

Warm climate and Medium temperature

Model(s):	CTC EcoAir 410 + CTC EcoLogic		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VII
Brine-to-water heat pump:	No	Controller contribution:	3,5 %
Low-temperature heat pump:	No	Package efficiency:	149 %
Equipped with a supplementary heater:	No	Package efficiency class:	-
Heat pump combination heater:	No		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	9	kW	Seasonal space heating energy efficiency	η_s	145	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	na	kW	T _j = -7 °C	<i>COP_d</i>	na	-
T _j = +2 °C	<i>P_{dh}</i>	8,0	kW	T _j = +2 °C	<i>COP_d</i>	2,62	-
T _j = +7 °C	<i>P_{dh}</i>	10,6	kW	T _j = +7 °C	<i>COP_d</i>	3,39	-
T _j = +12 °C	<i>P_{dh}</i>	13,1	kW	T _j = +12 °C	<i>COP_d</i>	4,69	-
T _j = bivalent temperature	<i>P_{dh}</i>	8,3	kW	T _j = bivalent temperature	<i>COP_d</i>	2,76	-
T _j = operation limit temperature	<i>P_{dh}</i>	8,1	kW	T _j = operation limit temperature	<i>COP_d</i>	2,40	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	3	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	2	°C
Cycling interval capacity for heating	<i>P_{Cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,99	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	0,9	kW
Thermostat-off mode	<i>P_{TO}</i>	0,013	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	4100	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	3227	kWh				
For heat pump combination heater:							
Declared load profile	na			Water heating energy efficiency	η_{wh}	na	%
Daily electricity consumption	<i>Q_{elec}</i>	na	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	na	kWh	Annual fuel consumption	<i>AFC</i>	na	GJ

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *Prated* is equal to the design load for heating *P_{designh}*, and the rated heat output of a supplementary heater *P_{sup}* is equal to the supplementary capacity for heating *sup(T_j)*. (**) If *C_{dh}* is not determined by measurement then the default degradation coefficient is *C_{dh}* = 0,9.

Warm climate and Low temperature

Model(s):	CTC EcoAir 410 + CTC EcoLogic		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VII
Brine-to-water heat pump:	No	Controller contribution:	3,5 %
Low-temperature heat pump:	No	Package efficiency:	193 %
Equipped with a supplementary heater:	No	Package efficiency class:	-
Heat pump combination heater:	No		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	10	kW	Seasonal space heating energy efficiency	η_s	189	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	na	kW	T _j = -7 °C	<i>COP_d</i>	na	-
T _j = +2 °C	<i>P_{dh}</i>	8,9	kW	T _j = +2 °C	<i>COP_d</i>	3,72	-
T _j = +7 °C	<i>P_{dh}</i>	11,6	kW	T _j = +7 °C	<i>COP_d</i>	4,84	-
T _j = +12 °C	<i>P_{dh}</i>	13,9	kW	T _j = +12 °C	<i>COP_d</i>	6,07	-
T _j = bivalent temperature	<i>P_{dh}</i>	9,1	kW	T _j = bivalent temperature	<i>COP_d</i>	3,83	-
T _j = operation limit temperature	<i>P_{dh}</i>	9,3	kW	T _j = operation limit temperature	<i>COP_d</i>	3,87	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	3	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	2	°C
Cycling interval capacity for heating	<i>P_{Cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{Cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	0,7	kW
Thermostat-off mode	<i>P_{TO}</i>	0,041	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	4100	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	2734	kWh				
For heat pump combination heater:							
Declared load profile	na			Water heating energy efficiency	η_{wh}	na	%
Daily electricity consumption	<i>Q_{elec}</i>	na	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	na	kWh	Annual fuel consumption	<i>AFC</i>	na	GJ

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *Prated* is equal to the design load for heating *P_{designh}*, and the rated heat output of a supplementary heater *P_{sup}* is equal to the supplementary capacity for heating *sup(T_j)*. (**) If *C_{dh}* is not determined by measurement then the default degradation coefficient is *C_{dh}* = 0,9.

Average climate and Medium temperature

Model(s):	CTC EcoAir 410 + CTC EcoLogic		
Air-to-water heat pump:	Yes	Energy efficiency class:	A+ -
Water-to-water heat pump:	No	Controller class:	VII -
Brine-to-water heat pump:	No	Controller contribution:	3,5 %
Low-temperature heat pump:	No	Package efficiency:	125 %
Equipped with a supplementary heater:	No	Package efficiency class:	A++ -
Heat pump combination heater:	No		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	9	kW	Seasonal space heating energy efficiency	η_s	121	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	6,6	kW	T _j = -7 °C	<i>COP_d</i>	2,22	-
T _j = +2 °C	<i>P_{dh}</i>	8,6	kW	T _j = +2 °C	<i>COP_d</i>	3,07	-
T _j = +7 °C	<i>P_{dh}</i>	11,1	kW	T _j = +7 °C	<i>COP_d</i>	3,99	-
T _j = +12 °C	<i>P_{dh}</i>	13,3	kW	T _j = +12 °C	<i>COP_d</i>	5,04	-
T _j = bivalent temperature	<i>P_{dh}</i>	7,0	kW	T _j = bivalent temperature	<i>COP_d</i>	2,46	-
T _j = operation limit temperature	<i>P_{dh}</i>	5,9	kW	T _j = operation limit temperature	<i>COP_d</i>	1,95	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	-5	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-10	°C
Cycling interval capacity for heating	<i>P_{Cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{Cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,99	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	2,8	kW
Thermostat-off mode	<i>P_{TO}</i>	0,013	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW	For air-to-water heat pumps: Rated air flow rate, outdoors			
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items				For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			
Capacity control	Fixed			-	4100	na	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/58	dB	-	na		m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	5826	kWh				
For heat pump combination heater:				Water heating energy efficiency			
Declared load profile	na			η_{wh}	na		%
Daily electricity consumption	<i>Q_{elec}</i>	na	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	na	kWh	Annual fuel consumption	<i>AFC</i>	na	GJ

