

heatingandcoolingsystems

**Panasonic**  
ideas for life

AQUAREA

high  
capacity  
at  $-15^{\circ}\text{C}$

AQUAREA T-CAP



# Full line-up to meet all customer needs

output  
water  
**65°C**

HIGH TEMP  
HEAT PUMP

For retrofit on  
existing installations

Where water output of  
65°C is required

high  
capacity  
at -15°C

AQUAREA T-CAP

For existing and new  
installations

Keeps the same capacity as  
nominal even at -15°C

**100%**  
CAPACITY AT  
-15°

**4.74 COP**  
high  
efficiency

AQUAREA  
HIGH CONNECTIVITY

For existing and new  
installations

Extremely high  
savings with COP  
of 4.74

# Aquarea T-CAP

100%  
CAPACITY AT  
-15°

high  
capacity  
at -15°C  
AQUAREA T-CAP

**Panasonic**  
ideas for life

**For new or refurbishment projects**  
**Maintains capacity even at outdoor temperatures of -15 °C**

T-CAP: 9 KW and 12kW

Available in Mono-bloc and Bi-bloc

Single phase and three-phase

Heating only or heating and cooling available

Connects to a hot water tank (200 litres or 300 litres)

Compatible with solar panels



# TCAP Heat Pump - operation

The TCAP's refrigeration circuit is composed of a subcooler which cools the gas under R410a to the condenser outlet to optimize its liquid state.

Cooling takes place via a bypass.

This liquid is then optimized bypass significantly improving the exchange at the evaporator. This will improve the enthalpy allowing maximum calorie capture to compensate for the possible fall in temperature.

Moreover, the 9KW TCap consists of a bi-fan. This 'oversizing' of the battery exchange will also play a role in performance observed during the evaporation phase.

This 'oversizing' coupled with the "Subcooling system" cooling technology allows Panasonic to be the first manufacturer to maintain a constant capacity combined with unparalleled performance at very low outdoor temperatures.



Subcooling technology

# High Capacity type A2W / Sales Points & Technology

100%  
CAPACITY AT  
-15°

high  
capacity  
at -15°C  
AQUAREA T-CAP

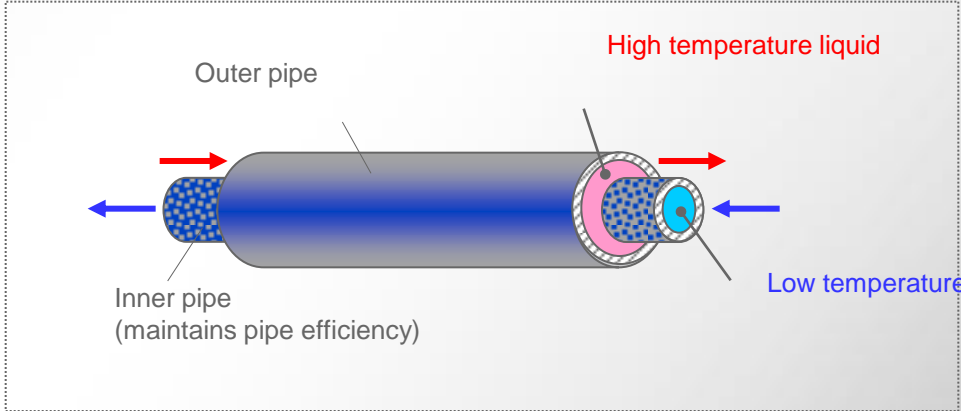
**Panasonic**  
ideas for life

### Sales Point

Increased evaporation capacity  
=  
Maintains power

### Sub-cooling system

- **Sub-cooling high performance (SubCooler)**
  - High exchange efficiency between the liquid and the liquid high temperature low temperature = optimization of liquid



