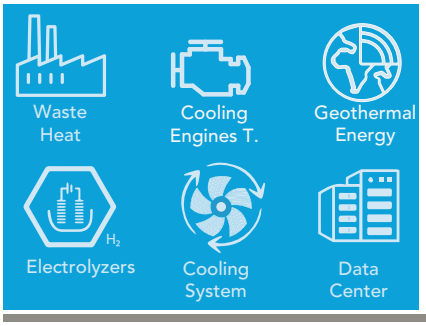
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation: Tout (ºC)	Heat source				
150	3,7	4,9	6,0	9,6	12,8
135	3,9	5,5	6,8	12,0	13,8
120	4,3	6,4	9,2	14,8	-
105	5,1	7,4	10,7	15,9	-
90	5,5	10,1	15,3	-	-
Tin (ºC)	25	50	75	100	125

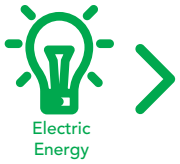


Heat source

Heat transfer fluid	Agua
Inlet temperature	25 °C
Outlet temperature	20 °C
Volumetric flow rate	59 m³/h
Thermal power	344 kWt
Pressure drop	100 kPa

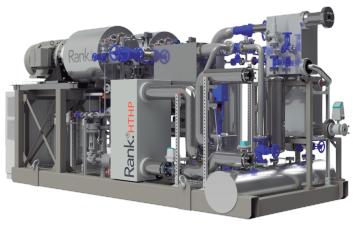
Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	55 °C
Outlet temperature	150 °C
Volumetric flow rate	5 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa



Electricity

Consumption	232 kWe
COP_H+C	3,6
COP_H	2,2
COP_C	1,5
Voltage	3x400 V



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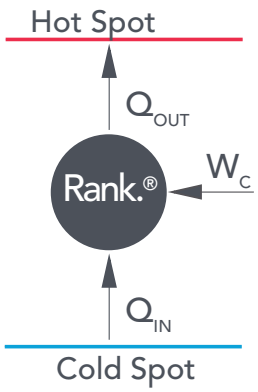
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

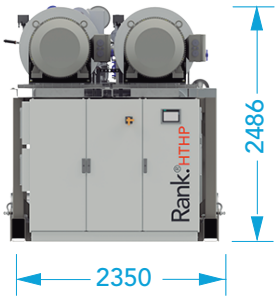
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

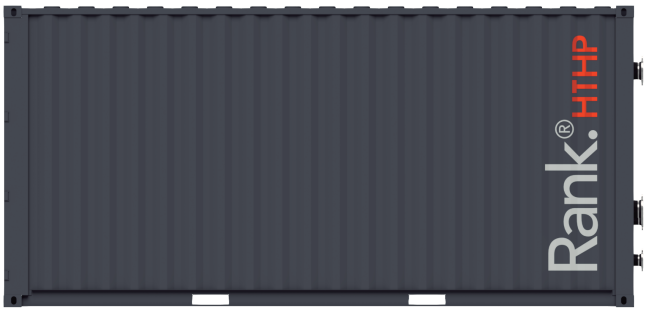
Dimensiones

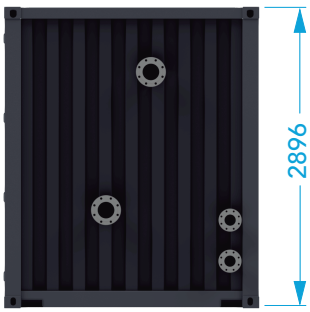
Basic Option



Wrap-around Option

Container Option





Compliance with regulations and standards

- Low voltage Directive
- Machinery Directive
- Electromagnetic Compatibility Directive
- Pressurized Equipment Directive
- EN/ISO 3744:2010
- UNE EN 10216
- UNE EN 764-7
- UNE EN 13136:2014+A1
- 2006/42/CE
- 2014/68/UE
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- ASME Boiler and Pressure Vessel Code Section VIII
- UL 508A- Control Panel Wiring
- 2014/35/UE
- 2014/30/UE

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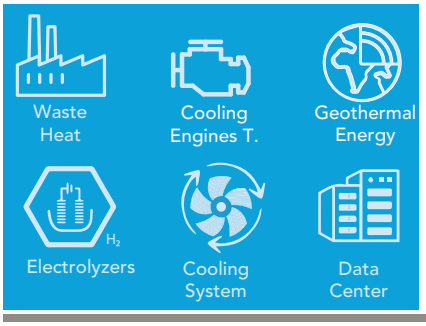
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation: Tout (ºC)					
150	3,7	4,9	6,0	9,6	12,8
135	3,9	5,5	6,8	12,0	13,8
120	4,3	6,4	9,2	14,8	-
105	5,1	7,4	10,7	15,9	-
90	5,5	10,1	15,3	-	-
Tin (ºC)	25	**50**	75	100	125

Heat source

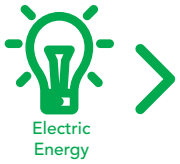


Heat source

Heat transfer fluid	Agua
Inlet temperature	50 °C
Outlet temperature	45 °C
Volumetric flow rate	66 m³/h
Thermal power	377 kWt
Pressure drop	100 kPa

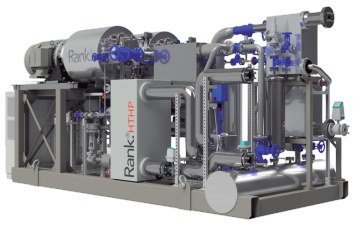
Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	55 °C
Outlet temperature	150 °C
Volumetric flow rate	5 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa



Electricity

Consumption	179 kWe
COP_H+C	4,9
COP_H	2,8
COP_C	2,1
Voltage	3x400 V



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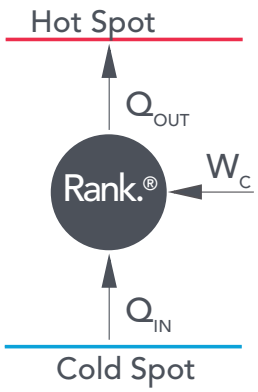
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

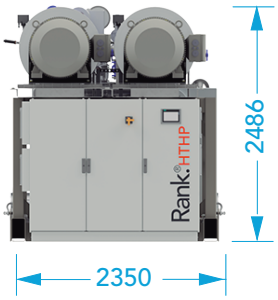
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

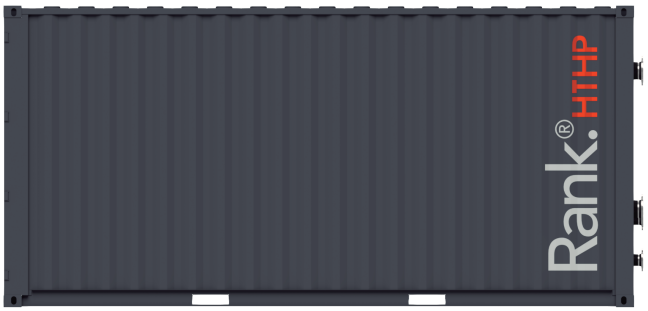
Dimensiones

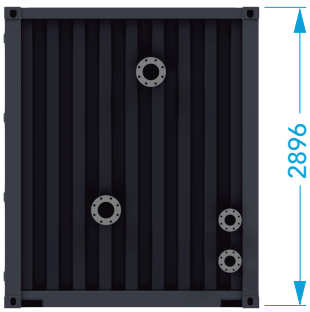
Basic Option



Wrap-around Option

Container Option





Compliance with regulations and standards

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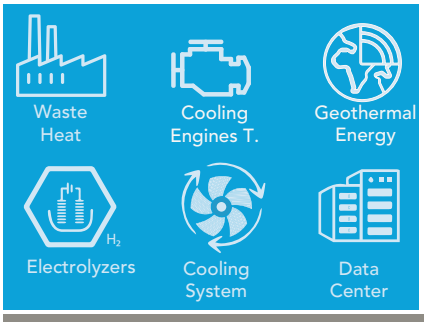
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation: Tout (ºC)					
150	3,7	4,9	6,0	9,6	12,8
135	3,9	5,5	6,8	12,0	13,8
120	4,3	6,4	9,2	14,8	-
105	5,1	7,4	10,7	15,9	-
90	5,5	10,1	15,3	-	-
Tin (ºC)	25	50	75	100	125

Heat source



Heat source

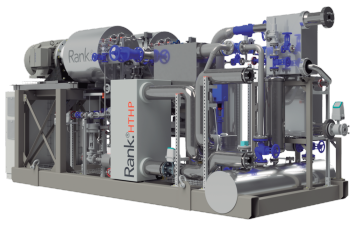
Heat transfer fluid	Agua
Inlet temperature	75 °C
Outlet temperature	70 °C
Volumetric flow rate	69 m³/h
Thermal power	395 kWt
Pressure drop	100 kPa

Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	100 °C
Outlet temperature	150 °C
Volumetric flow rate	9 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa

Electricity

Consumption	150 kWe
COP_H+C	6,0
COP_H	3,3
COP_C	2,6
Voltage	3x400 V



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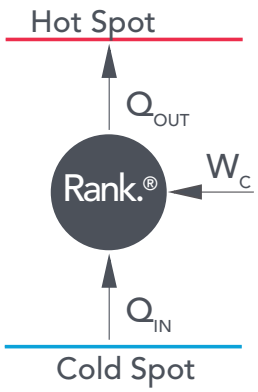
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

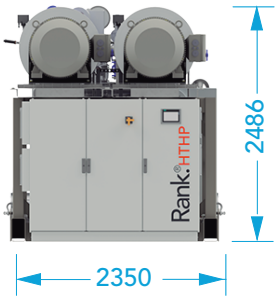
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

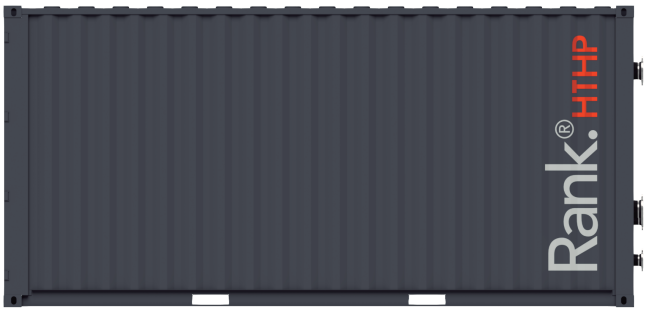
Dimensiones

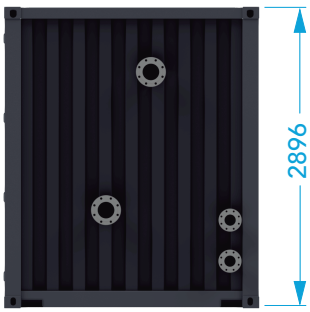
Basic Option



Wrap-around Option

Container Option





Compliance with regulations and standards

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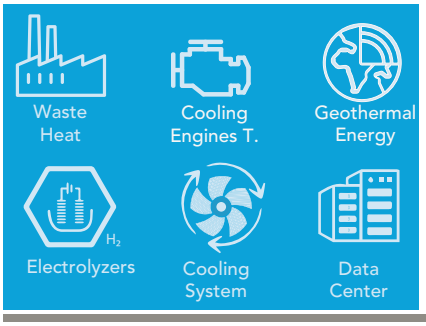
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation	Tout (ºC)					
	150	3,7	4,9	6,0	9,6	12,8
	135	3,9	5,5	6,8	12,0	13,8
	120	4,3	6,4	9,2	14,8	-
	105	5,1	7,4	10,7	15,9	-
	90	5,5	10,1	15,3	-	-
	Tin (ºC)	25	50	75	100	125