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Average climate and Low temperature

Model(s):	CTC EcoAir 410 + CTC EcoLogic		
Air-to-water heat pump:	Yes	Energy efficiency class:	A++ -
Water-to-water heat pump:	No	Controller class:	VII -
Brine-to-water heat pump:	No	Controller contribution:	3,5 %
Low-temperature heat pump:	No	Package efficiency:	158 %
Equipped with a supplementary heater:	No	Package efficiency class:	A++ -
Heat pump combination heater:	No		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	10	kW	Seasonal space heating energy efficiency	η_s	154	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	7,4	kW	T _j = -7 °C	<i>COP_d</i>	3,25	-
T _j = +2 °C	<i>P_{dh}</i>	9,0	kW	T _j = +2 °C	<i>COP_d</i>	3,94	-
T _j = +7 °C	<i>P_{dh}</i>	11,7	kW	T _j = +7 °C	<i>COP_d</i>	5,08	-
T _j = +12 °C	<i>P_{dh}</i>	14,0	kW	T _j = +12 °C	<i>COP_d</i>	6,23	-
T _j = bivalent temperature	<i>P_{dh}</i>	7,8	kW	T _j = bivalent temperature	<i>COP_d</i>	3,42	-
T _j = operation limit temperature	<i>P_{dh}</i>	6,1	kW	T _j = operation limit temperature	<i>COP_d</i>	2,97	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	-5	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-10	°C
Cycling interval capacity for heating	<i>P_{Cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{Cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,97	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	2,9	kW
Thermostat-off mode	<i>P_{TO}</i>	0,041	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	4100	m ³ /h
Sound power level, indoors/ outdoors	<i>L_{WA}</i>	na/58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	5063	kWh				
For heat pump combination heater:							
Declared load profile	na			Water heating energy efficiency	η_{wh}	na	%
Daily electricity consumption	<i>Q_{elec}</i>	na	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	na	kWh	Annual fuel consumption	<i>AFC</i>	na	GJ

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Cold climate and Medium temperature

Model(s):	CTC EcoAir 410 + CTC EcoLogic		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VII
Brine-to-water heat pump:	No	Controller contribution:	3,5 %
Low-temperature heat pump:	No	Package efficiency:	113 %
Equipped with a supplementary heater:	No	Package efficiency class:	-
Heat pump combination heater:	No		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	7	kW	Seasonal space heating energy efficiency	η_s	109	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	6,9	kW	T _j = -7 °C	<i>COP_d</i>	2,56	-
T _j = +2 °C	<i>P_{dh}</i>	8,7	kW	T _j = +2 °C	<i>COP_d</i>	3,28	-
T _j = +7 °C	<i>P_{dh}</i>	11,3	kW	T _j = +7 °C	<i>COP_d</i>	4,25	-
T _j = +12 °C	<i>P_{dh}</i>	13,4	kW	T _j = +12 °C	<i>COP_d</i>	5,21	-
T _j = bivalent temperature	<i>P_{dh}</i>	5,5	kW	T _j = bivalent temperature	<i>COP_d</i>	2,13	-
T _j = operation limit temperature	<i>P_{dh}</i>	3,6	kW	T _j = operation limit temperature	<i>COP_d</i>	1,50	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	5,1	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	1,95	-
Bivalent temperature	<i>T_{biv}</i>	-13	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-22	°C
Cycling interval capacity for heating	<i>P_{Cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{Cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,99	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	3,7	kW
Thermostat-off mode	<i>P_{TO}</i>	0,013	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	4100	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	6381	kWh				
For heat pump combination heater:							
Declared load profile	na			Water heating energy efficiency	η_{wh}	na	%
Daily electricity consumption	<i>Q_{elec}</i>	na	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	na	kWh	Annual fuel consumption	<i>AFC</i>	na	GJ

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Cold climate and Low temperature

Model(s):	CTC EcoAir 410 + CTC EcoLogic		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VII
Brine-to-water heat pump:	No	Controller contribution:	3,5 %
Low-temperature heat pump:	No	Package efficiency:	140 %
Equipped with a supplementary heater:	No	Package efficiency class:	-
Heat pump combination heater:	No		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	7	kW	Seasonal space heating energy efficiency	η_s	136	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	7,5	kW	T _j = -7 °C	<i>COP_d</i>	3,41	-
T _j = +2 °C	<i>P_{dh}</i>	9,1	kW	T _j = +2 °C	<i>COP_d</i>	4,06	-
T _j = +7 °C	<i>P_{dh}</i>	11,8	kW	T _j = +7 °C	<i>COP_d</i>	5,21	-
T _j = +12 °C	<i>P_{dh}</i>	14,0	kW	T _j = +12 °C	<i>COP_d</i>	6,20	-
T _j = bivalent temperature	<i>P_{dh}</i>	5,9	kW	T _j = bivalent temperature	<i>COP_d</i>	2,95	-
T _j = operation limit temperature	<i>P_{dh}</i>	4,1	kW	T _j = operation limit temperature	<i>COP_d</i>	2,07	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	5,7	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	2,74	-
Bivalent temperature	<i>T_{biv}</i>	-14	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-22	°C
Cycling interval capacity for heating	<i>P_{Cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{Cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,97	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	3,4	kW
Thermostat-off mode	<i>P_{TO}</i>	0,041	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	4100	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	5337	kWh				
For heat pump combination heater:							
Declared load profile	na			Water heating energy efficiency	η_{wh}	na	%
Daily electricity consumption	<i>Q_{elec}</i>	na	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	na	kWh	Annual fuel consumption	<i>AFC</i>	na	GJ

