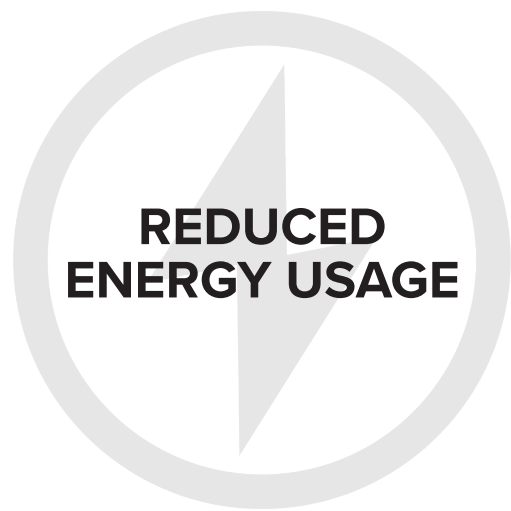
Through every step of the way and up to the last commissioning stage, your service, knowledge, and guidance have been much appreciated and helpful.

To date, the Heat Recovery Water Heater has been working to all expectations while making a great difference to the gas and emission consumptions resulting in **substantial savings**.

Carlos Bravo, Director of Engineering at San Juan Puerto Rico Marriott Resort



REDUCED
ENERGY COSTS



REDUCED
ENERGY USAGE



REDUCED
CO₂ EMISSIONS

BUILT FOR HOSPITALITY

Hotels are one of the major economic drivers in the world, so conserving energy and its respective costs can dramatically increase profitability.

The four largest hotel groups, each spend between \$500-820M per year to heat hot water. If Green Matters were to expand and distribute its heat recovery water heating systems in 20% of the hotels, each group could save \$250-500M annually.

Additionally, the significant improvement in efficiency puts most hospitality facilities within reach of qualifying for ENERGY STAR recognition.



BUILT FOR SPORTS & RECREATIONAL FACILITIES

Sports venues are massive consumers of energy, and more teams are looking for innovative ways to satisfy their respective sustainability objectives.

The average NHL arena consumes 248,000 gallons of water per game. The League's 2018 sustainability report noted that despite implementing green initiatives, there was only a 1% overall reduction from 2014.

This creates an opportunity for Green Matters as a viable option to aid the League in meeting its emissions targets and significantly reducing operating costs.



BUILT FOR HEALTHCARE

The energy use intensity of hospitals is nearly three times those of a typical commercial building, with 35 to 60% of the annual energy costs coming from the operation of HVAC systems.

Hot water demands are significantly higher in hospitals due to stringent hygiene and safety standards, high priority on patient comfort, and 24-hour operations.

This serves as an exceptional opportunity for significant energy savings with Green Matters CE-K500, which captures and transfers waste heat from a number of energy sources, delivering potable hot water at temperatures up to 65°C/149°F.



BUILT FOR MULTI-STORY COMMERCIAL & RESIDENTIAL

Multi-story buildings range from offices, schools, warehouses, shopping malls and living spaces. Heating water in these spaces can account for more than 25% of their energy end-use.

For example, a 2010 study of energy use in high rise residential buildings in British Columbia found that 49% of gas costs went solely to heating domestic hot water.

Green Matters CE-K500 offers an efficient, cost-effective, and green solution that allows for heat energy, otherwise released as waste, to be recaptured to provide potable domestic hot water and radiant space heating.

A SERVICE PRICING MODEL BASED ON WHAT YOU SAVE

Just as our technology is unique, so is our pricing model.

We understand that purchasing additional HVAC infrastructure is not something facility owners have generally budgeted for.