Heat source



Heat source

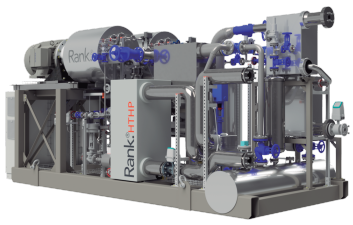
Heat transfer fluid	Agua
Inlet temperature	100 °C
Outlet temperature	95 °C
Volumetric flow rate	77 m³/h
Thermal power	432 kWt
Pressure drop	100 kPa

Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	95 °C
Outlet temperature	150 °C
Volumetric flow rate	8 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa

Electricity

Consumption	97 kWe
COP_H+C	9,6
COP_H	5,1
COP_C	4,4
Voltage	3x400 V



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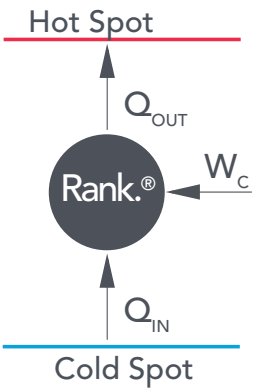
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

$$COP_H = \frac{Q_{OUT}}{W_C}$$

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COP_H = COP Heating
COP_C = COP Cooling
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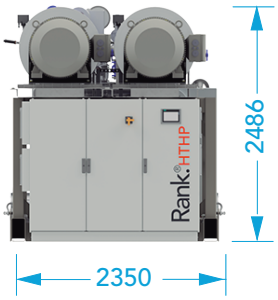
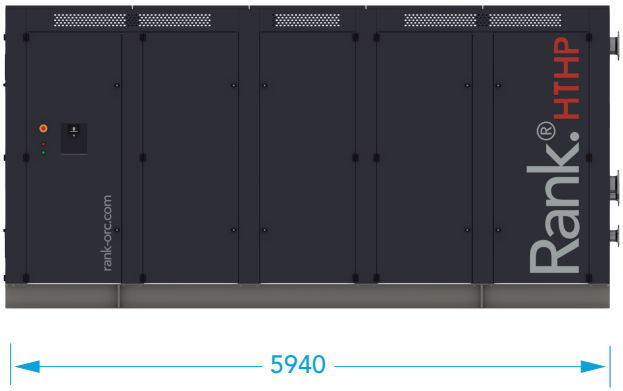
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

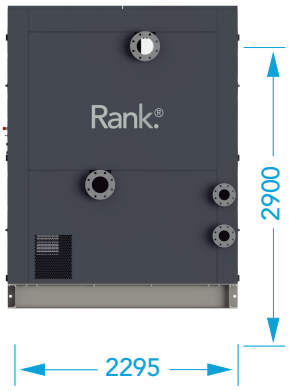
Dimensiones

Basic Option



Wrap-around Option





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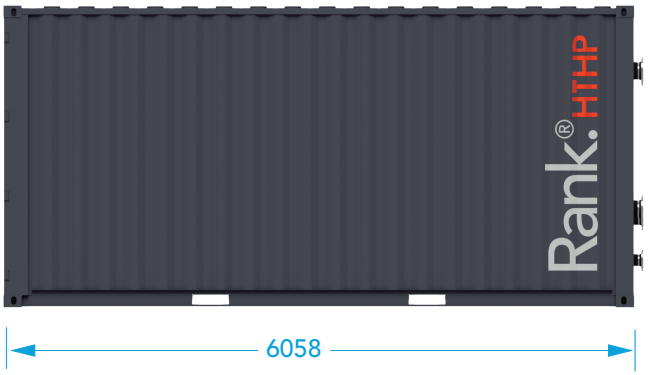

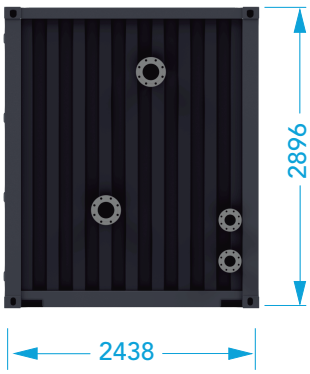

Compliance with regulations and standards

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- UL 508A- Control Panel Wiring
- 2014/35/UE
- 2014/30/UE

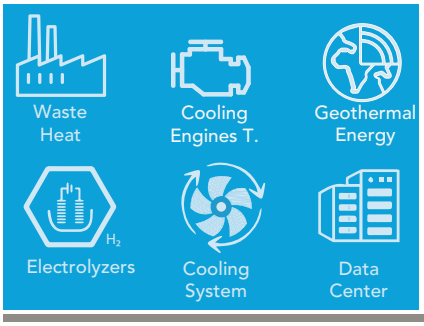
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation: Tout (ºC)					
150	3,7	4,9	6,0	9,6	12,8
135	3,9	5,5	6,8	12,0	13,8
120	4,3	6,4	9,2	14,8	-
105	5,1	7,4	10,7	15,9	-
90	5,5	10,1	15,3	-	-
Tin (ºC)	25	50	75	100	125

Heat source

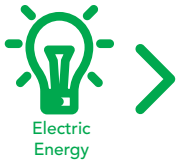


Heat source

Heat transfer fluid	Agua
Inlet temperature	125 °C
Outlet temperature	115 °C
Volumetric flow rate	40 m³/h
Thermal power	449 kWt
Pressure drop	100 kPa

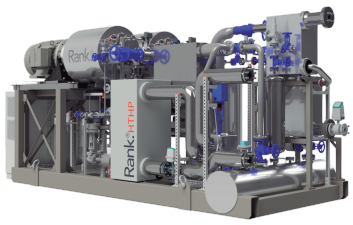
Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	130 °C
Outlet temperature	150 °C
Volumetric flow rate	23 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa



Electricity

Consumption	74 kWe
COP_H+C	12,8
COP_H	6,8
COP_C	6,1
Voltage	3x400 V



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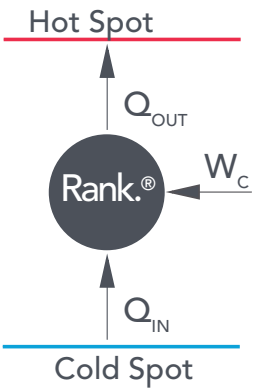
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

COP_H = COP Heating
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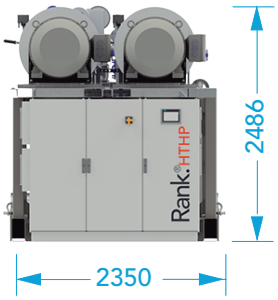
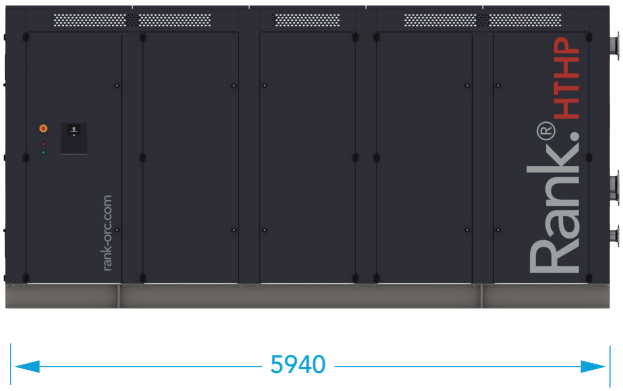
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

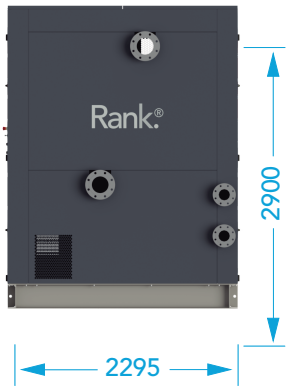
Dimensiones

Basic Option



Wrap-around Option





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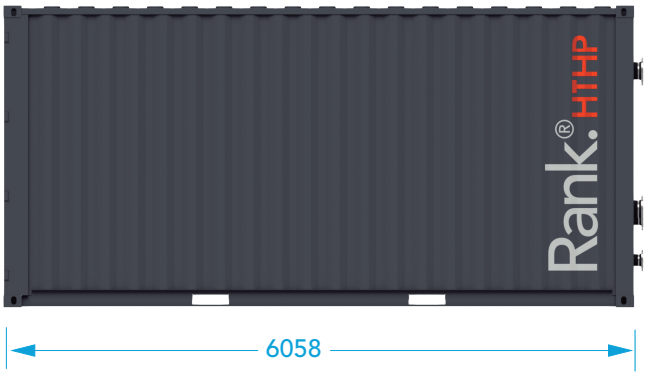

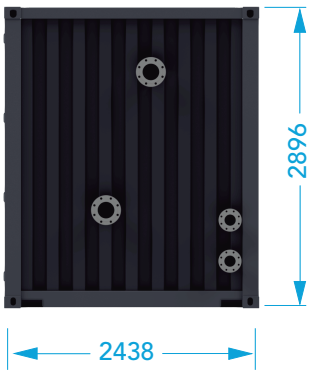

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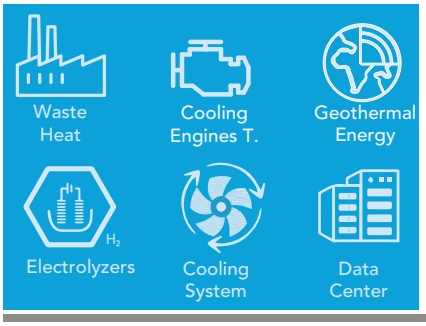
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation: Tout (ºC)	Heat source				
150	3,7	4,9	6,0	9,6	12,8
135	3,9	5,5	6,8	12,0	13,8
120	4,3	6,4	9,2	14,8	-
105	5,1	7,4	10,7	15,9	-
90	5,5	10,1	15,3	-	-
Tin (ºC)	25	50	75	100	125

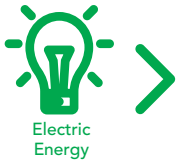


Heat source

Heat transfer fluid	Agua
Inlet temperature	25 °C
Outlet temperature	20 °C
Volumetric flow rate	61 m³/h
Thermal power	352 kWt
Pressure drop	100 kPa

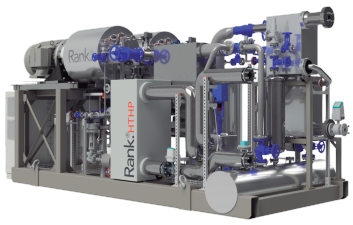
Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	55 °C
Outlet temperature	135 °C
Volumetric flow rate	6 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa