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Warm climate and Medium temperature

Model(s):	CTC EcoAir 410 + CTC EcoZenith 250		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VII -
Brine-to-water heat pump:	No	Controller contribution:	3,5 %
Low-temperature heat pump:	No	Package efficiency:	136 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	10	kW	Seasonal space heating energy efficiency	η_s	132	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	na	kW	T _j = -7 °C	<i>COP_d</i>	na	-
T _j = +2 °C	<i>P_{dh}</i>	8,0	kW	T _j = +2 °C	<i>COP_d</i>	2,37	-
T _j = +7 °C	<i>P_{dh}</i>	10,6	kW	T _j = +7 °C	<i>COP_d</i>	3,15	-
T _j = +12 °C	<i>P_{dh}</i>	13,1	kW	T _j = +12 °C	<i>COP_d</i>	4,37	-
T _j = bivalent temperature	<i>P_{dh}</i>	8,6	kW	T _j = bivalent temperature	<i>COP_d</i>	2,63	-
T _j = operation limit temperature	<i>P_{dh}</i>	8,1	kW	T _j = operation limit temperature	<i>COP_d</i>	2,15	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	4	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	2	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	2,0	kW
Thermostat-off mode	<i>P_{TO}</i>	0,030	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW	For air-to-water heat pumps: Rated air flow rate, outdoors			
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items				For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			
Capacity control	Fixed			-	4100	<i>m³/h</i>	
Sound power level, indoors/ outdoors	<i>L_{WA}</i>	na/58	<i>dB</i>	-	na	<i>m³/h</i>	
Annual energy consumption	<i>Q_{HE}</i>	3971	<i>kWh</i>	160304			
For heat pump combination heater:				Water heating energy efficiency			
Declared load profile	L	Efficiency class	na	η_{wh}	70	%	
Daily electricity consumption	<i>Q_{elec}</i>	6,622	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	NA	kWh
Annual electricity consumption	<i>AEC</i>	1457	kWh	Annual fuel consumption	<i>AFC</i>	NA	GJ

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *Prated* is equal to the design load for heating *P_{designh}*, and the rated heat output of a supplementary heater *P_{sup}* is equal to the supplementary capacity for heating *sup(T_j)*. (**) If *C_{dh}* is not determined by measurement then the default degradation coefficient is *C_{dh}* = 0,9.



Warm climate and Low temperature

Model(s):	CTC EcoAir 410 + CTC EcoZenith 250		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VII -
Brine-to-water heat pump:	No	Controller contribution:	3,5 %
Low-temperature heat pump:	No	Package efficiency:	166 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	11	kW	Seasonal space heating energy efficiency	η_s	162	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	na	kW	T _j = -7 °C	<i>COP_d</i>	na	-
T _j = +2 °C	<i>P_{dh}</i>	8,9	kW	T _j = +2 °C	<i>COP_d</i>	3,26	-
T _j = +7 °C	<i>P_{dh}</i>	11,6	kW	T _j = +7 °C	<i>COP_d</i>	4,38	-
T _j = +12 °C	<i>P_{dh}</i>	13,9	kW	T _j = +12 °C	<i>COP_d</i>	5,56	-
T _j = bivalent temperature	<i>P_{dh}</i>	9,3	kW	T _j = bivalent temperature	<i>COP_d</i>	3,46	-
T _j = operation limit temperature	<i>P_{dh}</i>	9,3	kW	T _j = operation limit temperature	<i>COP_d</i>	3,41	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	4	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	2	°C
Cycling interval capacity for heating	<i>P_{Cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{Cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,94	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	2,0	kW
Thermostat-off mode	<i>P_{TO}</i>	0,096	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	4100	m ³ /h
Sound power level, indoors/ outdoors	<i>L_{WA}</i>	na/58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	3512	kWh				

For heat pump combination heater:

Declared load profile	L	Efficiency class	na	Water heating energy efficiency	η_{wh}	70	%
Daily electricity consumption	<i>Q_{elec}</i>	6,622	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	NA	kWh
Annual electricity consumption	<i>AEC</i>	1457	kWh	Annual fuel consumption	<i>AFC</i>	NA	GJ

160304

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *Prated* is equal to the design load for heating *P_{designh}*, and the rated heat output of a supplementary heater *P_{sup}* is equal to the supplementary capacity for heating *sup(T_j)*. (**) If *C_{dh}* is not determined by measurement then the default degradation coefficient is *C_{dh}* = 0,9.