FLAT Model Cycle

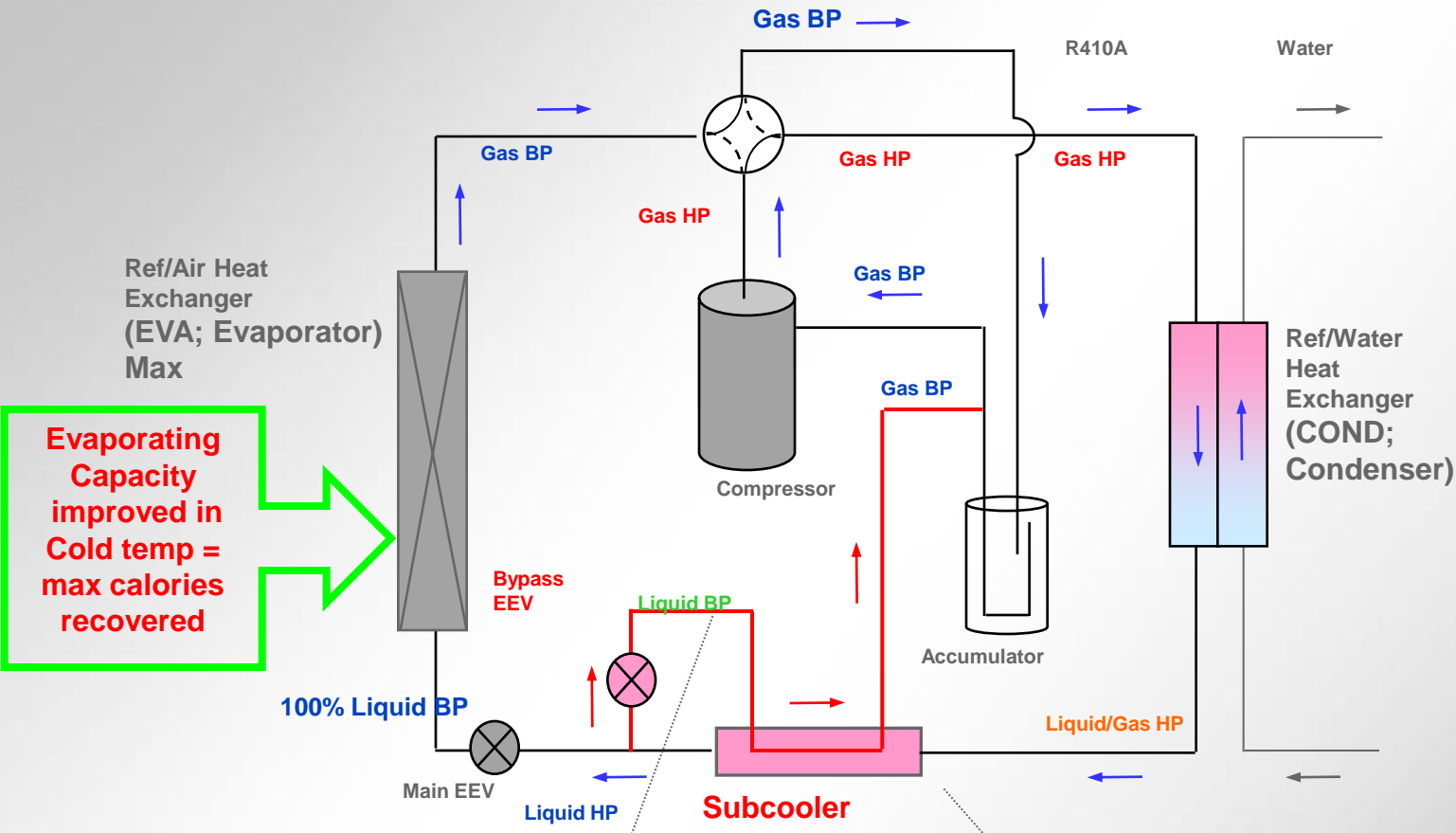


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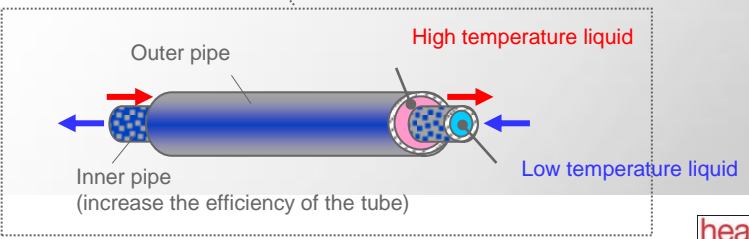
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AQUAREA T-CAP

