

Energy Saving by

Air to Water Heat Pump

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TRANE VIET NAM

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OUTLINE

- ◆ Air to Water Heat Pump Technology
- ◆ Applications
- ◆ Project References

Introduction

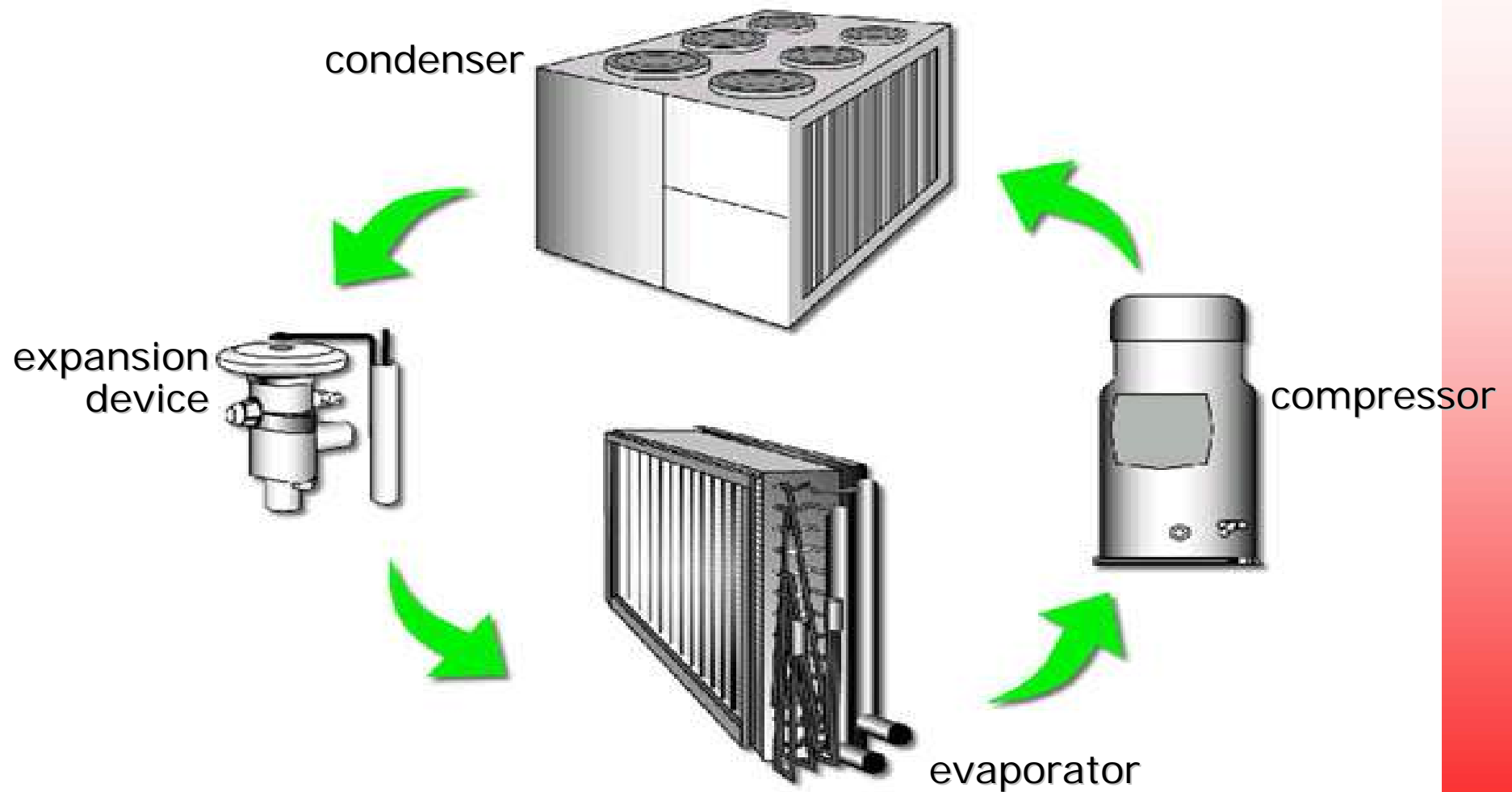
AIR TO WATER HEAT PUMP

- ◆ A proven technology as an energy efficiency hot water production system, 80% less energy consuming
- ◆ It has been installed to produce hot water in the U.S. for more than 20 years
- ◆ Estimated 50,000 commercial HWHP systems currently operate in the U.S.
- ◆ Has been known in Thai market since 1994