Average climate and Medium temperature

Model(s):	CTC EcoAir 410 + CTC EcoZenith 250		
Air-to-water heat pump:	Yes	Energy efficiency class:	A++ -
Water-to-water heat pump:	No	Controller class:	VII -
Brine-to-water heat pump:	No	Controller contribution:	3,5 %
Low-temperature heat pump:	No	Package efficiency:	135 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	A++ -
Heat pump combination heater:	Yes		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	9	kW	Seasonal space heating energy efficiency	η_s	131	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	7,7	kW	T _j = -7 °C	<i>COP_d</i>	2,59	-
T _j = +2 °C	<i>P_{dh}</i>	9,6	kW	T _j = +2 °C	<i>COP_d</i>	3,47	-
T _j = +7 °C	<i>P_{dh}</i>	11,8	kW	T _j = +7 °C	<i>COP_d</i>	4,16	-
T _j = +12 °C	<i>P_{dh}</i>	13,6	kW	T _j = +12 °C	<i>COP_d</i>	4,89	-
T _j = bivalent temperature	<i>P_{dh}</i>	8,3	kW	T _j = bivalent temperature	<i>COP_d</i>	2,92	-
T _j = operation limit temperature	<i>P_{dh}</i>	6,9	kW	T _j = operation limit temperature	<i>COP_d</i>	2,24	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	-4	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-10	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	2,6	kW
Thermostat-off mode	<i>P_{TO}</i>	0,030	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	4100	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	5826	kWh				
For heat pump combination heater:							
Declared load profile	L	Efficiency class	B	Water heating energy efficiency	η_{wh}	59	%
Daily electricity consumption	<i>Q_{elec}</i>	7,969	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	NA	kWh
Annual electricity consumption	<i>AEC</i>	1753	kWh	Annual fuel consumption	<i>AFC</i>	NA	GJ
							171005

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *Prated* is equal to the design load for heating *P_{designh}*, and the rated heat output of a supplementary heater *P_{sup}* is equal to the supplementary capacity for heating *sup(T_j)*. (**) If *C_{dh}* is not determined by measurement then the default degradation coefficient is *C_{dh}* = 0,9.

Average climate and Low temperature

Model(s):	CTC EcoAir 410 + CTC EcoZenith 250		
Air-to-water heat pump:	Yes	Energy efficiency class:	A+ -
Water-to-water heat pump:	No	Controller class:	VII -
Brine-to-water heat pump:	No	Controller contribution:	3,5 %
Low-temperature heat pump:	No	Package efficiency:	134 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	A+ -
Heat pump combination heater:	Yes		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	10	kW	Seasonal space heating energy efficiency	η_s	130	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	7,4	kW	T _j = -7 °C	<i>COP_d</i>	2,77	-
T _j = +2 °C	<i>P_{dh}</i>	9,0	kW	T _j = +2 °C	<i>COP_d</i>	3,43	-
T _j = +7 °C	<i>P_{dh}</i>	11,7	kW	T _j = +7 °C	<i>COP_d</i>	4,57	-
T _j = +12 °C	<i>P_{dh}</i>	14,0	kW	T _j = +12 °C	<i>COP_d</i>	5,69	-
T _j = bivalent temperature	<i>P_{dh}</i>	14,0	kW	T _j = bivalent temperature	<i>COP_d</i>	3,01	-
T _j = operation limit temperature	<i>P_{dh}</i>	7,9	kW	T _j = operation limit temperature	<i>COP_d</i>	2,51	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	-4	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-10	°C
Cycling interval capacity for heating	<i>P_{Cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{Cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,94	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	3,7	kW
Thermostat-off mode	<i>P_{TO}</i>	0,096	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	4100	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	6399	kWh				

For heat pump combination heater:

Declared load profile	L	Efficiency class	B	Water heating energy efficiency	η_{wh}	59	%
Daily electricity consumption	<i>Q_{elec}</i>	7,969	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	NA	kWh
Annual electricity consumption	<i>AEC</i>	1753	kWh	Annual fuel consumption	<i>AFC</i>	NA	GJ

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *Prated* is equal to the design load for heating *P_{designh}*, and the rated heat output of a supplementary heater *P_{sup}* is equal to the supplementary capacity for heating *sup(T_j)*. (**) If *C_{dh}* is not determined by measurement then the default degradation coefficient is *C_{dh}* = 0,9.

Cold climate and Medium temperature

Model(s):	CTC EcoAir 410 + CTC EcoZenith 250		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VII -
Brine-to-water heat pump:	No	Controller contribution:	3,5 %
Low-temperature heat pump:	No	Package efficiency:	100 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	10	kW	Seasonal space heating energy efficiency	η_s	96	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	6,9	kW	T _j = -7 °C	<i>COP_d</i>	2,31	-
T _j = +2 °C	<i>P_{dh}</i>	8,7	kW	T _j = +2 °C	<i>COP_d</i>	2,96	-
T _j = +7 °C	<i>P_{dh}</i>	11,3	kW	T _j = +7 °C	<i>COP_d</i>	3,90	-
T _j = +12 °C	<i>P_{dh}</i>	13,4	kW	T _j = +12 °C	<i>COP_d</i>	4,82	-
T _j = bivalent temperature	<i>P_{dh}</i>	6,5	kW	T _j = bivalent temperature	<i>COP_d</i>	2,18	-
T _j = operation limit temperature	<i>P_{dh}</i>	3,6	kW	T _j = operation limit temperature	<i>COP_d</i>	1,25	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	5,1	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	1,67	-
Bivalent temperature	<i>T_{biv}</i>	-9	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-22	°C
Cycling interval capacity for heating	<i>P_{Cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	6,3	kW
Thermostat-off mode	<i>P_{TO}</i>	0,030	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	4100	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	9752	kWh				
For heat pump combination heater:							
Declared load profile	L	Efficiency class	na	Water heating energy efficiency	η_{wh}	52	%
Daily electricity consumption	<i>Q_{elec}</i>	9,017	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	NA	kWh
Annual electricity consumption	<i>AEC</i>	1984	kWh	Annual fuel consumption	<i>AFC</i>	NA	GJ
						160304	

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *Prated* is equal to the design load for heating *P_{designh}*, and the rated heat output of a supplementary heater *P_{sup}* is equal to the supplementary capacity for heating *sup(T_j)*. (**) If *C_{dh}* is not determined by measurement then the default degradation coefficient is *C_{dh}* = 0,9.