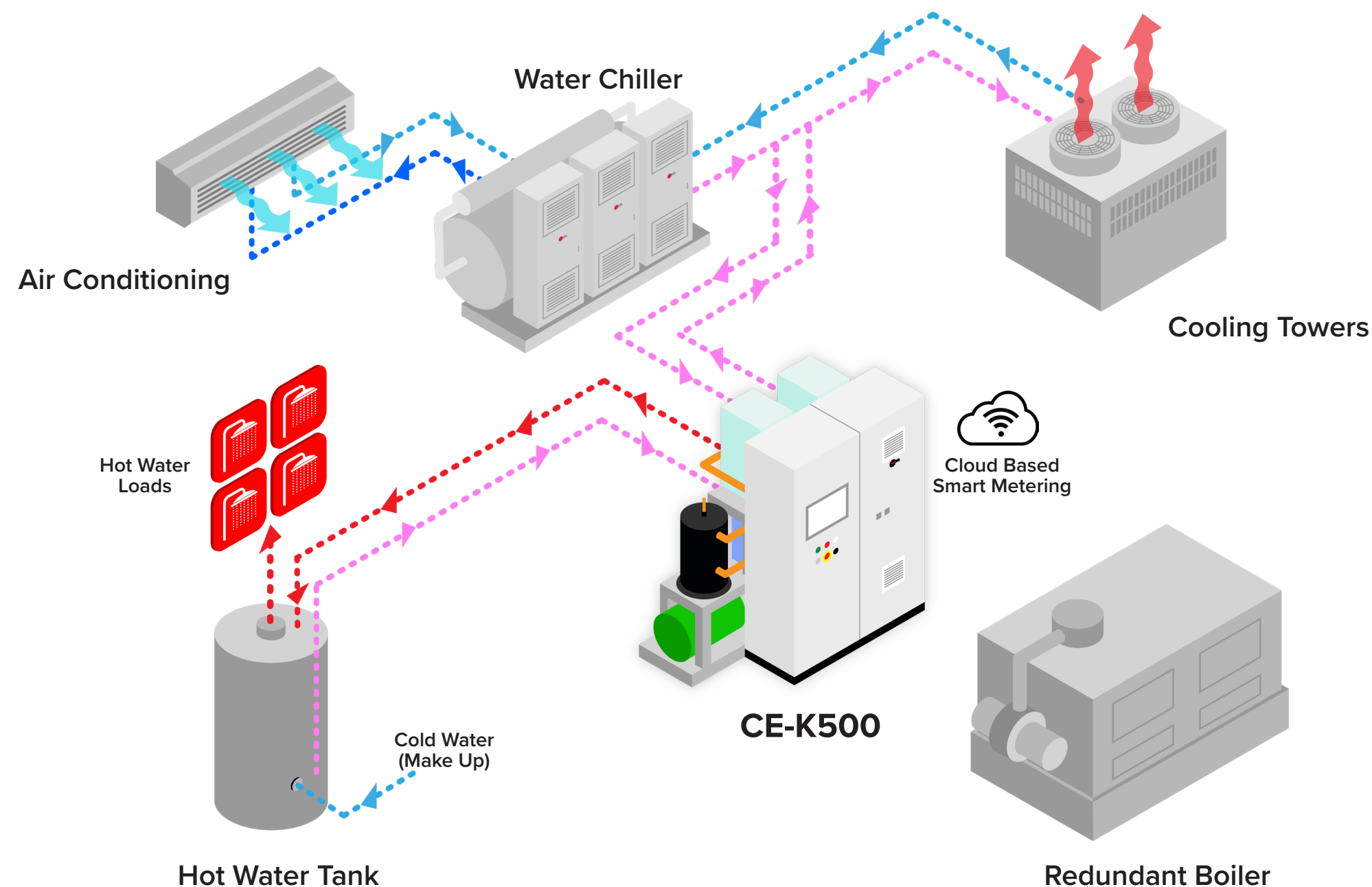
And even with the potential of new technology providing significant savings, new capital expenditures must still be carefully considered.

So we provide our CE-K500 based on a service/utility model, and simply charge a monthly fee based on the savings generated.

It's a model that ensures what's best for you, is best for us. The more robust and efficient our technology is, the more you save.

Our CE-K500 is designed to generate efficiency and savings data, as well as specific performance indicators, in real-time, with smart cloud-based metering.

To ensure accuracy, we use the highest quality components such as Siemens electronics, Bitzer semi-hermetic screw compressors, and third party verification of our machine performance by Intertek.



MAKING NET ZERO POSSIBLE TODAY

From health care facilities to sports and recreation venues, hotels, universities and high rise commercial/residential buildings, we have developed an energy-efficient water heating technology that generates significant savings.

Furthermore, our products can be easily retrofitted into any facility without requiring the removal or replacement of existing boilers.

They have also been designed for ease of logistics purposes so they can fit into service elevators and be easily transportable.

At Green Matters Technologies we take pride in being an environmentally sustainable company, making meaningful and impactful changes through our products that are a win for business, and a win for the environment.

Because when it comes to making this world a better place, green matters.



International Trade Council
2021 Clean Tech Frontrunner



Recognized Member of the
Canada Green Building Council

STANDARD FEATURES

- Soft starters minimize power spikes at start-up.
- Touch screen control simplifies ease of operation.
- Compressors are high-condensing, semi-hermetic, screw compressors with infinite capacity control accommodating various hot water demands.
- ETX valve (electronic expansion valve) accurately regulates the flow of refrigerant.
- USB backup power for controls.
- Real time, cloud-based smart metering.
- Condensers on the heat exchangers are brazed plate, double walled with air gap.
- Dual refrigeration circuits provide a failsafe allowing the smooth, continued production of hot water during maintenance. As well as delivering a beneficial redundancy if one of the compressors or heat exchangers require service, the separate circuits ensure no cross-contamination of refrigerant or oil.

SIEMENS
intertek
 Machine Certified Performance


GENERAL

Rated Capacity	475 kW
Weight	2000 kg [4400 lbs] (dry)
Dimensions	2.5m x 0.9m x 2.0m (LxDxH)

ELECTRICAL

Voltage	460V $\pm 10\%$ - 3PH - 60Hz
Full Load Power	90kW
Minimum Circuit Ampacity	215A
Required Fuse Size	250A
Panel Approval	CSA, C/US

COMPRESSOR

Type	Semi-hermetic screw
Qty	2 independent refrigerant circuits
Refrigerant	R134a, R513a, R1234yf ¹
Lubricant	Bitzer BSE 170 POE oil, 3.3 gal [12.3L]

HEAT EXCHANGERS

Evaporators	Brazed Plate, single wall (450 psi maximum refrigerant pressure)
Condensers	Brazed Plate, double walled with air gap (350psi maximum refrigerant pressure)
Approvals	ASME BPVC Section VIII, Div. 1

WATER LINES (Evaporators)

Size	4"
Type	Victaulic Standard Groove, Stainless
Flow Rate	23 L/s [360 gpm]
Pressure Drop	90 kPa [30 Ft H ₂ O]
Max Pressure	1.03 MPa [150 psi]

CONDENSORS

Size	2.5"
Type	Victaulic Standard Groove, Copper
Flow Rate	3.8 L/s [60 gpm]
Pressure Drop	80 kPa [27 Ft H ₂ O]
Max Pressure	1.03 MPa [150 psig]

1. R1234yf currently in verification process