Electricity

Consumption	217 kWe
COP_H+C	3,9
COP_H	2,3
COP_C	1,6
Voltage	3x400 V



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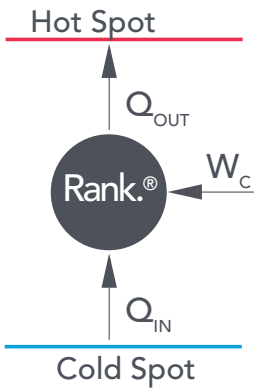
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

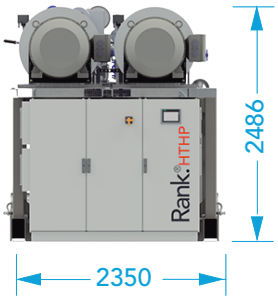
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

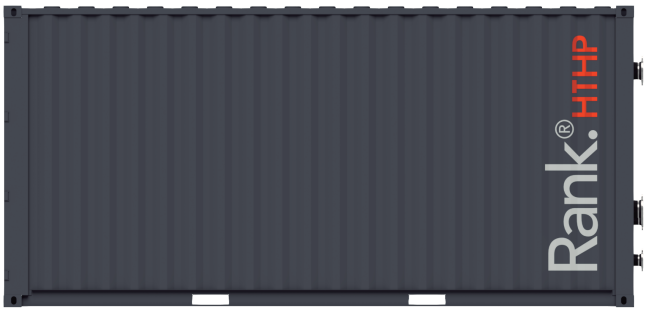
Dimensiones

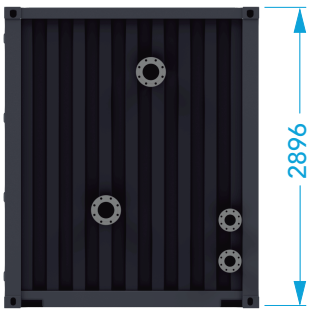
Basic Option



Wrap-around Option

Container Option





Compliance with regulations and standards

- Low voltage Directive
- Machinery Directive
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- Pressurized Equipment Directive
- EN/ISO 3744:2010
- UNE EN 10216
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- ASME Boiler and Pressure Vessel Code Section VIII
- UL 508A- Control Panel Wiring
- 2014/35/UE
- 2014/30/UE

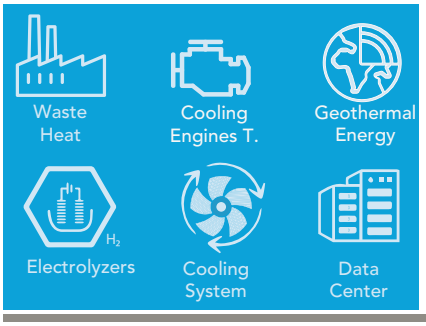
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation: Tout (ºC)	Tin (ºC) 25	50	75	100	125
150	3,7	4,9	6,0	9,6	12,8
135	3,9	5,5	6,8	12,0	13,8
120	4,3	6,4	9,2	14,8	-
105	5,1	7,4	10,7	15,9	-
90	5,5	10,1	15,3	-	-

Heat source



Heat source

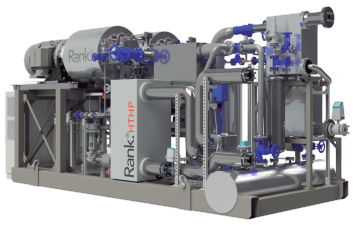
Heat transfer fluid	Agua
Inlet temperature	50 °C
Outlet temperature	45 °C
Volumetric flow rate	67 m³/h
Thermal power	388 kWt
Pressure drop	100 kPa

Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	55 °C
Outlet temperature	135 °C
Volumetric flow rate	6 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa

Electricity

Consumption	161 kWe
COP_H+C	5,5
COP_H	3,1
COP_C	2,4
Voltage	3x400 V



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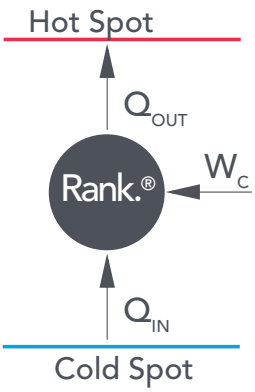
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

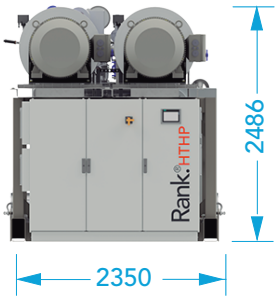
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

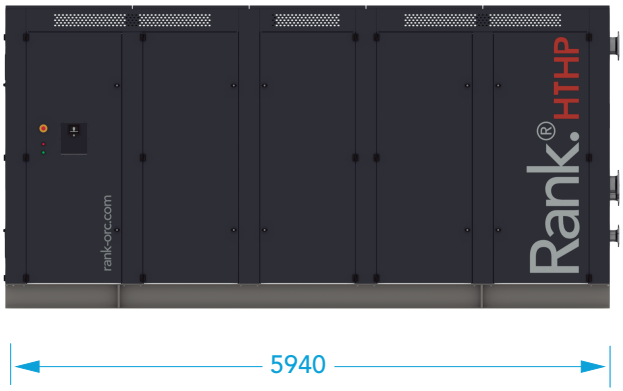
COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

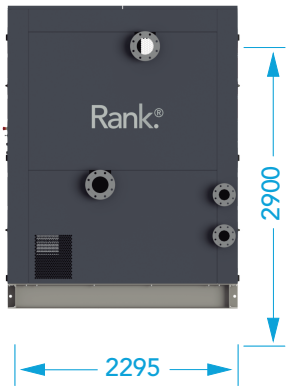
Dimensiones

Basic Option

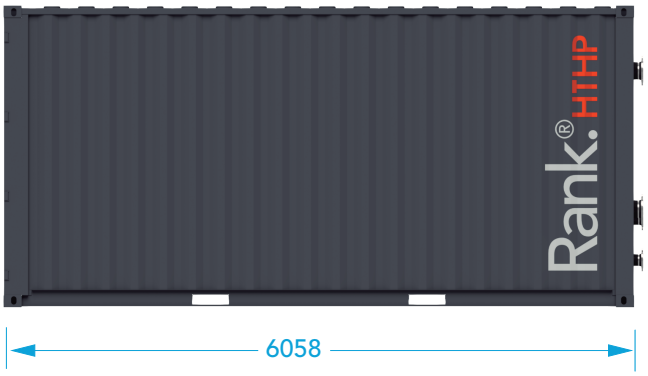


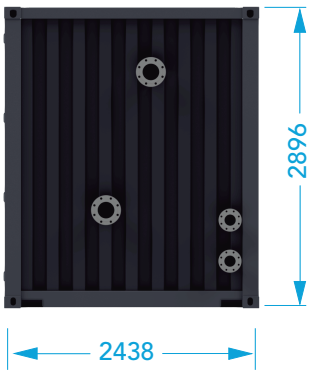
Wrap-around Option





Container Option





Compliance with regulations and standards

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- 2014/30/UE

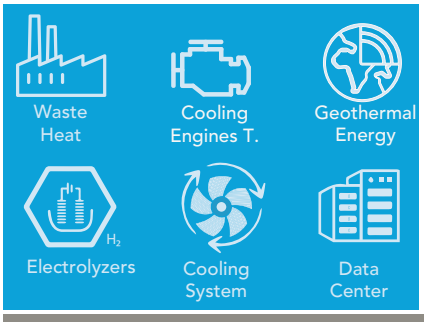
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation: Tout (ºC)					
150	3,7	4,9	6,0	9,6	12,8
135	3,9	5,5	**6,8**	12,0	13,8
120	4,3	6,4	9,2	14,8	-
105	5,1	7,4	10,7	15,9	-
90	5,5	10,1	15,3	-	-
Tin (ºC)	25	50	**75**	100	125

Heat source



Heat source

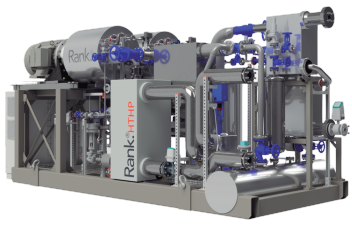
Heat transfer fluid	Agua
Inlet temperature	75 °C
Outlet temperature	70 °C
Volumetric flow rate	72 m³/h
Thermal power	410 kWt
Pressure drop	100 kPa

Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	95 °C
Outlet temperature	135 °C
Volumetric flow rate	11 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa

Electricity

Consumption	134 kWe
COP_H+C	6,8
COP_H	3,7
COP_C	3,1
Voltage	3x400 V



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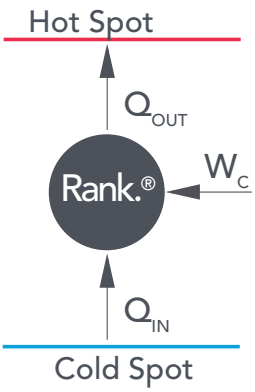
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

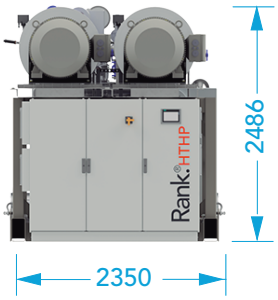
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

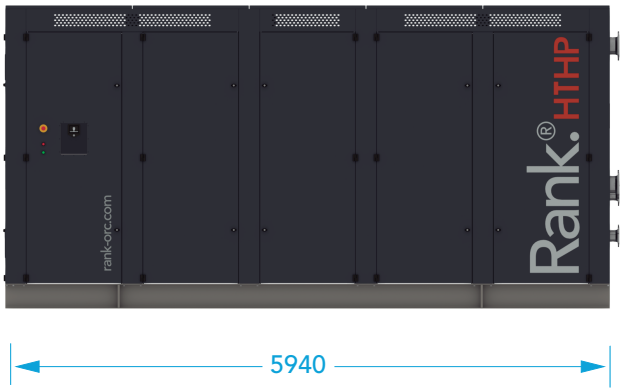
COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

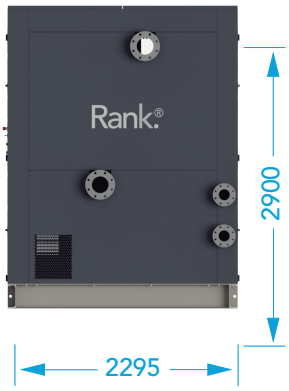
Dimensiones

Basic Option

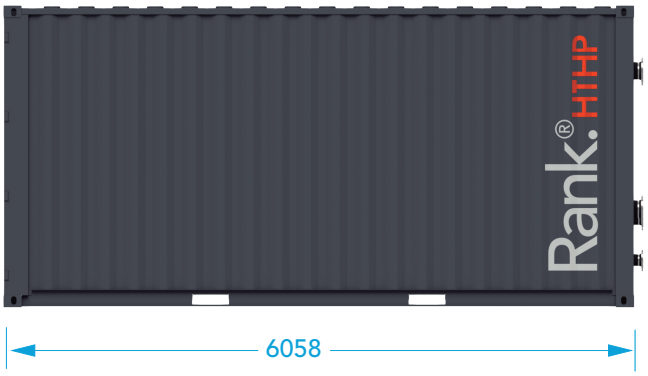


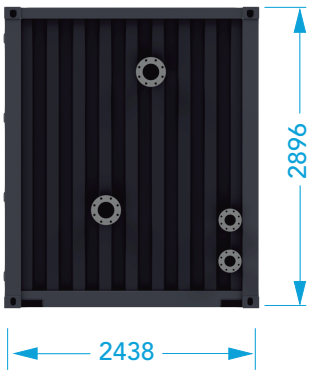
Wrap-around Option





Container Option





Compliance with regulations and standards

- Low voltage Directive
- Machinery Directive
- Electromagnetic Compatibility Directive
- Pressurized Equipment Directive
- EN/ISO 3744:2010
- UNE EN 10216
- UNE EN 764-7
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- ASME Boiler and Pressure Vessel Code Section VIII
- UL 508A- Control Panel Wiring
- 2014/35/UE
- 2014/30/UE