**Cold climate and Low temperature**

Model(s):	CTC EcoAir 410 + CTC EcoZenith 250		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VII -
Brine-to-water heat pump:	No	Controller contribution:	3,5 %
Low-temperature heat pump:	No	Package efficiency:	116 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	10	kW	Seasonal space heating energy efficiency	η_s	112	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	7,5	kW	T _j = -7 °C	<i>COP_d</i>	2,92	-
T _j = +2 °C	<i>P_{dh}</i>	9,1	kW	T _j = +2 °C	<i>COP_d</i>	3,54	-
T _j = +7 °C	<i>P_{dh}</i>	11,8	kW	T _j = +7 °C	<i>COP_d</i>	4,68	-
T _j = +12 °C	<i>P_{dh}</i>	14,0	kW	T _j = +12 °C	<i>COP_d</i>	5,67	-
T _j = bivalent temperature	<i>P_{dh}</i>	6,8	kW	T _j = bivalent temperature	<i>COP_d</i>	2,73	-
T _j = operation limit temperature	<i>P_{dh}</i>	4,1	kW	T _j = operation limit temperature	<i>COP_d</i>	1,61	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	5,7	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	2,24	-
Bivalent temperature	<i>T_{biv}</i>	-10	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-22	°C
Cycling interval capacity for heating	<i>P_{Cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{Cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,94	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	5,9	kW
Thermostat-off mode	<i>P_{TO}</i>	0,096	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	4100	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	8586	kWh				
For heat pump combination heater:							
Declared load profile	L	Efficiency class	na	Water heating energy efficiency	η_{wh}	52	%
Daily electricity consumption	<i>Q_{elec}</i>	9,017	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	NA	kWh
Annual electricity consumption	<i>AEC</i>	1984	kWh	Annual fuel consumption	<i>AFC</i>	NA	GJ
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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *Prated* is equal to the design load for heating *P_{designh}*, and the rated heat output of a supplementary heater *P_{sup}* is equal to the supplementary capacity for heating *sup(T_j)*. (**) If *C_{dh}* is not determined by measurement then the default degradation coefficient is *C_{dh}* = 0,9.

Warm climate and Medium temperature

Model(s):	CTC EcoAir 410 + CTC EcoZenith 550		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VII -
Brine-to-water heat pump:	No	Controller contribution:	3,5 %
Low-temperature heat pump:	No	Package efficiency:	136 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	9	kW	Seasonal space heating energy efficiency	η_s	132	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	na	kW	T _j = -7 °C	<i>COP_d</i>	na	-
T _j = +2 °C	<i>P_{dh}</i>	8,0	kW	T _j = +2 °C	<i>COP_d</i>	2,37	-
T _j = +7 °C	<i>P_{dh}</i>	10,6	kW	T _j = +7 °C	<i>COP_d</i>	3,11	-
T _j = +12 °C	<i>P_{dh}</i>	13,1	kW	T _j = +12 °C	<i>COP_d</i>	4,34	-
T _j = bivalent temperature	<i>P_{dh}</i>	8,3	kW	T _j = bivalent temperature	<i>COP_d</i>	2,50	-
T _j = operation limit temperature	<i>P_{dh}</i>	8,1	kW	T _j = operation limit temperature	<i>COP_d</i>	2,15	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	3	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	2	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,99	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	0,9	kW
Thermostat-off mode	<i>P_{TO}</i>	0,024	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	4100	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	3526	kWh				
For heat pump combination heater:							
Declared load profile	XL	Efficiency class	na	Water heating energy efficiency	η_{wh}	85	%
Daily electricity consumption	<i>Q_{elec}</i>	9,006	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	NA	kWh
Annual electricity consumption	<i>AEC</i>	1981	kWh	Annual fuel consumption	<i>AFC</i>	NA	GJ
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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *P_{rated}* is equal to the design load for heating *P_{designh}*, and the rated heat output of a supplementary heater *P_{sup}* is equal to the supplementary capacity for heating *sup(T_j)*. (**) If *C_{dh}* is not determined by measurement then the default degradation coefficient is *C_{dh}* = 0,9.



Warm climate and Low temperature

Model(s):	CTC EcoAir 410 + CTC EcoZenith 550		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VII -
Brine-to-water heat pump:	No	Controller contribution:	3,5 %
Low-temperature heat pump:	No	Package efficiency:	170 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	10	kW	Seasonal space heating energy efficiency	η_s	166	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = - 7 °C	<i>P_{dh}</i>	na	kW	T _j = - 7 °C	<i>COP_d</i>	na	-
T _j = + 2 °C	<i>P_{dh}</i>	8,9	kW	T _j = +2 °C	<i>COP_d</i>	4,24	-
T _j = + 7 °C	<i>P_{dh}</i>	11,6	kW	T _j = +7 °C	<i>COP_d</i>	3,26	-
T _j = + 12 °C	<i>P_{dh}</i>	13,9	kW	T _j = +12 °C	<i>COP_d</i>	4,35	-
T _j = bivalent temperature	<i>P_{dh}</i>	9,1	kW	T _j = bivalent temperature	<i>COP_d</i>	5,55	-
T _j = operation limit temperature	<i>P_{dh}</i>	9,3	kW	T _j = operation limit temperature	<i>COP_d</i>	3,36	-
For air-to-water heat pumps: T _j = - 15 °C (if TOL < - 20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = - 15 °C (if TOL < - 20 °C)	<i>COP_d</i>	3,41	-
Bivalent temperature	<i>T_{biv}</i>	3	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	2	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,96	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	0,9	kW
Thermostat-off mode	<i>P_{TO}</i>	0,073	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	4100	m ³ /h
Sound power level, indoors/ outdoors	<i>L_{WA}</i>	na/58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	3099	kWh				

For heat pump combination heater:

Declared load profile	XL	Efficiency class	na	Water heating energy efficiency	η_{wh}	85	%
Daily electricity consumption	<i>Q_{elec}</i>	9,006	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	NA	kWh
Annual electricity consumption	<i>AEC</i>	1981	kWh	Annual fuel consumption	<i>AFC</i>	NA	GJ

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *P_{rated}* is equal to the design load for heating *P_{designh}*, and the rated heat output of a supplementary heater *P_{sup}* is equal to the supplementary capacity for heating *sup(T_j)*. (**) If *C_{dh}* is not determined by measurement then the default degradation coefficient is *C_{dh}* = 0,9.