**Panasonic**  
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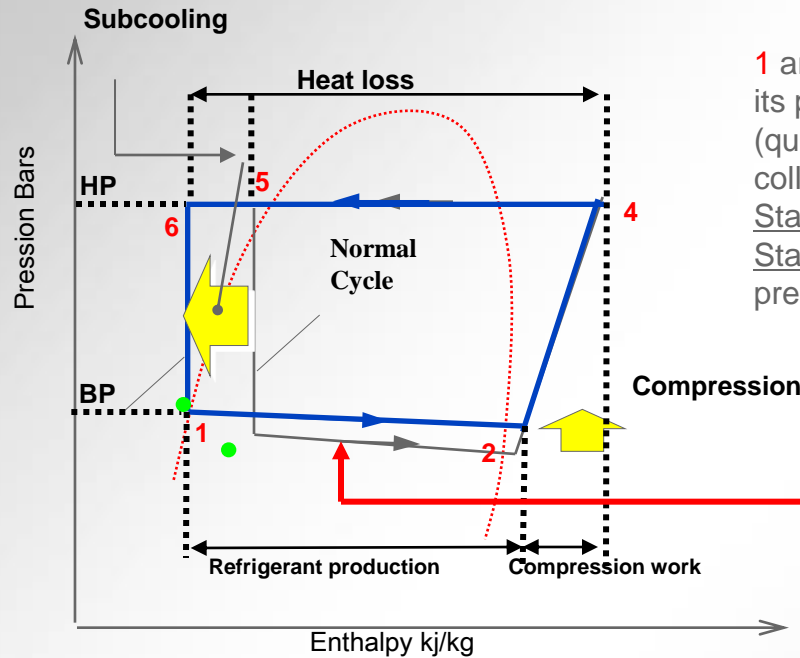


**Evaporating Capacity improved in Cold temp = max calories recovered**

**Subcooler/Eva Bypass Cycle**



# TCap's refrigerant cycle



**1 and 2:** 1 to 2: The fluid evaporates. Its temperature and its pressure does not change but its enthalpy increases (quantity of heat). This is the phase when the fluid collects heat from the medium to be cooled.  
State of the fluid at entry: vapour liquid mixture  
State of the fluid at output: overheated vapour low pressure

**Evaporation capacity improved**

**5 to 6:** It is the zone of under cooling.

**6 to 1:** The fluid slackens by rolling (sudden lowering of the pressure) through an opening, part of the fluid vaporizes.

State of the fluid on entry: liquid high

State of the fluid on output: liquid mixture vapour

Return to stage **1 to 2**

**4 to 5:** The fluid returns to liquid in the condenser, the pressure does not change, this condensation takes place at a higher temperature which allows the heat to yield the enthalpy of the fluid enthalpy decreases.

State of the fluid at entry: vapour high overheated pressure

State of the fluid output: low-pressure superheated steam

# High Capacity type A2W / Sales Points & Technology

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AQUAREA T-CAP

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## Sales Point

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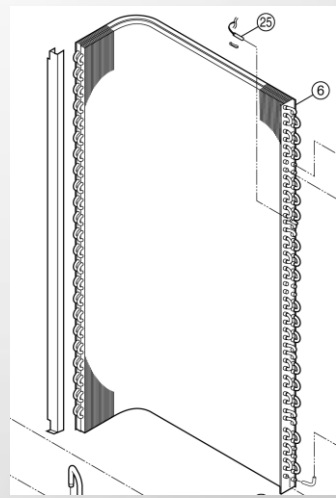
## 9KW Range

- **Heat Exchanger efficiency**
  - Optimum capture of calories to offset the drop in temperature



Bi-fans

Outdoor Units  
TCap 9KW





# High Capacity type A2W / Sales Points & Technology

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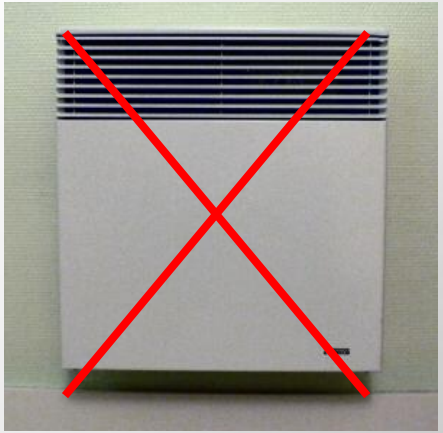
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AQUAREA T-CAP

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With the T Cap: Comfort guaranteed all year round without the need for additional backup heating



- Simple installation
- Cheaper to install
- Reduced heating bills



# Highly performance and reliability to -15°C



Excellent performance in low temperatures

High COP even at -15°C

+7°C T Ext: 78% more efficient than other heating (12kw)