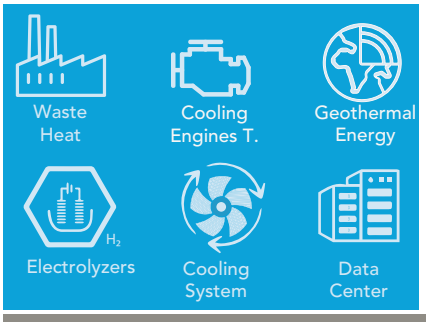
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation: Tout (ºC)					
150	3,7	4,9	6,0	9,6	12,8
135	3,9	5,5	6,8	12,0	13,8
120	4,3	6,4	9,2	14,8	-
105	5,1	7,4	10,7	15,9	-
90	5,5	10,1	15,3	-	-
Tin (ºC)	25	50	75	100	125

Heat source

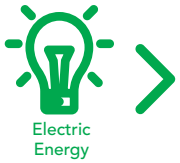


Heat source

Heat transfer fluid	Agua
Inlet temperature	100 °C
Outlet temperature	95 °C
Volumetric flow rate	79 m³/h
Thermal power	445 kWt
Pressure drop	100 kPa

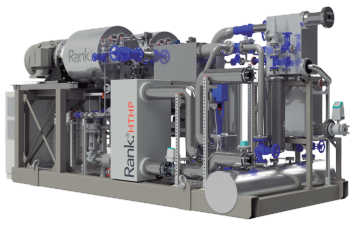
Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	100 °C
Outlet temperature	135 °C
Volumetric flow rate	13 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa



Electricity

Consumption	79 kWe
COP_H+C	12,0
COP_H	6,3
COP_C	5,6
Voltage	3x400 V



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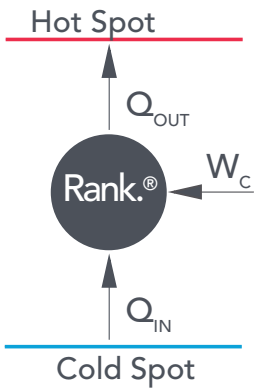
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

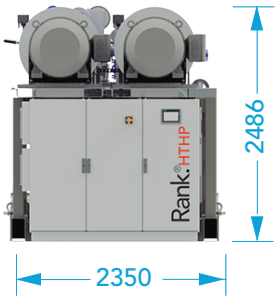
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

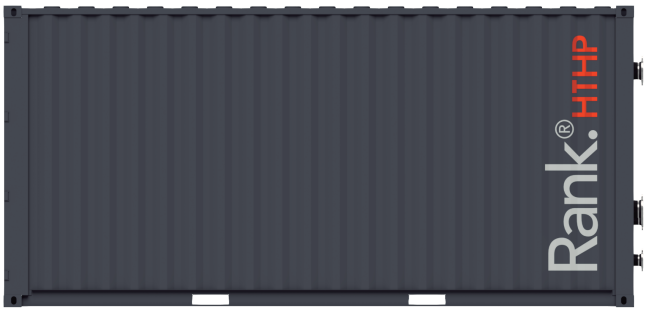
Dimensiones

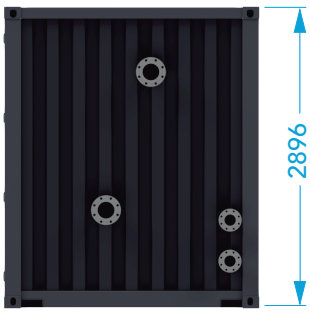
Basic Option



Wrap-around Option

Container Option





Compliance with regulations and standards

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- UL 508A- Control Panel Wiring
- 2014/35/UE
- 2014/30/UE

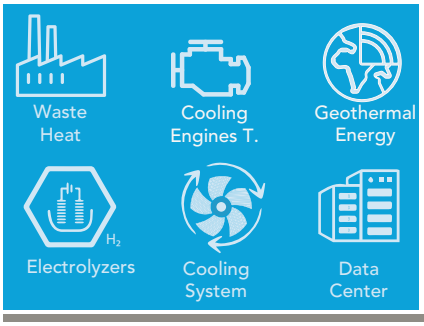
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation: Tout (ºC)					
150	3,7	4,9	6,0	9,6	12,8
135	3,9	5,5	6,8	12,0	13,8
120	4,3	6,4	9,2	14,8	-
105	5,1	7,4	10,7	15,9	-
90	5,5	10,1	15,3	-	-
Tin (ºC)	25	50	75	100	125

Heat source



Heat source

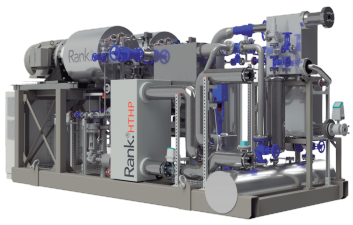
Heat transfer fluid	Agua
Inlet temperature	125 °C
Outlet temperature	105 °C
Volumetric flow rate	20 m³/h
Thermal power	452 kWt
Pressure drop	100 kPa

Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	125 °C
Outlet temperature	135 °C
Volumetric flow rate	45 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa

Electricity

Consumption	69 kWe
COP_H+C	13,8
COP_H	7,2
COP_C	6,5
Voltage	3x400 V



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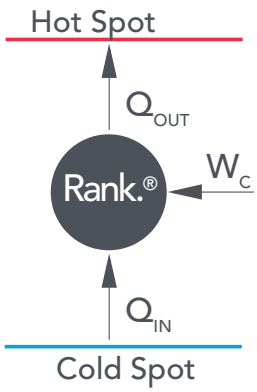
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

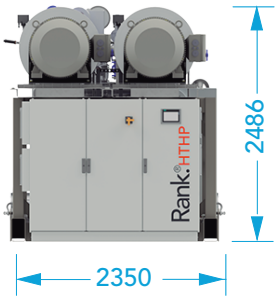
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

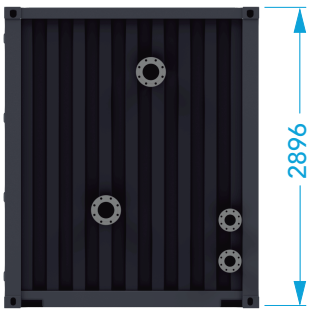
Dimensiones

Basic Option



Wrap-around Option

Container Option



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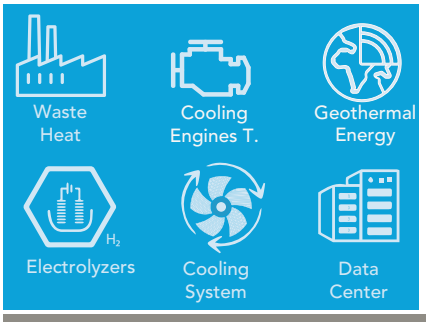
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation: Tout (ºC)					
150	3,7	4,9	6,0	9,6	12,8
135	3,9	5,5	6,8	12,0	13,8
120	**4,3**	6,4	9,2	14,8	-
105	5,1	7,4	10,7	15,9	-
90	5,5	10,1	15,3	-	-
Tin (ºC)	**25**	50	75	100	125

Heat source

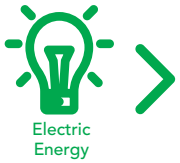


Heat source

Heat transfer fluid	Agua
Inlet temperature	25 °C
Outlet temperature	20 °C
Volumetric flow rate	62 m³/h
Thermal power	362 kWt
Pressure drop	100 kPa

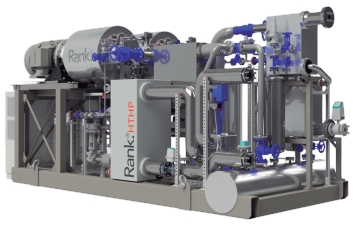
Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	55 °C
Outlet temperature	120 °C
Volumetric flow rate	7 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa



Electricity

Consumption	200 kWe
COP_H+C	4,3
COP_H	2,5
COP_C	1,8
Voltage	3x400 V



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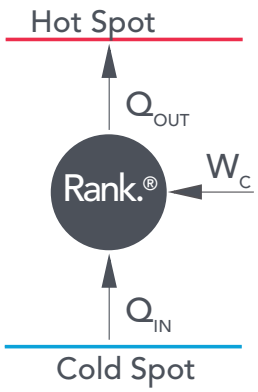
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

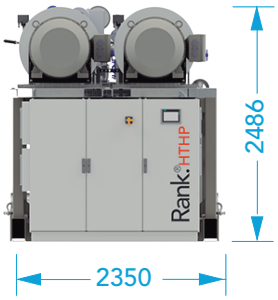
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

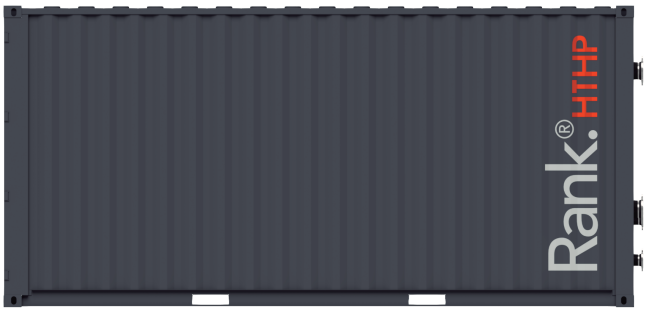
Dimensiones

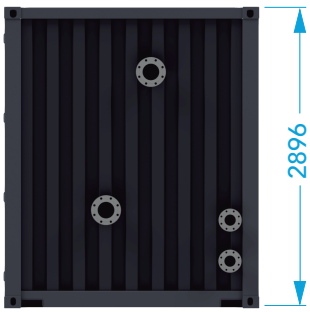
Basic Option



Wrap-around Option

Container Option





Compliance with regulations and standards

- Low voltage Directive
- Machinery Directive
- Electromagnetic Compatibility Directive
- Pressurized Equipment Directive
- EN/ISO 3744:2010
- UNE EN 10216
- UNE EN 764-7
- UNE EN 13136:2014+A1
- 2006/42/CE
- 2014/68/UE
- ASME B31.1 / ASME B31.3 – Process Piping Code
- ASME Boiler and Pressure Vessel Code Section VIII
- UL 508A- Control Panel Wiring
- 2014/35/UE
- 2014/30/UE