Average climate and Medium temperature

Model(s):	CTC EcoAir 410 + CTC EcoZenith 550		
Air-to-water heat pump:	Yes	Energy efficiency class:	A+ -
Water-to-water heat pump:	No	Controller class:	VII -
Brine-to-water heat pump:	No	Controller contribution:	3,5 %
Low-temperature heat pump:	No	Package efficiency:	113 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	A+ -
Heat pump combination heater:	Yes		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	9	kW	Seasonal space heating energy efficiency	η_s	110	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T j			
T j = - 7 °C	<i>Pdh</i>	6,6	kW	T j = - 7 °C	<i>COPd</i>	2,05	-
T j = + 2 °C	<i>Pdh</i>	8,9	kW	T j = +2 °C	<i>COPd</i>	2,97	-
T j = + 7 °C	<i>Pdh</i>	10,8	kW	T j = +7 °C	<i>COPd</i>	3,55	-
T j = + 12 °C	<i>Pdh</i>	12,6	kW	T j = +12 °C	<i>COPd</i>	4,31	-
T j = bivalent temperature	<i>Pdh</i>	7,0	kW	T j = bivalent temperature	<i>COPd</i>	2,30	-
T j = operation limit temperature	<i>Pdh</i>	5,8	kW	T j = operation limit temperature	<i>COPd</i>	1,71	-
For air-to-water heat pumps: T j = - 15 °C (if TOL < - 20 °C)	<i>Pdh</i>	na	kW	For air-to-water heat pumps: T j = - 15 °C (if TOL < - 20 °C)	<i>COPd</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	-4	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-10	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>Cdh</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	3,7	kW
Thermostat-off mode	<i>P_{TO}</i>	0,024	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	4100	m ³ /h
Sound power level, indoors/ outdoors	<i>L_{WA}</i>	na/58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	6901	kWh				

For heat pump combination heater:

Declared load profile	XL	Efficiency class	B	Water heating energy efficiency	η_{wh}	73	%
Daily electricity consumption	<i>Q_{elec}</i>	10,478	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	NA	kWh
Annual electricity consumption	<i>AEC</i>	2305	kWh	Annual fuel consumption	<i>AFC</i>	NA	GJ

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *Prated* is equal to the design load for heating *Pdesignh*, and the rated heat output of a supplementary heater *Psup* is equal to the supplementary capacity for heating *sup(Tj)*. (**) If *Cdh* is not determined by measurement then the default degradation coefficient is *Cdh* = 0,9.



Average climate and Low temperature

Model(s):	CTC EcoAir 410 + CTC EcoZenith 550		
Air-to-water heat pump:	Yes	Energy efficiency class:	A+ -
Water-to-water heat pump:	No	Controller class:	VII -
Brine-to-water heat pump:	No	Controller contribution:	3,5 %
Low-temperature heat pump:	No	Package efficiency:	136 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	A+ -
Heat pump combination heater:	Yes		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	10	kW	Seasonal space heating energy efficiency	η_s	132	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T j			
T j = - 7 °C	<i>Pdh</i>	7,4	kW	T j = - 7 °C	<i>COPd</i>	2,77	-
T j = + 2 °C	<i>Pdh</i>	9,0	kW	T j = +2 °C	<i>COPd</i>	3,43	-
T j = + 7 °C	<i>Pdh</i>	11,7	kW	T j = +7 °C	<i>COPd</i>	4,57	-
T j = + 12 °C	<i>Pdh</i>	14,0	kW	T j = +12 °C	<i>COPd</i>	5,69	-
T j = bivalent temperature	<i>Pdh</i>	7,9	kW	T j = bivalent temperature	<i>COPd</i>	3,01	-
T j = operation limit temperature	<i>Pdh</i>	6,7	kW	T j = operation limit temperature	<i>COPd</i>	2,51	-
For air-to-water heat pumps: T j = - 15 °C (if TOL < - 20 °C)	<i>Pdh</i>	na	kW	For air-to-water heat pumps: T j = - 15 °C (if TOL < - 20 °C)	<i>COPd</i>	na	-
Bivalent temperature	<i>T biv</i>	-4	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-10	°C
Cycling interval capacity for heating	<i>P cych</i>	na	kW	Cycling interval efficiency	<i>COPcyc</i>	na	-
Degradation co-efficient (**)	<i>Cdh</i>	0,95	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P OFF</i>	0,018	kW	Rated heat output (*)	<i>Psup</i>	3,7	kW
Thermostat-off mode	<i>P TO</i>	0,073	kW	Type of energy input Electric			
Standby mode	<i>P SB</i>	0,018	kW				
Crankcase heater mode	<i>P CK</i>	0,000	kW	For air-to-water heat pumps: Rated air flow rate, outdoors			
Other items				For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			
Capacity control	Fixed			-	4100	<i>m3/h</i>	
Sound power level, indoors/ outdoors	<i>L WA</i>	na/58	<i>dB</i>	-	na	<i>m3/h</i>	
Annual energy consumption	<i>Q HE</i>	6320	<i>kWh</i>				