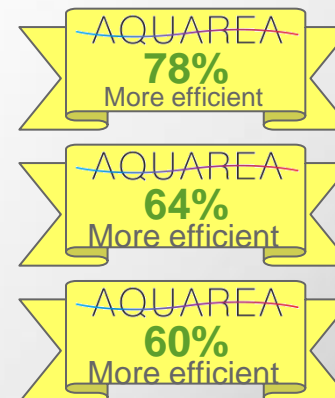
-7°C T Ext: 64%

-15°C T Ext: 60%

Operating limit: -20°C

Always enough capacity to heat the home without help from an external boiler – even at extremely low temperatures

T.Ext	Models	9kw	12kw
7°C	Capacity	9.0	12.0
	COP	4.74	4.67
-7°C	Capacity	9.0	12.0
	COP	2.81	2.70
-15°C	Capacity	9.0	12.0
	COP	2.54	2.40



Comparison with standard electric heaters

Maximum performance throughout the year

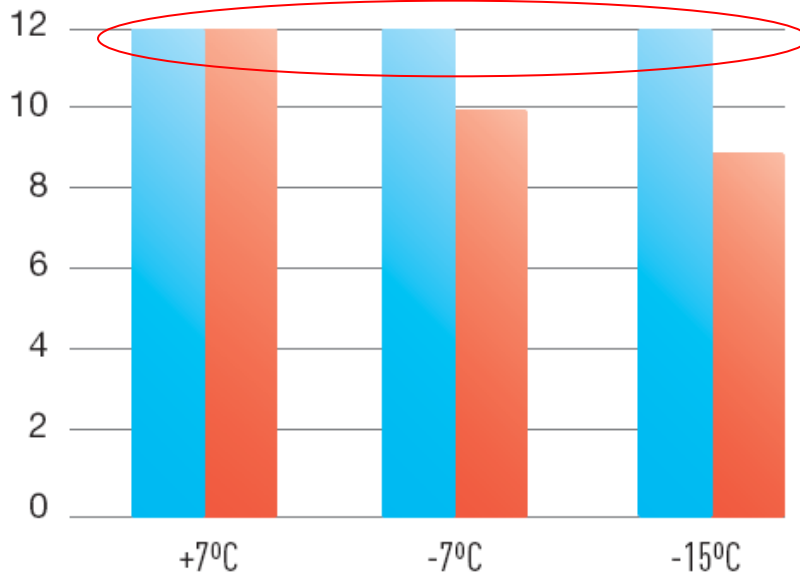
# Full line-up to meet all customer requirements



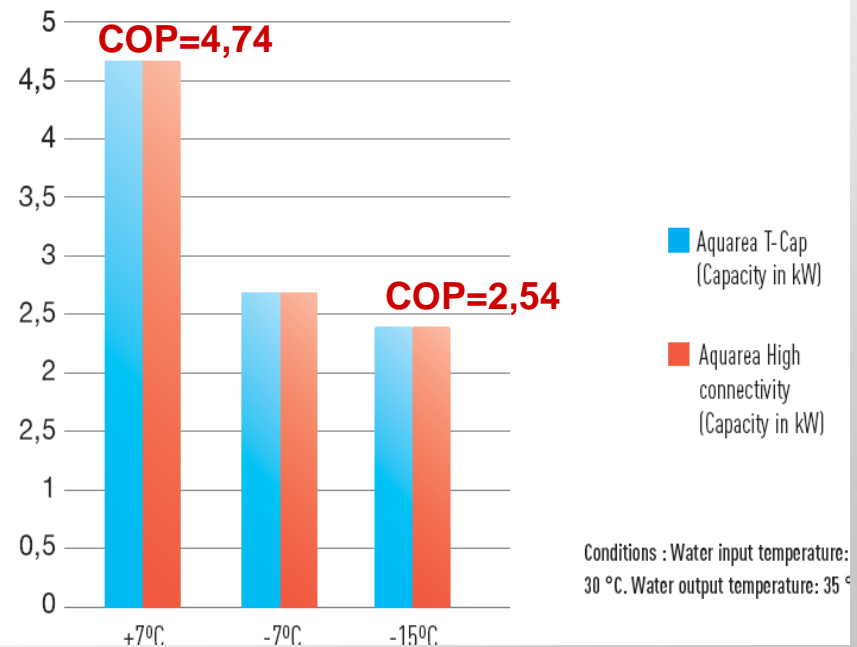
T-CAP: maintains nominal capacities even a low temperatures