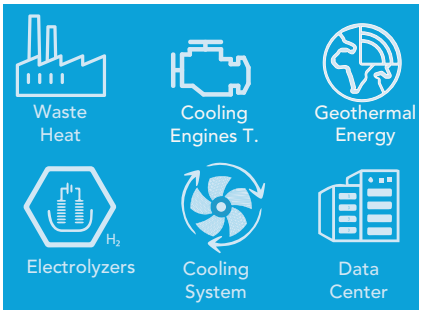
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water COP H+C

Useful Heat / Disipation: Tout (ºC)	Tin (ºC) 25	Tin (ºC) 50	Tin (ºC) 75	Tin (ºC) 100	Tin (ºC) 125
150	3,7	4,9	6,0	9,6	12,8
135	3,9	5,5	6,8	12,0	13,8
120	4,3	**6,4**	9,2	14,8	-
105	5,1	7,4	10,7	15,9	-
90	5,5	10,1	15,3	-	-

Heat source

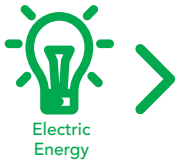


Heat source

Heat transfer fluid	Agua
Inlet temperature	50 °C
Outlet temperature	45 °C
Volumetric flow rate	70 m³/h
Thermal power	400 kWt
Pressure drop	100 kPa

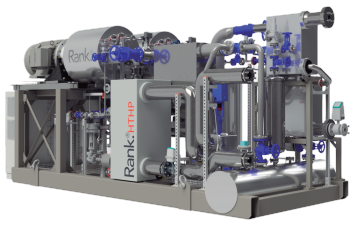
Useful heat Disipation

Heat transfer fluid	Agua
Inlet temperature	55 °C
Outlet temperature	120 °C
Volumetric flow rate	7 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa



Electricity

Consumption	141 kWe
COP_H+C	6,4
COP_H	3,5
COP_C	2,8
Voltage	3x400 V



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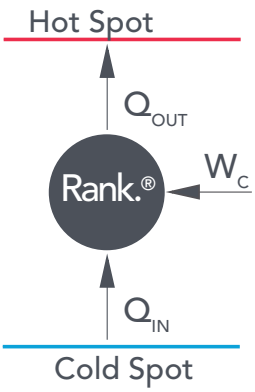
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

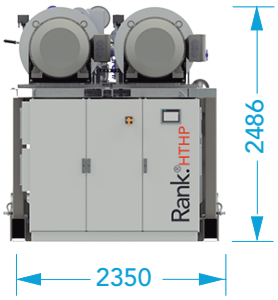
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

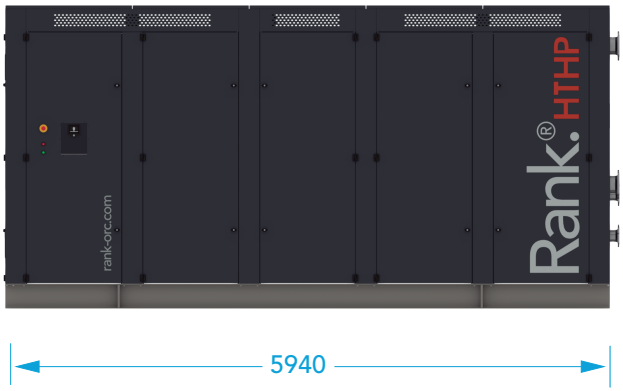
COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

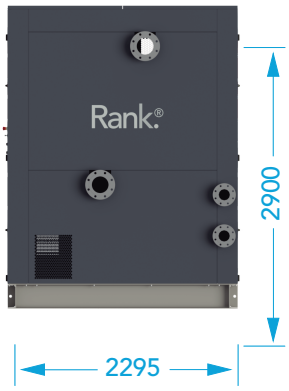
Dimensiones

Basic Option

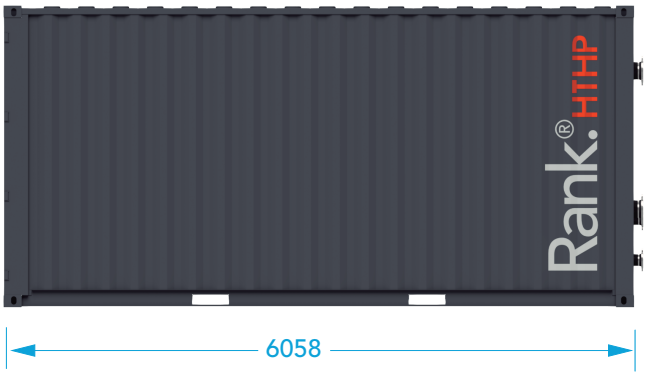


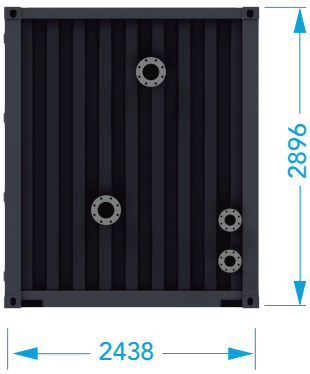
Wrap-around Option





Container Option





Compliance with regulations and standards

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- 2014/35/UE
- 2014/30/UE

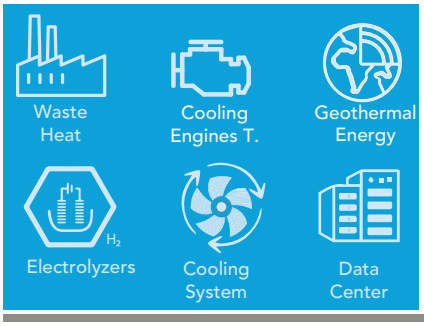
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water COP H+C

Useful Heat / Disipation: Tout (ºC)	Tin (ºC) 25	Tin (ºC) 50	Tin (ºC) 75	Tin (ºC) 100	Tin (ºC) 125
150	3,7	4,9	6,0	9,6	12,8
135	3,9	5,5	6,8	12,0	13,8
120	4,3	6,4	**9,2**	14,8	-
105	5,1	7,4	10,7	15,9	-
90	5,5	10,1	15,3	-	-

Heat source

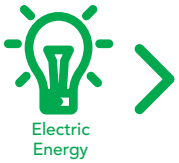


Heat source

Heat transfer fluid	Agua
Inlet temperature	75 °C
Outlet temperature	70 °C
Volumetric flow rate	76 m³/h
Thermal power	429 kWt
Pressure drop	100 kPa

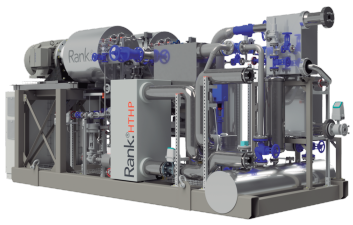
Useful heat Disipation

Heat transfer fluid	Agua
Inlet temperature	80 °C
Outlet temperature	120 °C
Volumetric flow rate	11 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa



Electricity

Consumption	101 kWe
COP_H+C	9,2
COP_H	5,0
COP_C	4,3
Voltage	3x400 V



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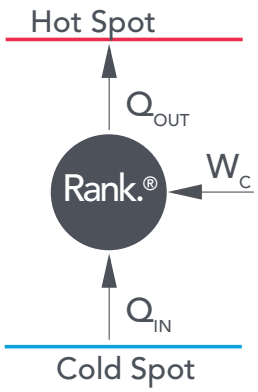
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

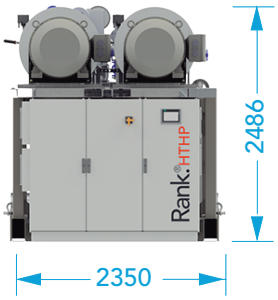
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

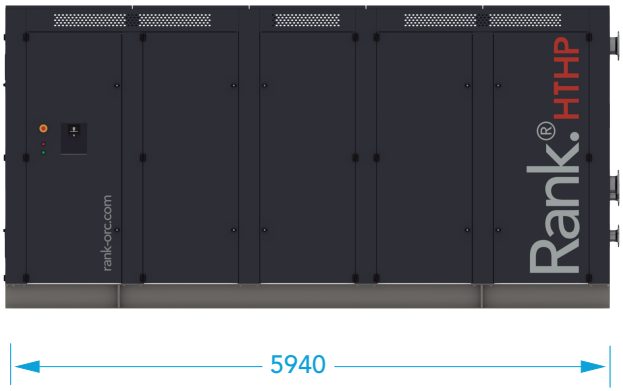
COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

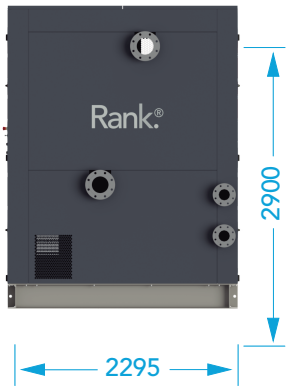
Dimensiones

Basic Option

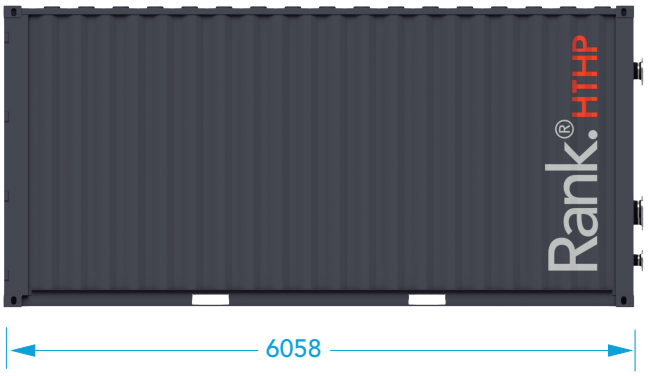


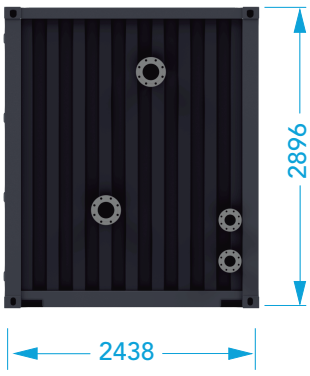
Wrap-around Option





Container Option





Compliance with regulations and standards

- Low voltage Directive
- Machinery Directive
- Electromagnetic Compatibility Directive
- Pressurized Equipment Directive
- EN/ISO 3744:2010
- UNE EN 10216
- UNE EN 764-7
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- 2006/42/CE
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- UL 508A- Control Panel Wiring
- 2014/35/UE
- 2014/30/UE

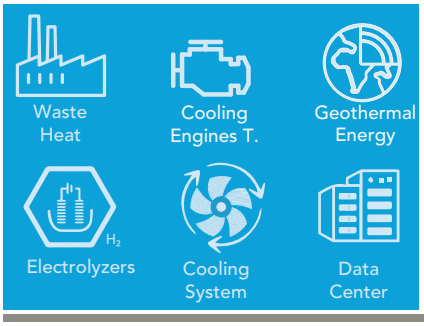
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation: Tout (ºC)					
150	3,7	4,9	6,0	9,6	12,8
135	3,9	5,5	6,8	12,0	13,8
120	4,3	6,4	9,2	**14,8**	-
105	5,1	7,4	10,7	15,9	-
90	5,5	10,1	15,3	-	-
Tin (ºC)	25	50	75	**100**	125