For heat pump combination heater:

Declared load profile	XL	Efficiency class	B	Water heating energy efficiency	η_{wh}	73	%
Daily electricity consumption	<i>Qelec</i>	10,478	kWh	Daily fuel consumption	<i>Qfuel</i>	NA	kWh
Annual electricity consumption	<i>AEC</i>	2305	kWh	Annual fuel consumption	<i>AFC</i>	NA	GJ

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *Prated* is equal to the design load for heating *Pdesignh*, and the rated heat output of a supplementary heater *Psup* is equal to the supplementary capacity for heating *sup(Tj)*. (**) If *Cdh* is not determined by measurement then the default degradation coefficient is *Cdh* = 0,9.

Cold climate and Medium temperature

Model(s):	CTC EcoAir 410 + CTC EcoZenith 550		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VII -
Brine-to-water heat pump:	No	Controller contribution:	3,5 %
Low-temperature heat pump:	No	Package efficiency:	101 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	9	kW	Seasonal space heating energy efficiency	η_s	97	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	6,9	kW	T _j = -7 °C	<i>COP_d</i>	2,30	-
T _j = +2 °C	<i>P_{dh}</i>	8,7	kW	T _j = +2 °C	<i>COP_d</i>	2,95	-
T _j = +7 °C	<i>P_{dh}</i>	11,3	kW	T _j = +7 °C	<i>COP_d</i>	3,89	-
T _j = +12 °C	<i>P_{dh}</i>	13,4	kW	T _j = +12 °C	<i>COP_d</i>	4,81	-
T _j = bivalent temperature	<i>P_{dh}</i>	6,2	kW	T _j = bivalent temperature	<i>COP_d</i>	2,10	-
T _j = operation limit temperature	<i>P_{dh}</i>	3,6	kW	T _j = operation limit temperature	<i>COP_d</i>	1,25	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	5,1	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	1,67	-
Bivalent temperature	<i>T_{biv}</i>	-10	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-22	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	5,6	kW
Thermostat-off mode	<i>P_{TO}</i>	0,024	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	4100	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	9015	kWh				
For heat pump combination heater:							
Declared load profile	XL	Efficiency class	na	Water heating energy efficiency	η_{wh}	66	%
Daily electricity consumption	<i>Q_{elec}</i>	11,558	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	NA	kWh
Annual electricity consumption	<i>AEC</i>	2543	kWh	Annual fuel consumption	<i>AFC</i>	NA	GJ

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output P_{rated} is equal to the design load for heating $P_{designh}$, and the rated heat output of a supplementary heater P_{sup} is equal to the supplementary capacity for heating $sup(T_j)$. (**) If C_{dh} is not determined by measurement then the default degradation coefficient is $C_{dh} = 0,9$.



Cold climate and Low temperature

Model(s):	CTC EcoAir 410 + CTC EcoZenith 550		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VII -
Brine-to-water heat pump:	No	Controller contribution:	3,5 %
Low-temperature heat pump:	No	Package efficiency:	117 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	9	kW	Seasonal space heating energy efficiency	η_s	113	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = - 7 °C	<i>P_{dh}</i>	7,5	kW	T _j = - 7 °C	<i>COP_d</i>	2,91	-
T _j = + 2 °C	<i>P_{dh}</i>	9,1	kW	T _j = +2 °C	<i>COP_d</i>	3,54	-
T _j = + 7 °C	<i>P_{dh}</i>	11,8	kW	T _j = +7 °C	<i>COP_d</i>	4,67	-
T _j = + 12 °C	<i>P_{dh}</i>	14,0	kW	T _j = +12 °C	<i>COP_d</i>	5,67	-
T _j = bivalent temperature	<i>P_{dh}</i>	6,6	kW	T _j = bivalent temperature	<i>COP_d</i>	2,65	-
T _j = operation limit temperature	<i>P_{dh}</i>	4,1	kW	T _j = operation limit temperature	<i>COP_d</i>	1,61	-
For air-to-water heat pumps: T _j = - 15 °C (if TOL < - 20 °C)	<i>P_{dh}</i>	5,7	kW	For air-to-water heat pumps: T _j = - 15 °C (if TOL < - 20 °C)	<i>COP_d</i>	2,24	-
Bivalent temperature	<i>T_{biv}</i>	-11	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-22	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,95	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	5,2	kW
Thermostat-off mode	<i>P_{TO}</i>	0,073	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	4100	m ³ /h
Sound power level, indoors/ outdoors	<i>L_{WA}</i>	na/58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	7894	kWh				

For heat pump combination heater:

Declared load profile	XL	Efficiency class	na	Water heating energy efficiency	η_{wh}	66	%
Daily electricity consumption	<i>Q_{elec}</i>	11,558	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	XL	kWh
Annual electricity consumption	<i>AEC</i>	2543	kWh	Annual fuel consumption	<i>AFC</i>	XL	GJ

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *P_{rated}* is equal to the design load for heating *P_{designh}*, and the rated heat output of a supplementary heater *P_{sup}* is equal to the supplementary capacity for heating *sup(T_j)*. (**) If *C_{dh}* is not determined by measurement then the default degradation coefficient is *C_{dh}* = 0,9.