T-CAP: COP highest for technology Flat System

AQUAREA T-CAP MAINTAINS THE NOMINAL CAPACITY TILL -15°C  
(EXAMPLE FOR 12KW)



AQUAREA T-CAP AND HIGH CONNECTIVITY HAVE EXTREMELY HIGH EFFICIENCY EVEN AT -15°C



# Panasonic 2011 T-CAP (Flat) Model (Bi-Bloc)

**100%**  
CAPACITY AT  
-15°

high  
capacity  
at -15°C  
AQUAREA T-CAP

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## Bi-Bloc models

Include Heating only  
Heating & Cooling



Power Supply	1 Phase / 230V / 50Hz	
Heating Capacity (A7-W35)	9kW	12kW
COP	4.74	4.67

Power Supply	3 Phase / 230V / 50Hz	
Heating Capacity (A7-W35)	9kW	12kW
COP	4.74	4.67

## Sales Point

### Panasonic A/W Product Concept

High capacity improvement  
at low ambient, & High efficiency

**1**

Newly developed refrigeration cycle  
& New refrigerant flow control

High heating capacity even at low ambient !

**2**

High Efficiency Product

In combination with High efficient  
Inverter and HEX module.

Industry **top class COP !**

**3**

No electrical heater is needed because of  
high heating capacity at low ambient !

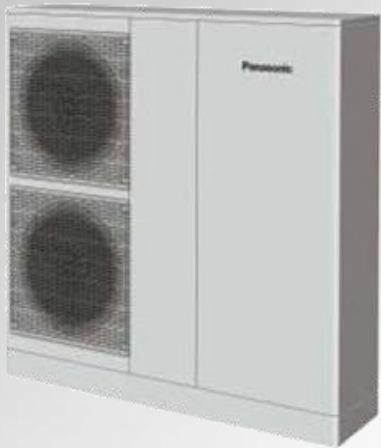
# Panasonic 2011 T-CAP (Flat) Model (Mono-Bloc)

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CAPACITY AT  
-15°

high  
capacity  
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AQUAREA T-CAP

**Panasonic**  
ideas for life

## Mono-Bloc models



Include Heating only  
Heating & Cooling

Power Supply	1 Phase / 230V / 50Hz	
Heating Capacity (A7-W35)	9kW	12kW
COP	4.74	4.67

Power Supply	3 Phase / 230V / 50Hz	
Heating Capacity (A7-W35)	9kW	12kW
COP	4.74	4.67

## Sales Point

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# Capacities: T-Cap 9KW

## WH-SXF09D3E5 WH-UX09DE5

LWC	30		35		40		45		50		55	
Tamb	HC	IP	HC	IP	HC	IP	HC	IP	HC	IP	HC	IP
-15	9.00	3.28	9.00	3.55	9.00	3.95	9.00	4.34	9.00	4.77	9.00	5.20
-7	9.00	2.75	9.00	3.20	9.00	3.66	9.00	4.11	9.00	4.31	9.00	4.50
2	9.00	2.40	9.00	2.55	9.00	2.82	9.00	3.09	9.00	3.30	9.00	4.11
7	9.00	1.68	9.00	1.90	9.00	2.20	9.00	2.50	9.00	2.80	9.00	3.10
25	13.60	1.54	13.60	1.75	13.20	1.97	12.80	2.10	12.40	2.20	12.00	2.30

**COP: 1,73**

**T-CAP have a extremely high COP even with output water of 55degrees and at -15 outside!**

HC: Heating Capacity (kW)

IP: Power Input (kW)

LWC: Leaving Water Condenser Temperature (°C)

Tamb: Ambient Temperature (°C)



# Capacities: TCap 12KW

## WH-SXF12D6E5 WH-UX12DE5

LWC	30		35		40		45		50		55	
Tamb	HC	IP	HC	IP	HC	IP	HC	IP	HC	IP	HC	IP
-15	12.00	4.79	12.00	5.00	11.50	5.21	11.00	5.42	10.70	5.86	10.50	6.30
-7	12.00	3.89	12.00	4.45	12.00	5.02	12.00	5.58	12.00	5.94	12.00	6.30
2	12.00	3.23	12.00	3.53	12.00	3.91	12.00	4.29	12.00	4.90	12.00	5.51
7	12.00	2.22	12.00	2.57	12.00	3.00	12.00	3.41	12.00	3.82	12.00	4.20
25	13.60	1.59	13.60	1.80	13.40	2.14	13.20	2.41	13.00	2.78	12.80	2.93