Heat source

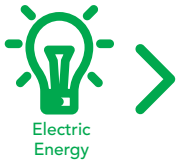


Heat source

Heat transfer fluid	Agua
Inlet temperature	100 °C
Outlet temperature	90 °C
Volumetric flow rate	41 m³/h
Thermal power	456 kWt
Pressure drop	100 kPa

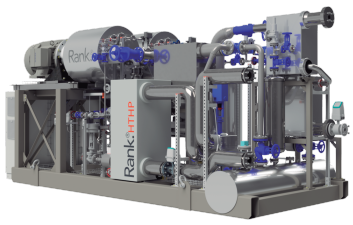
Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	90 °C
Outlet temperature	120 °C
Volumetric flow rate	15 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa



Electricity

Consumption	65 kWe
COP_H+C	14,8
COP_H	7,7
COP_C	7,1
Voltage	3x400 V



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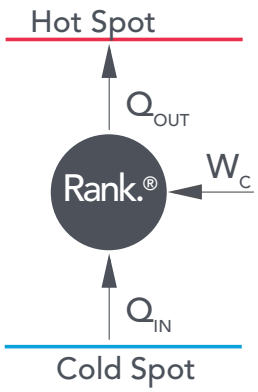
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

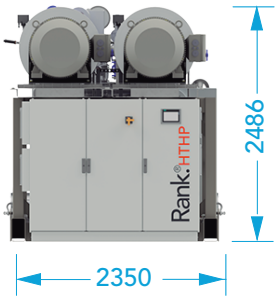
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

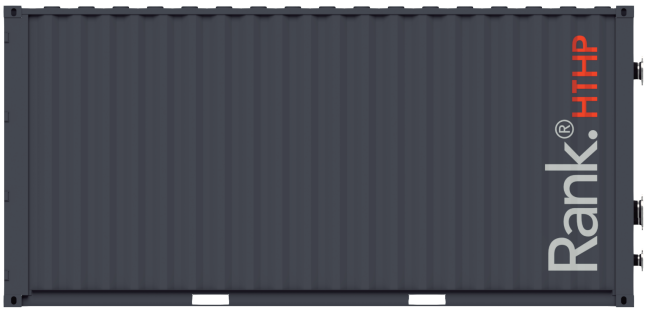
Dimensiones

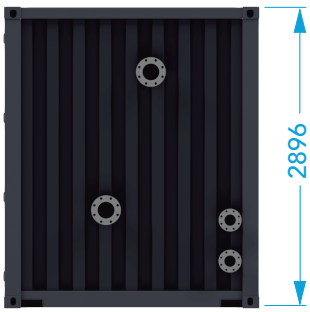
Basic Option



Wrap-around Option

Container Option





Compliance with regulations and standards

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- Machinery Directive
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- Pressurized Equipment Directive
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- UNE EN 10216
- UNE EN 764-7
- UNE EN 13136:2014+A1
- 2006/42/CE
- 2014/68/UE
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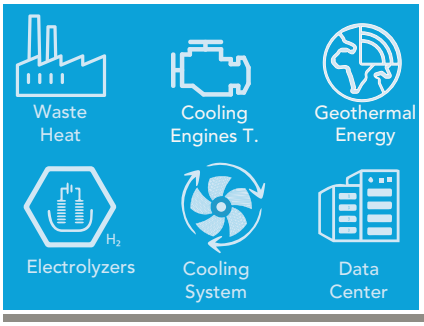
- ASME Boiler and Pressure Vessel Code Section VIII
- UL 508A- Control Panel Wiring
- 2014/35/UE
- 2014/30/UE

Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation: Tout (ºC)	Heat source				
150	3,7	4,9	6,0	9,6	12,8
135	3,9	5,5	6,8	12,0	13,8
120	4,3	6,4	9,2	14,8	-
105	**5,1**	7,4	10,7	15,9	-
90	5,5	10,1	15,3	-	-
Tin (ºC)	**25**	50	75	100	125

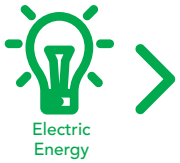


Heat source

Heat transfer fluid	Agua
Inlet temperature	25 °C
Outlet temperature	20 °C
Volumetric flow rate	65 m³/h
Thermal power	379 kWt
Pressure drop	100 kPa

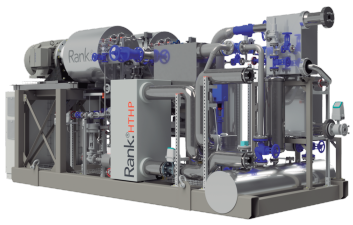
Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	45 °C
Outlet temperature	105 °C
Volumetric flow rate	7 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa



Electricity

Consumption	251 kWe
COP_H+C	3,5
COP_H	2,0
COP_C	1,5
Voltage	3x400 V



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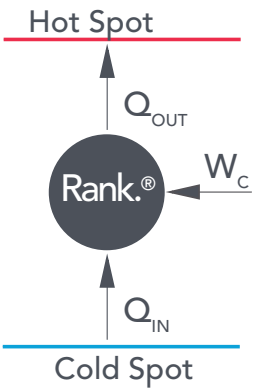
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

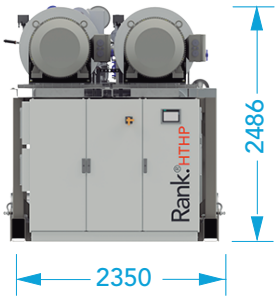
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

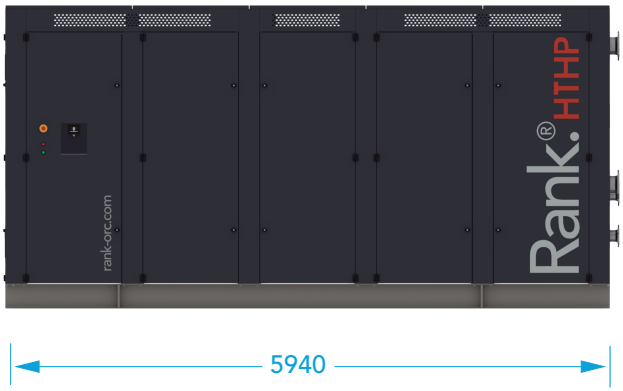
COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

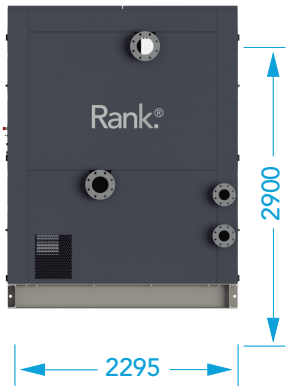
Dimensiones

Basic Option

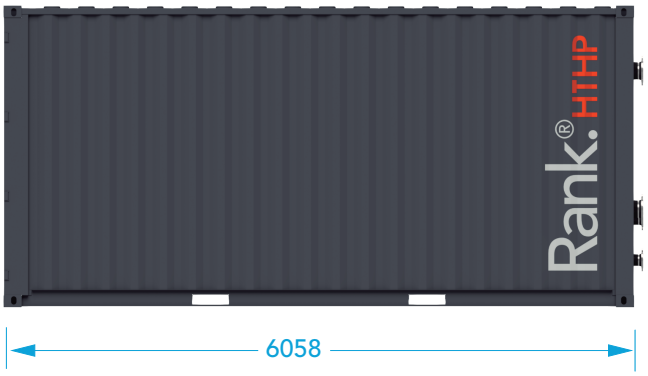


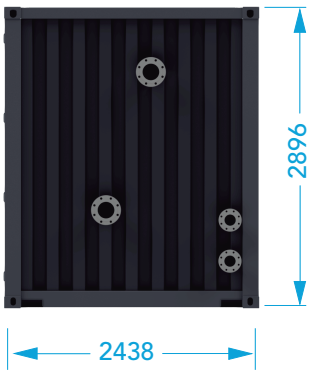
Wrap-around Option





Container Option





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- 2006/42/CE
- 2014/68/UE
- ASME B31.1 / ASME B31.3 – Process Piping Code
- ASME Boiler and Pressure Vessel Code Section VIII
- UL 508A- Control Panel Wiring
- 2014/35/UE
- 2014/30/UE

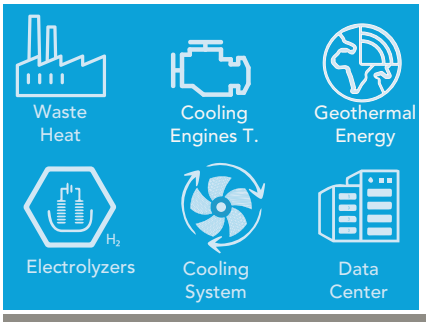
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation: Tout (ºC)	Tin (ºC) 25	50	75	100	125
150	3,7	4,9	6,0	9,6	12,8
135	3,9	5,5	6,8	12,0	13,8
120	4,3	6,4	9,2	14,8	-
105	5,1	**7,4**	10,7	15,9	-
90	5,5	10,1	15,3	-	-

Heat source



Heat source

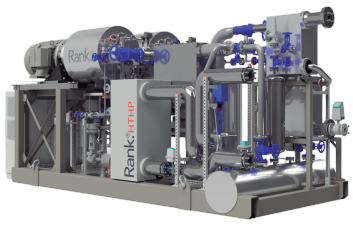
Heat transfer fluid	Agua
Inlet temperature	50 °C
Outlet temperature	45 °C
Volumetric flow rate	73 m³/h
Thermal power	417 kWt
Pressure drop	100 kPa

Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	45 °C
Outlet temperature	105 °C
Volumetric flow rate	7 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa

Electricity

Consumption	124 kWe
COP_H+C	7,4
COP_H	4,0
COP_C	3,4
Voltage	3x400 V



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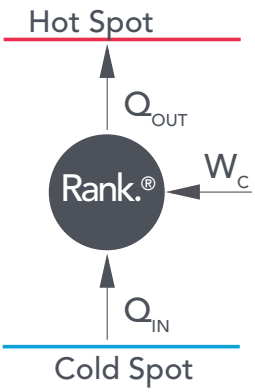
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

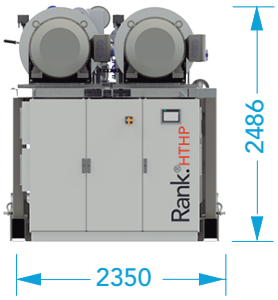
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

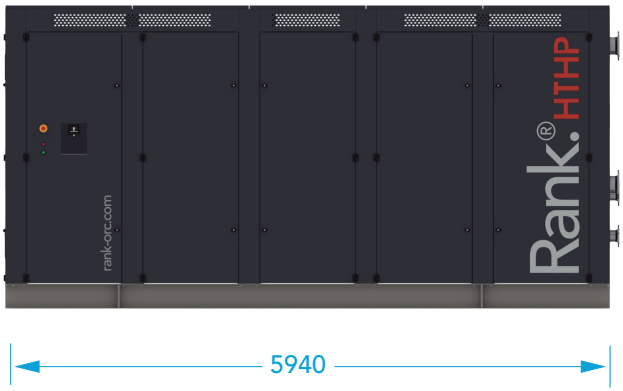
COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