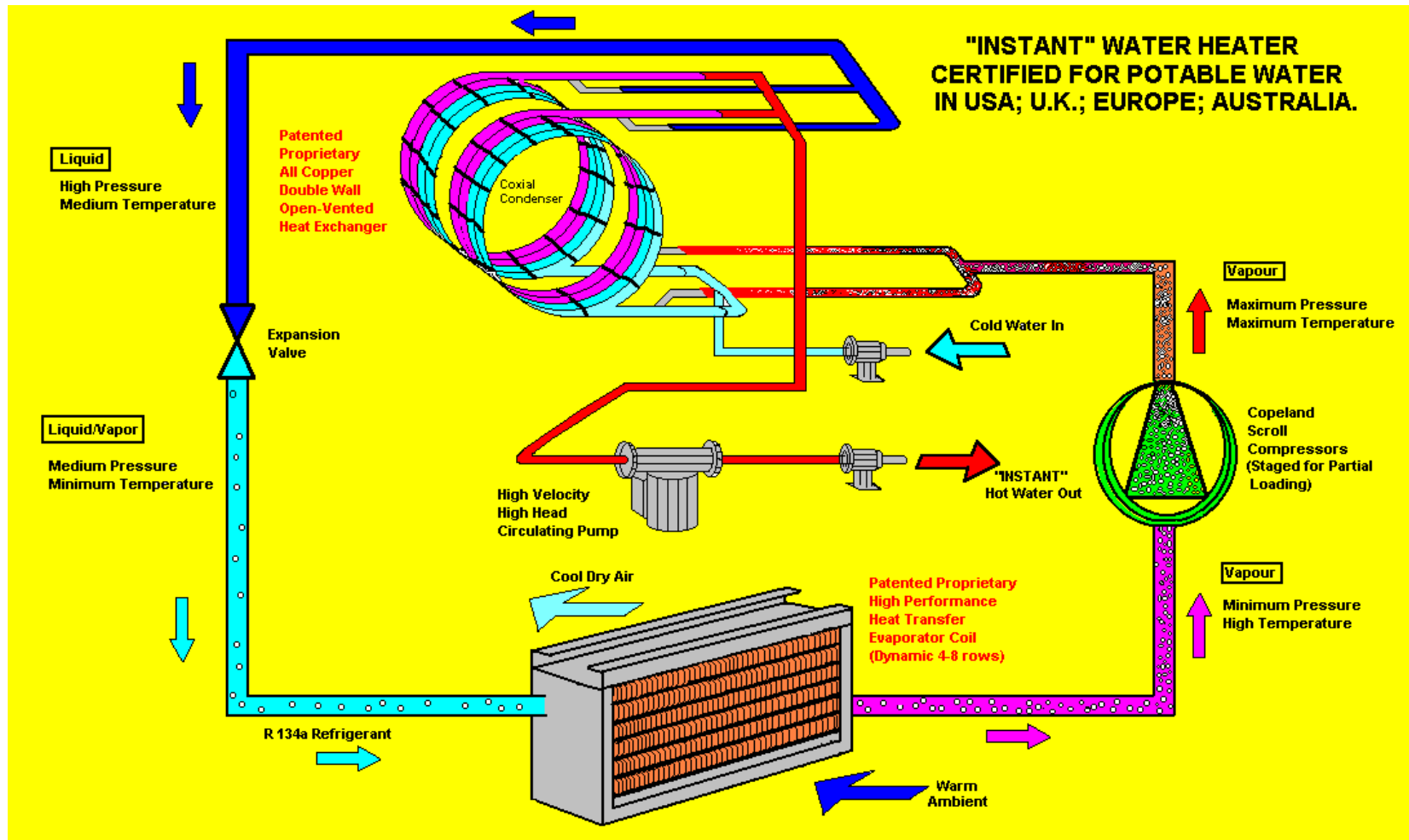
About the Technology

BASIC PRINCIPLE



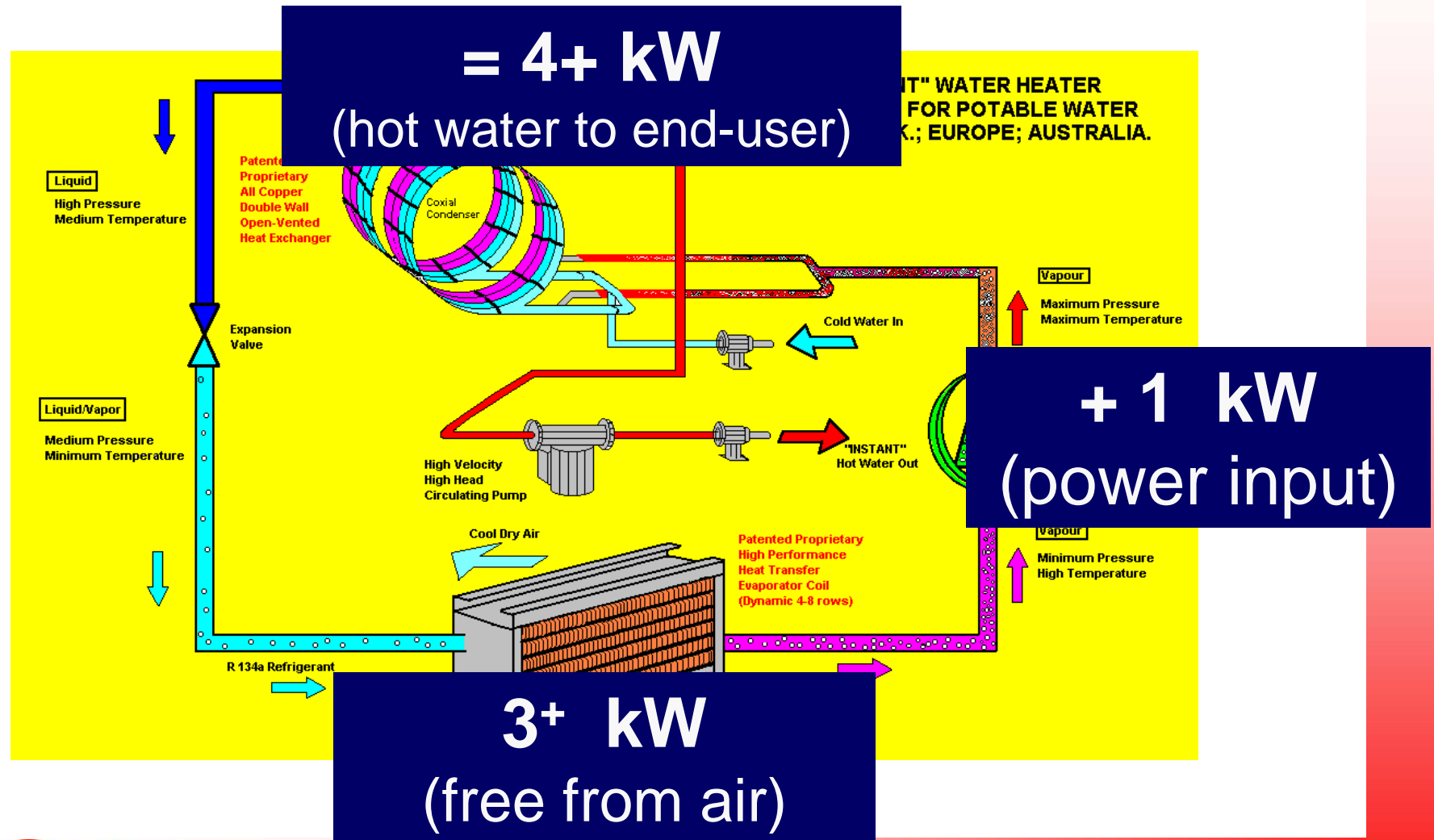
About the Technology

BASIC PRINCIPLE



About the Technology

POWER MULTIPLIER



About the Technology

AWHP EFFICIENCY

- ◆ Coefficient of Performance, C.O.P

$$\text{C.O.P.} = \frac{\text{Heating Output}^*}{\text{Input}}$$

***Heating output = (free energy from air + power input)**

About the Technology

POWER MULTIPLIER

◆ ACTUAL EXAMPLE: MODEL HPA2018

Heating Capacity = 25.27 kW

Cooling Capacity = 20.00 kW

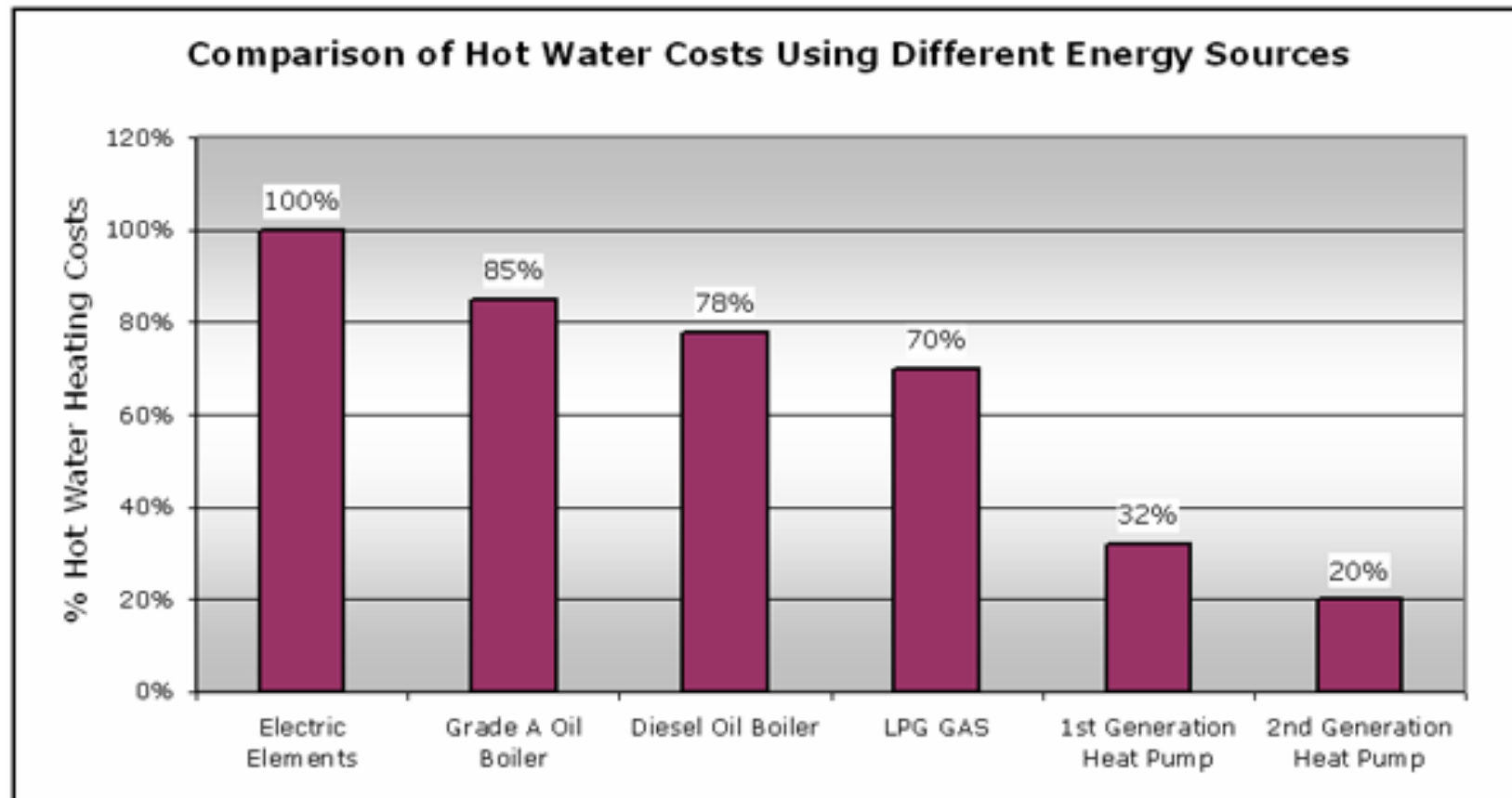
Total Power Input = 5.1 kW

TOTAL Heating C.O.P. = 4.95



About the Technology

COST SAVING WITH AWHP



Applications



APPLICATION

- ◆ **Produce Hot Water and Supply to**
 - ◆ Hotel's Guestrooms
 - ◆ Kitchens, Restaurants
 - ◆ Hospitals, Laundry
 - ◆ Condominiums, Apartments
 - ◆ Heath Club, Spa, Jacuzzis
 - ◆ Villas, Resorts