**COP: 1,66**

**T-CAP have a extremely high COP even with output water of 55degrees and at -15 outside!**

HC: Heating Capacity (kW)

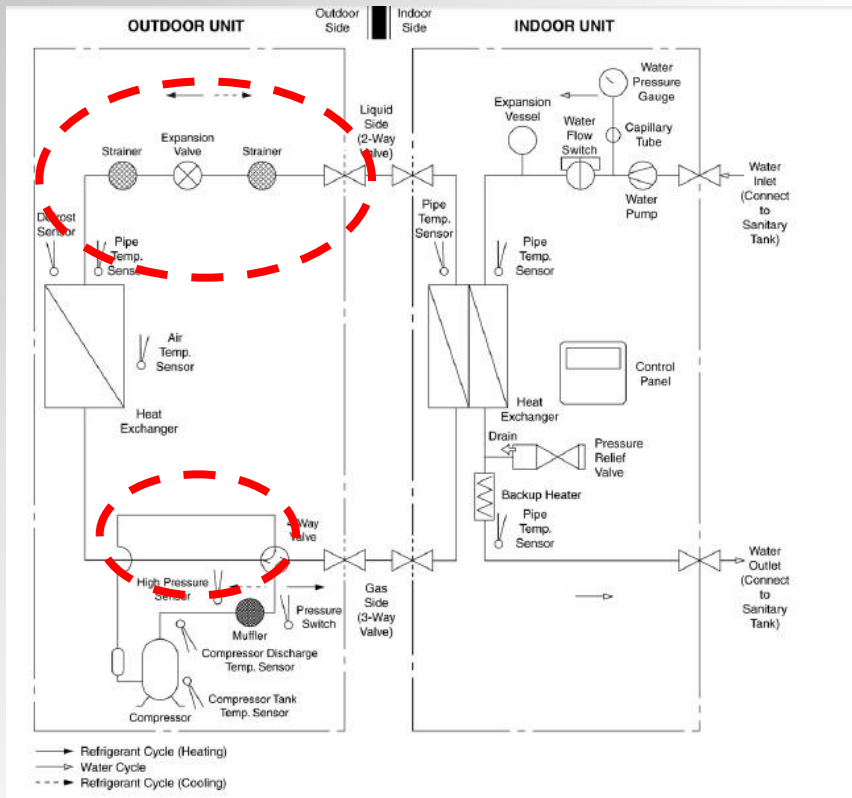
IP: Power Input (kW)

LWC: Leaving Water Condenser Temperature (°C)

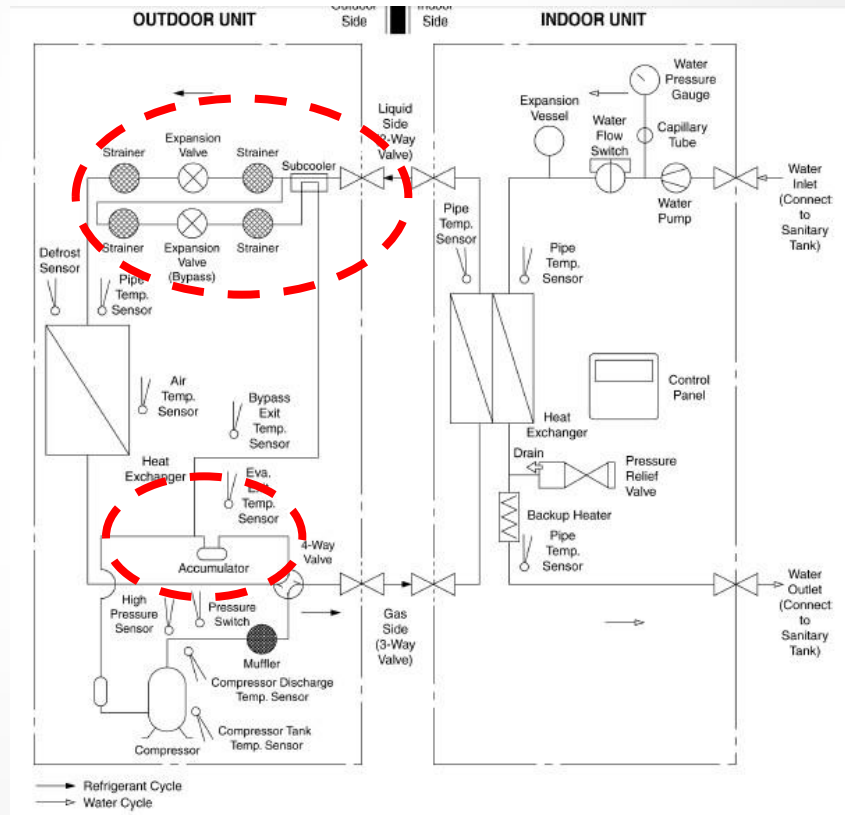
Tamb: Ambient Temperature (°C)