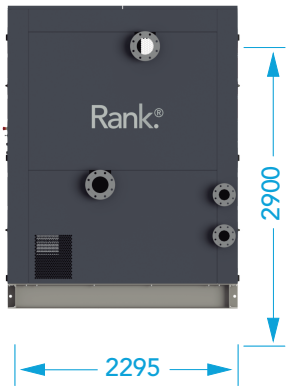
Dimensiones

Basic Option

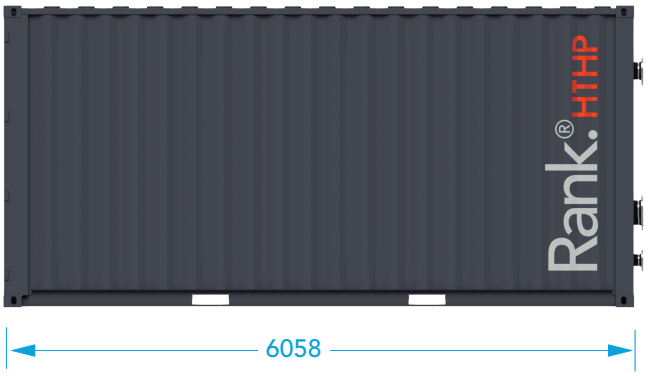


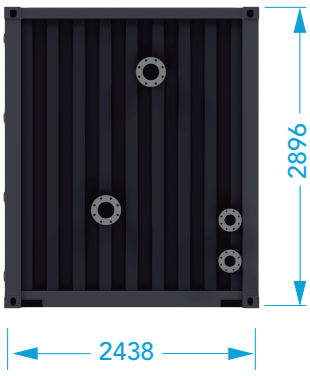
Wrap-around Option





Container Option





Compliance with regulations and standards

- Low voltage Directive
- Machinery Directive
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- Pressurized Equipment Directive
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- UNE EN 10216
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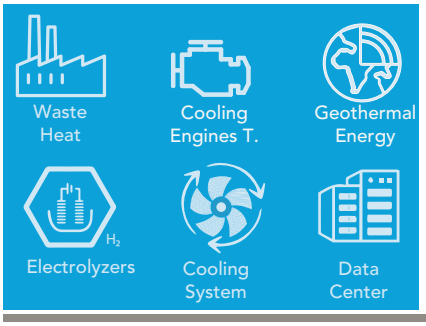
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation \ Heat source	Tout (ºC)					
	150	3,7	4,9	6,0	9,6	12,8
	135	3,9	5,5	6,8	12,0	13,8
	120	4,3	6,4	9,2	14,8	-
	105	5,1	7,4	10,7	15,9	-
	90	5,5	10,1	15,3	-	-
	Tin (ºC)	25	50	75	100	125



Heat source

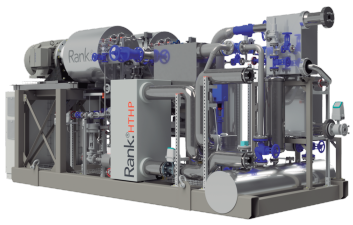
Heat transfer fluid	Agua
Inlet temperature	75 °C
Outlet temperature	65 °C
Volumetric flow rate	39 m³/h
Thermal power	439 kWt
Pressure drop	100 kPa

Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	80 °C
Outlet temperature	105 °C
Volumetric flow rate	18 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa

Electricity

Consumption	88 kWe
COP_H+C	10,7
COP_H	5,7
COP_C	5,0
Voltage	3x400 V



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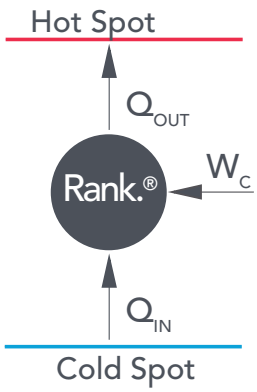
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

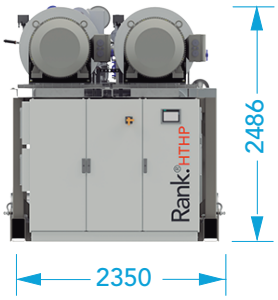
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

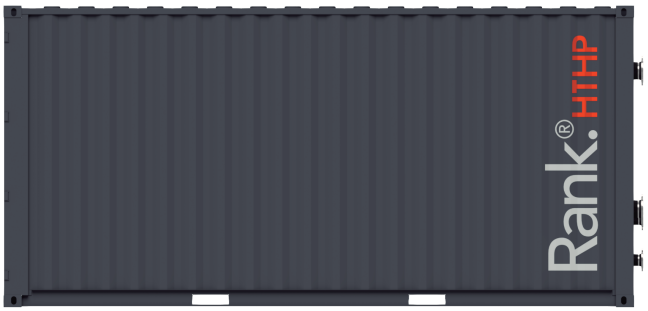
Dimensiones

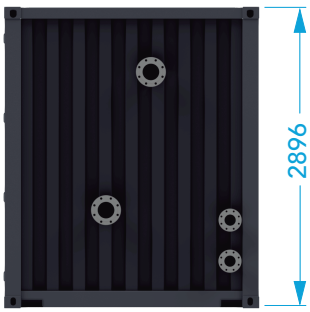
Basic Option



Wrap-around Option

Container Option





Compliance with regulations and standards

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- UL 508A- Control Panel Wiring
- 2014/35/UE
- 2014/30/UE

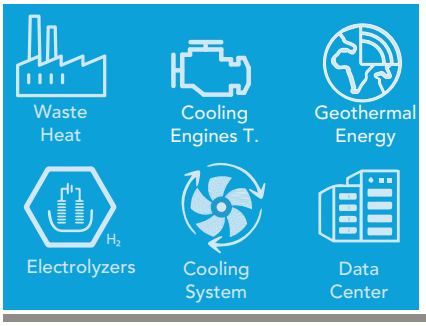
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation: Tout (ºC)					
150	3,7	4,9	6,0	9,6	12,8
135	3,9	5,5	6,8	12,0	13,8
120	4,3	6,4	9,2	14,8	-
105	5,1	7,4	10,7	**15,9**	-
90	5,5	10,1	15,3	-	-
Tin (ºC)	25	50	75	**100**	125

Heat source



Heat source

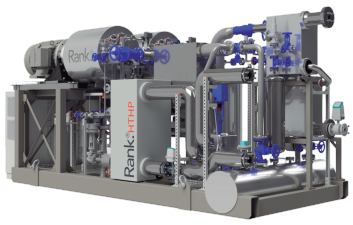
Heat transfer fluid	Agua
Inlet temperature	100 °C
Outlet temperature	80 °C
Volumetric flow rate	20 m³/h
Thermal power	459 kWt
Pressure drop	100 kPa

Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	90 °C
Outlet temperature	105 °C
Volumetric flow rate	30 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa

Electricity

Consumption	60 kWe
COP_H+C	15,9
COP_H	8,3
COP_C	7,6
Voltage	3x400 V



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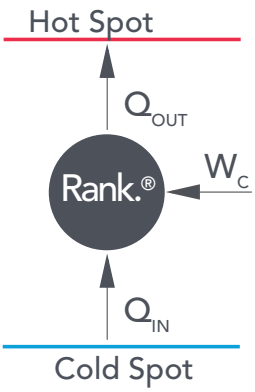
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

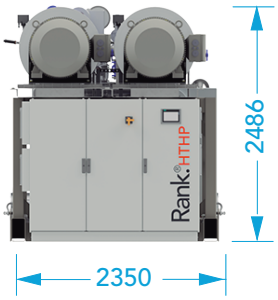
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

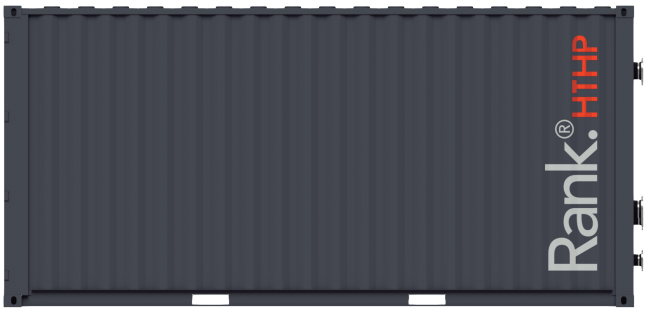
Dimensiones

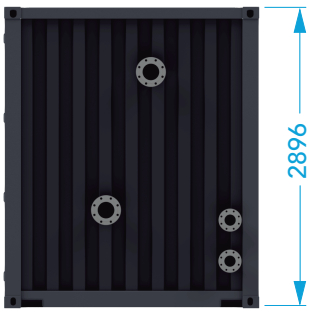
Basic Option



Wrap-around Option

Container Option





Compliance with regulations and standards

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- Machinery Directive
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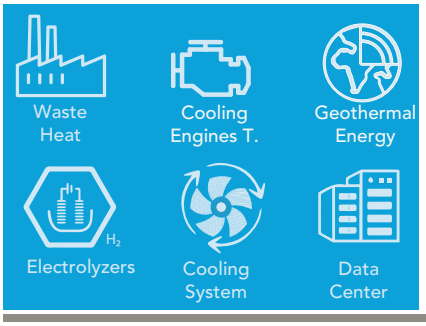
- 2014/35/UE
- 2014/30/UE

Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation: Tout (ºC)	Heat source				
150	3,7	4,9	6,0	9,6	12,8
135	3,9	5,5	6,8	12,0	13,8
120	4,3	6,4	9,2	14,8	-
105	5,1	7,4	10,7	15,9	-
90	5,5	10,1	15,3	-	-
Tin (ºC)	25	50	75	100	125

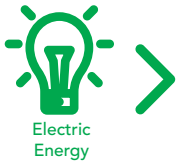


Heat source

Heat transfer fluid	Agua
Inlet temperature	25 °C
Outlet temperature	20 °C
Volumetric flow rate	68 m³/h
Thermal power	397 kWt
Pressure drop	100 kPa

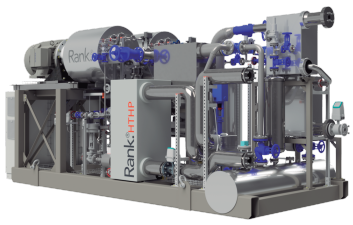
Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	35 °C
Outlet temperature	90 °C
Volumetric flow rate	8 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa



Electricity

Consumption	162 kWe
COP_H+C	6
COP_H	3
COP_C	2
Voltage	3x400 V



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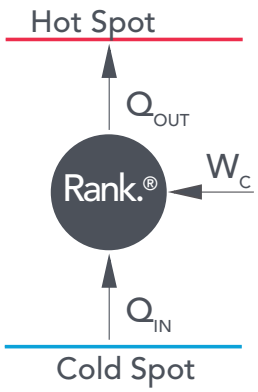
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