 - ◆ Schools
- ◆ **Preheat water before entering into Instant Heating System (improve energy efficiency of the system)**

HOTEL APPLICATION

◆ Hot Water System Requirements

- ◆ Cost effectiveness
- ◆ Instantaneous hot water
- ◆ High reliability, Constant temperature
- ◆ Health and Safety
- ◆ Easy to maintenance
- ◆ Easy to operate

HWHP Solutions by Trane

- ◆ **There are 2 types of Air to Water HWHP system available.**
 - HWHP storage system with a capacity of delivering 340 to 3,000 Litres per day @ 60 C
 - HWHP instantaneous system capable of delivering hot water within 2 second from switching on the unit, and can deliver 15,000 Litres per day @ 60 C from 1 unit.

HWHP Solutions by Trane

- ◆ There are 2 major types of Air to Water HWHP system available.



HWHP Solutions by Trane

◆ Range of HWHPs Available for Compact System



Model: 120ACH-417

- 3.2 kW Heating Capacity
- Built-in 120 Litre Storage
- Produces up to 2,400 Litre/day
- High efficiency @ COP > 4.0
- Power input only 0.98 kW
- Heavy duty galvanised casing for all installation condition

HWHP Solutions by Trane

◆ Range of HWHPs Available for Compact System



Model: 270/340 ACH

- 4.5 kW Heating Capacity
- Built-in 270/340 Litre Storage
- Produces up to 3,000 Litre/day
- High efficiency @ COP > 4.0
- Power input only 1.1 kW
- Heavy duty galvanised casing for all installation condition

HWHP Solutions by Trane

◆ Range of HWHPs Available for Compact System



Model: 340TIH

- 8.2 kW Heating Capacity
- Built-in Storage 340 Litre
- Produces up to 4,500 Litre/day
- High efficiency @ COP > 4.0
- Power input only 1.8 kW
- Heavy duty galvanised casing for all installation condition

HWHP Solutions by Trane

◆ Range of HWHPs Available for Central System



Model: 27ACW-417

- 14 kW Heating Capacity
- Produces up to 7,000 Litre/day
- High efficiency @ COP > 4.0
- Power input only 2.7 kW
- Heavy duty galvanised casing for all installation condition

HWHP Solutions by Trane

◆ Range of HWHPs Available for Central System



Model: HPA2018

- 25 kW Heating Capacity
- Produces up to 15,000 Litre/day
- High efficiency @ COP > 4.6 / 8.0
- Usable cold air to adjacent space
- Power input only 5.1 kW
- UL approved condenser coil

HWHP Solutions by Trane

◆ Range of HWHPs Available for Central System



Model: HPA18

- 48 kW Heating Capacity
- Produces up to 27,000 Litre/day
- High efficiency @ COP > 4.1
- Power input 11.6 kW
- UL approved condenser coil

HWHP Solutions by Trane

◆ Range of HWHPs Available for Central System



Model: 112ACW – 417

- 60 kW Heating Capacity
- Produces up to 31,000 Litre/day
- High efficiency @ COP > 5.0
- Power input only 11.2 kW
- Heavy duty galvanised casing for all installation condition