# COMPARING TECHNOLOGIES

## Comparison PAC High connectivity and T Cap



High connectivity

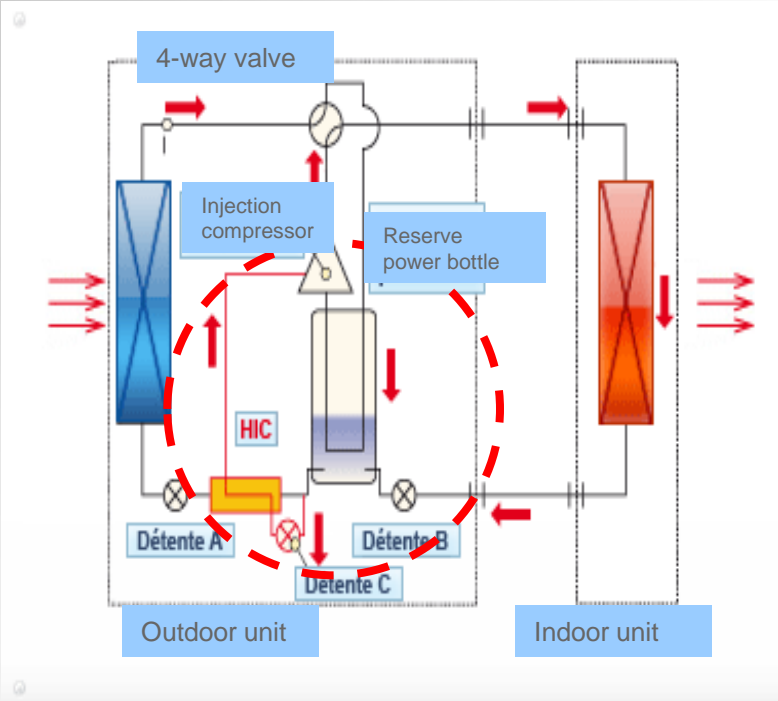


T CAP

# COMPARING TECHNOLOGIES

## Flat system technology comparison

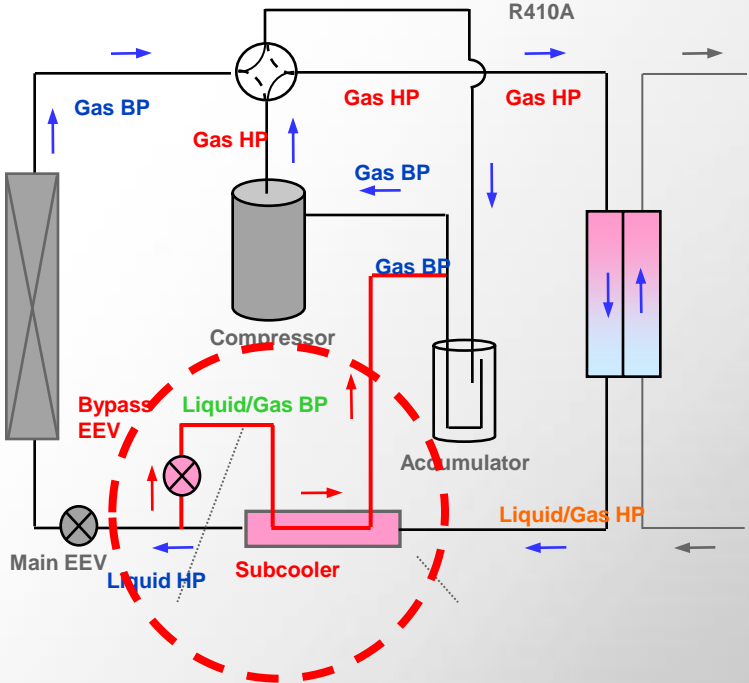
### zubadan



### Overheating Technology

Increase in HP compressor

### Panasonic T-CAP



### Undercooling Technology

Increased evaporation capacity

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