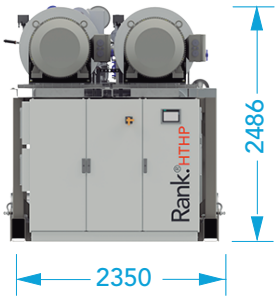
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

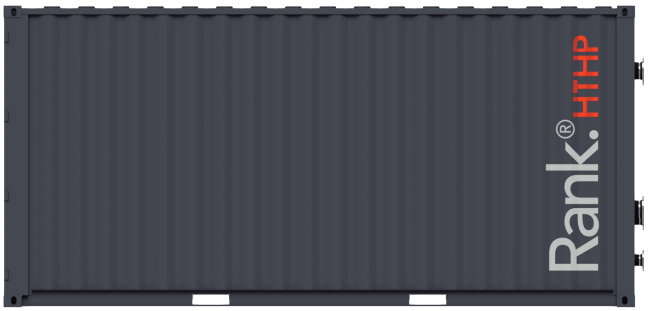
Dimensiones

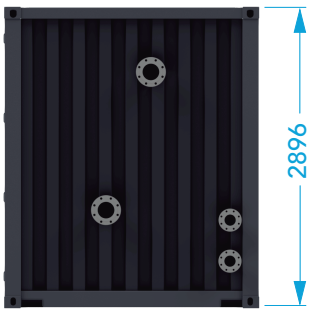
Basic Option



Wrap-around Option

Container Option





Compliance with regulations and standards

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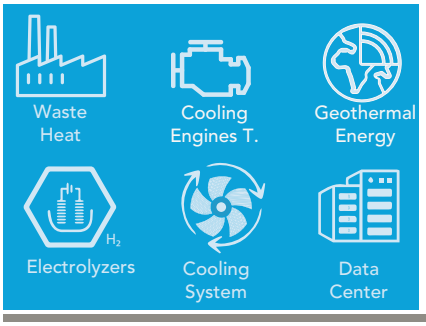
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation	Tout (ºC)					
	150	3,7	4,9	6,0	9,6	12,8
	135	3,9	5,5	6,8	12,0	13,8
	120	4,3	6,4	9,2	14,8	-
	105	5,1	7,4	10,7	15,9	-
	90	5,5	10,1	15,3	-	-
	Tin (ºC)	25	50	75	100	125

Heat source

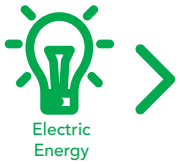


Heat source

Heat transfer fluid	Agua
Inlet temperature	50 °C
Outlet temperature	45 °C
Volumetric flow rate	76 m³/h
Thermal power	435 kWt
Pressure drop	100 kPa

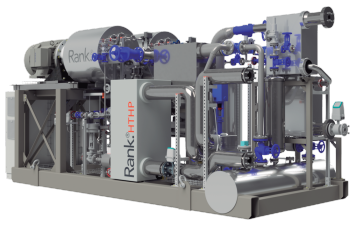
Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	35 °C
Outlet temperature	90 °C
Volumetric flow rate	8 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa



Electricity

Consumption	93 kWe
COP_H+C	10,1
COP_H	5,4
COP_C	4,7
Voltage	3x400 V



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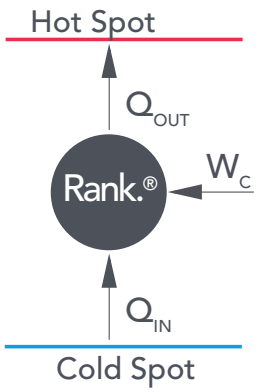
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

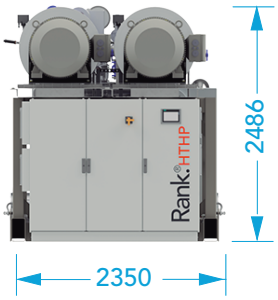
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

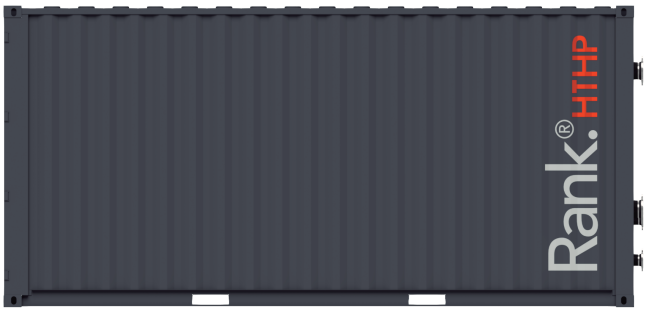
Dimensiones

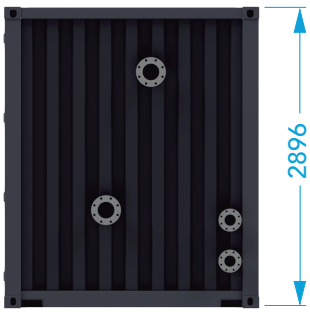
Basic Option



Wrap-around Option

Container Option





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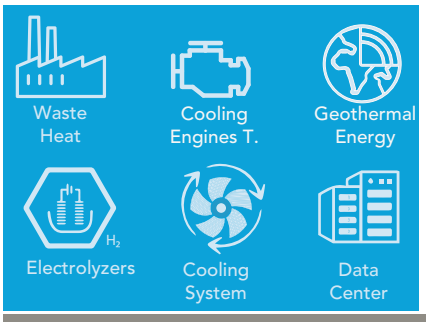
Rank.® HTHP 0.5MWt

Selected operating point

Water-Water
COP H+C

Useful Heat / Disipation	Tout (ºC)					
	150	3,7	4,9	6,0	9,6	12,8
	135	3,9	5,5	6,8	12,0	13,8
	120	4,3	6,4	9,2	14,8	-
	105	5,1	7,4	10,7	15,9	-
	90	5,5	10,1	15,3	-	-
	Tin (ºC)	25	50	75	100	125

Heat source

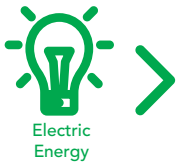


Heat source

Heat transfer fluid	Agua
Inlet temperature	75 °C
Outlet temperature	65 °C
Volumetric flow rate	40 m³/h
Thermal power	457 kWt
Pressure drop	100 kPa

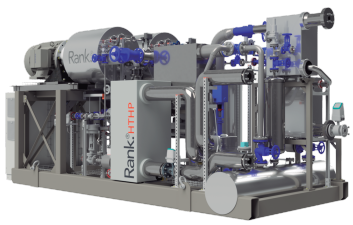
Useful heat
Disipation

Heat transfer fluid	Agua
Inlet temperature	80 °C
Outlet temperature	90 °C
Volumetric flow rate	44 m³/h
Thermal power	500 kWt
Pressure drop	50 kPa



Electricity

Consumption	62 kWe
COP_H+C	15
COP_H	8
COP_C	7
Voltage	3x400 V



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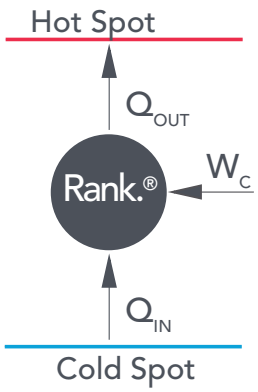
Calculation COP´s



$$COP_{H+C} = \frac{Q_{OUT} + Q_{IN}}{W_c}$$

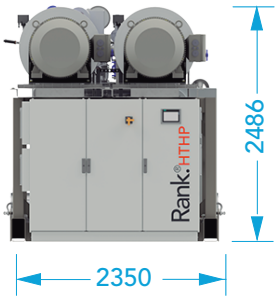
$$COP_H = \frac{Q_{OUT}}{W_C}$$

$$COP_C = \frac{Q_{IN}}{W_C}$$

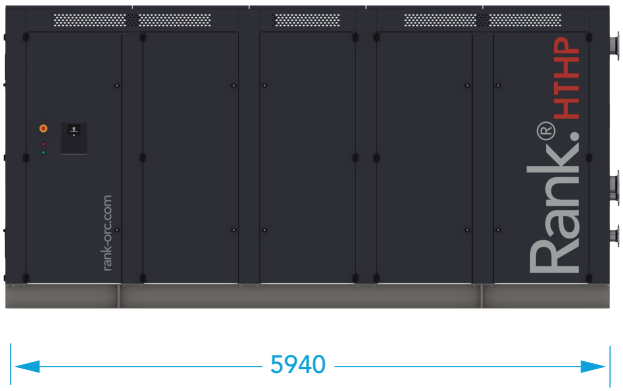
COP_H = COP Heating
COP_C = COP Cooling
COP_{H+C} = COP Aggregate
Q_{OUT} = Thermal Power Delivered
Q_{IN} = Extract Cooling Power
W_C = Electricity Consumption HTHP

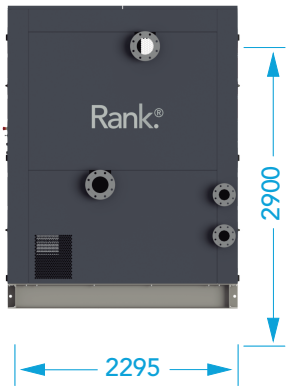
Dimensiones

Basic Option

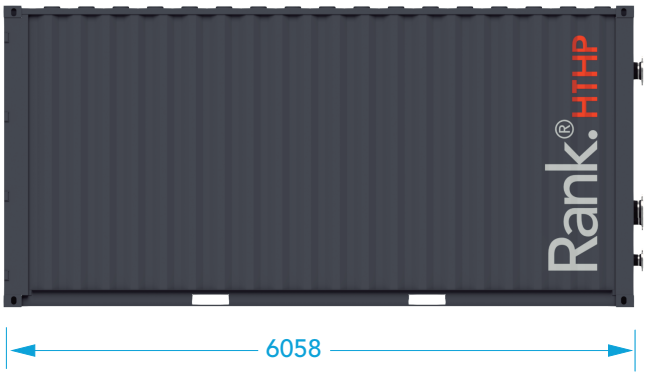


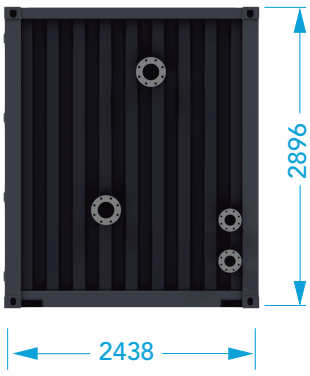
Wrap-around Option





Container Option





Compliance with regulations and standards

- Low voltage Directive
- Machinery Directive
- Electromagnetic Compatibility Directive
- Pressurized Equipment Directive
- EN/ISO 3744:2010
- UNE EN 10216
- UNE EN 764-7
- UNE EN 13136:2014+A1
- 2006/42/CE
- 2014/68/UE
- ASME B31.1 / ASME B31.3 – Process Piping Code
- ASME Boiler and Pressure Vessel Code Section VIII
- UL 508A- Control Panel Wiring
- 2014/35/UE
- 2014/30/UE