HWHP Solutions by Trane

◆ QUANTUM Central System



Model: 67CAW2-134-C

- 22 kW Heating Capacity
- Produces up to 15,000 Litre/day
- High efficiency @ COP > 3.6 / 6.0
- Usable cold air to adjacent space
- Power input only 7 kW
- UL certified condenser coil
- Benefit cooling air capacity up to 17.65 kW

HWHP Solutions by Trane

◆ QUANTUM Central System



Model: 134CAW2-134-C

- 44.2 kW Heating Capacity
- Produces up to 30,000 Litre/day
- High efficiency @ COP > 3.6 / 6.0
- Usable cold air to adjacent space
- Power input only 14.05 kW
- UL certified condenser coil
- Benefit cooling air capacity up to 35.3kW

“TRANE” Not Just a Heat Pump

◆ Special Coil Design

- Special coil design with double-wall condenser to prevent the possibility of cross-contamination
- Be able to use with Potable Water or any Service Water.

“TRANE” Not Just a Heat Pump

- ◆ **Worldwide Recognized Standards**

- Designing,
- Manufacturing and
- Product quality & performance



COLMAC IS PROUD TO MEET THE FOLLOWING QUALITY, SAFETY AND PERFORMANCE CERTIFICATION STANDARDS



ASME "U" Stamp – American
Society of Mechanical Engineers

Colmac coils are built in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code, Section VIII for the manufacture of pressure vessels.



ASME "U" Stamp – American
Society of Mechanical Engineers

Colmac coils are built in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code, Section VIII for the manufacture of miniature pressure vessels.

CRN

CRN – Canadian Registration Number

Colmac can provide aluminium tube ammonia coils that meet the strict quality standards for design and manufacturing outlines in Canadian standard CSA B51.



CSA – Canadian Standards Association

Colmac offers refrigerant coils with additional options that are certified with CSA and built in compliance with Std. C22.2 and all provisions governing that certification.



UL508 – Underwriters Laboratories Inc.

Colmac offers selected commercial refrigeration unit coolers that are listed with Underwriters Laboratories and built in accordance with the requirements of the UL508 standard for Industrial Control Equipment.



ARI-410 – Air Conditioning & Refrigeration Institute

Colmac Coil is a participating corporation in the ARI-410 certification program and provides coils and coil performance ratings for hot & chilled water and steam heating coils that are within the scope of ARI-410, established by testing to ASHRAE Std 33 and certified in accordance with ARI Std. 410.

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Australian
Standard

STANDARDSMARK LICENCE

SAI Global Limited (ABN 67 050 611 642) hereby grants to:

Quantum Energy Technologies Pty Ltd
ABN 88 095 989 327

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AS/NZS 2712 - Solar and heat pump water heaters - Design and construction

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Issue Date: 14 January 2003



Alex Ezrakhovich - General Manager Certification
For and on behalf of SAI Global Limited

Certified Date: 14 January 2003
Expiry Date: 13 January 2008



Authorised Local Signatory, SAI Global Limited





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“TRANE” Not Just a Heat Pump

◆ Maximize benefits to Customer

- Exclusive design for fully function on both hot water and cold air benefit
- Easy to install! No need to buy, install & balance external circulator pumps.



“TRANE” Not Just a Heat Pump

◆ Highest Reliability and Durability of the System

- Deliver an instantaneous hot water at 60 C for a single pass (for HPA2018 Model), 2nd generation heat pump
- High grade materials, durable for all indoor, outdoor and marine duty
- Low noise and long life span with 5 Years Warranty



“TRANE” Not Just a Heat Pump

◆ Maximize benefits to Customer

- Exclusive design for fully function on both hot water and cold air benefit
- Easy to install! No need to buy, install & balance external circulator pumps.



"TRANE" Not Just a Heat Pump

- ◆ **Service Capability**

- Engineering Service
- Preventive Maintenance of the System



TRANE®



" HWHP "

***A True Solution for Energy Efficiency
Hot Water System In A Building***



TRANE™

