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Summary of	TTF 44.5	Reg. No.	011-1W0458
Certificate Holder			
Name	tecalor GmbH		
Address	Fürstenbergerstr. 77	Zip	37603
City	Holzminden	Country	Germany
Certification Body	DIN CERTCO Gesellschaft für Konformitätsbewertung mbH		
Subtype title	TTF 44.5		
Heat Pump Type	Brine/Water		
Refrigerant	R410A		
Mass of Refrigerant	4.4 kg		
Certification Date	15.03.2021		
Testing basis	HP KEYMARK certification scheme rules V8		

## Model: TTF 44.5

Configure model	
Model name	TTF 44.5
Application	Heating (medium temp)
Units	Indoor
Climate Zone	Colder Climate + Warmer Climate
Reversibility	Yes
Cooling mode application (optional)	n/a

General Data	
Power supply	3x400V 50Hz

### Heating

EN 14511-2		
	Low temperature	Medium temperature
Heat output	26.71 kW	22.39 kW
El input	5.81 kW	7.52 kW
COP	4.60	2.98

EN 14511-4	
Shutting off the heat transfer medium flow	passed
Complete power supply failure	passed
Defrost test	failed
Starting and operating test	passed

### Average Climate

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### EN 12102-1

	Low temperature	Medium temperature
Sound power level indoor	48 dB(A)	50 dB(A)

### EN 14825

	Low temperature	Medium temperature
$\eta_s$	218 %	168 %
Prated	38.06 kW	35.62 kW
SCOP	5.65	4.39
Tbiv	-10 °C	-10 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	33.67 kW	31.51 kW
COP Tj = -7°C	4.56	3.21
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	20.49 kW	19.18 kW
COP Tj = +2°C	5.68	4.39
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	13.18 kW	12.33 kW
COP Tj = +7°C	6.28	5.16
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	12.70 kW	12.57 kW

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COP Tj = 12°C	6.31	5.34
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	38.06 kW	35.62 kW
COP Tj = Tbiv	4.29	2.95
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	38.06 kW	35.62 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.29	2.95
WTOL	65 °C	65 °C
Poff	7 W	7 W
PTO	7 W	7 W
PSB	7 W	7 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	n/a	n/a
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Qhe	13917 kWh	16768 kWh

## Warmer Climate

<b>EN 14825</b>		
	<b>Low temperature</b>	<b>Medium temperature</b>
$\eta_s$	220 %	167 %
Prated	38.06 kW	35.62 kW
SCOP	5.70	4.38

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Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	38.06 kW	35.62 kW
COP Tj = +2°C	4.29	2.95
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	24.47 kW	22.90 kW
COP Tj = +7°C	5.35	3.89
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	12.71 kW	12.48 kW
COP Tj = 12°C	6.31	5.17
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	38.06 kW	35.62 kW
COP Tj = Tbiv	4.29	2.95
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	38.06 kW	35.62 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.29	2.95
WTOL	65 °C	65 °C
Poff	7 W	7 W
PTO	7 W	7 W
PSB	7 W	7 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	n/a	n/a

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Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Q <sub>he</sub>	8920 kWh	10862 kWh

<b>EN 12102-1</b>		
	<b>Low temperature</b>	<b>Medium temperature</b>
Sound power level indoor	48 dB(A)	50 dB(A)

## Colder Climate

<b>EN 14825</b>		
	<b>Low temperature</b>	<b>Medium temperature</b>
$\eta_s$	226 %	174 %
Prated	38.06 kW	35.62 kW
SCOP	5.86	4.55
T <sub>biv</sub>	-22 °C	-22 °C
TOL	-22 °C	-22 °C
P <sub>dh</sub> T <sub>j</sub> = -7°C	23.04 kW	21.56 kW
COP T <sub>j</sub> = -7°C	5.57	4.12
C <sub>dh</sub> T <sub>j</sub> = -7 °C	0.90	0.90
P <sub>dh</sub> T <sub>j</sub> = +2°C	14.02 kW	13.12 kW
COP T <sub>j</sub> = +2°C	6.27	5.02
C <sub>dh</sub> T <sub>j</sub> = +2 °C	0.90	0.90

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Pdh Tj = +7°C	12.71 kW	12.56 kW
COP Tj = +7°C	6.35	5.32
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	12.70 kW	12.65 kW
COP Tj = 12°C	6.19	5.49
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	38.06 kW	35.62 kW
COP Tj = Tbiv	4.29	2.95
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	38.06 kW	35.62 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.29	2.95
WTOL	65 °C	65 °C
Poff	7 W	7 W
PTO	7 W	7 W
PSB	7 W	7 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	n/a	n/a
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Qhe	16014 kWh	19290 kWh
Pdh Tj = -15°C (if TOL<-20°C)	38.06	35.62
COP Tj = -15°C (if TOL<-20°C)	4.29	2.95
Cdh Tj = -15 °C	0.90	0.90

<b>EN 12102-1</b>		
	<b>Low temperature</b>	<b>Medium temperature</b>
Sound power level indoor	48 dB(A)	50 dB(A)