Warm climate and Medium temperature

Model(s):	CTC EcoAir 410 + CTC Basicstyrning		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	I -
Brine-to-water heat pump:	No	Controller contribution:	1 %
Low-temperature heat pump:	No	Package efficiency:	146 %
Equipped with a supplementary heater:	No	Package efficiency class:	-
Heat pump combination heater:	No		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	9	kW	Seasonal space heating energy efficiency	η_s	145	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	na	kW	T _j = -7 °C	<i>COP_d</i>	na	-
T _j = +2 °C	<i>P_{dh}</i>	8,0	kW	T _j = +2 °C	<i>COP_d</i>	2,62	-
T _j = +7 °C	<i>P_{dh}</i>	10,6	kW	T _j = +7 °C	<i>COP_d</i>	3,39	-
T _j = +12 °C	<i>P_{dh}</i>	13,1	kW	T _j = +12 °C	<i>COP_d</i>	4,69	-
T _j = bivalent temperature	<i>P_{dh}</i>	8,3	kW	T _j = bivalent temperature	<i>COP_d</i>	2,76	-
T _j = operation limit temperature	<i>P_{dh}</i>	8,1	kW	T _j = operation limit temperature	<i>COP_d</i>	2,40	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	3	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	2	°C
Cycling interval capacity for heating	<i>P_{Cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{Cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,99	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	0,9	kW
Thermostat-off mode	<i>P_{TO}</i>	0,013	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW	For air-to-water heat pumps: Rated air flow rate, outdoors			
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items				For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			
Capacity control	Fixed			-	4100	<i>m³/h</i>	
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/58	<i>dB</i>	-	na	<i>m³/h</i>	
Annual energy consumption	<i>Q_{HE}</i>	3227	<i>kWh</i>				
For heat pump combination heater:				Water heating energy efficiency			
Declared load profile	na			η_{wh}	na	%	
Daily electricity consumption	<i>Q_{elec}</i>	na	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	na	kWh	Annual fuel consumption	<i>AFC</i>	na	GJ

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *Prated* is equal to the design load for heating *P_{designh}*, and the rated heat output of a supplementary heater *P_{sup}* is equal to the supplementary capacity for heating *sup(T_j)*. (**) If *C_{dh}* is not determined by measurement then the default degradation coefficient is *C_{dh}* = 0,9.

Warm climate and Low temperature

Model(s):	CTC EcoAir 410 + CTC Basicstyrning		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	I -
Brine-to-water heat pump:	No	Controller contribution:	1 %
Low-temperature heat pump:	No	Package efficiency:	190 %
Equipped with a supplementary heater:	No	Package efficiency class:	-
Heat pump combination heater:	No		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	10	kW	Seasonal space heating energy efficiency	η_s	189	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	na	kW	T _j = -7 °C	<i>COP_d</i>	na	-
T _j = +2 °C	<i>P_{dh}</i>	8,9	kW	T _j = +2 °C	<i>COP_d</i>	3,72	-
T _j = +7 °C	<i>P_{dh}</i>	11,6	kW	T _j = +7 °C	<i>COP_d</i>	4,84	-
T _j = +12 °C	<i>P_{dh}</i>	13,9	kW	T _j = +12 °C	<i>COP_d</i>	6,07	-
T _j = bivalent temperature	<i>P_{dh}</i>	9,1	kW	T _j = bivalent temperature	<i>COP_d</i>	3,83	-
T _j = operation limit temperature	<i>P_{dh}</i>	9,3	kW	T _j = operation limit temperature	<i>COP_d</i>	3,87	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	3	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	2	°C
Cycling interval capacity for heating	<i>P_{Cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	0,9	kW
Thermostat-off mode	<i>P_{TO}</i>	0,041	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	4100	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	2734	kWh				
For heat pump combination heater:							
Declared load profile	na			Water heating energy efficiency	η_{wh}	na	%
Daily electricity consumption	<i>Q_{elec}</i>	na	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	#####	kWh	Annual fuel consumption	<i>AFC</i>	na	GJ

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *Prated* is equal to the design load for heating *P_{designh}*, and the rated heat output of a supplementary heater *P_{sup}* is equal to the supplementary capacity for heating *sup(T_j)*. (**) If *C_{dh}* is not determined by measurement then the default degradation coefficient is *C_{dh}* = 0,9.

Average climate and Medium temperature

Model(s):	CTC EcoAir 410 + CTC Basicstyrning		
Air-to-water heat pump:	Yes	Energy efficiency class:	A+ -
Water-to-water heat pump:	No	Controller class:	I -
Brine-to-water heat pump:	No	Controller contribution:	1 %
Low-temperature heat pump:	No	Package efficiency:	122 %
Equipped with a supplementary heater:	No	Package efficiency class:	A+ -
Heat pump combination heater:	No		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	9	kW	Seasonal space heating energy efficiency	η_s	121	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	6,6	kW	T _j = -7 °C	<i>COP_d</i>	2,22	-
T _j = +2 °C	<i>P_{dh}</i>	8,6	kW	T _j = +2 °C	<i>COP_d</i>	3,07	-
T _j = +7 °C	<i>P_{dh}</i>	11,1	kW	T _j = +7 °C	<i>COP_d</i>	3,99	-
T _j = +12 °C	<i>P_{dh}</i>	13,3	kW	T _j = +12 °C	<i>COP_d</i>	5,04	-
T _j = bivalent temperature	<i>P_{dh}</i>	7,0	kW	T _j = bivalent temperature	<i>COP_d</i>	2,46	-
T _j = operation limit temperature	<i>P_{dh}</i>	5,9	kW	T _j = operation limit temperature	<i>COP_d</i>	1,95	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	-5	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-10	°C
Cycling interval capacity for heating	<i>P_{Cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,99	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	2,8	kW
Thermostat-off mode	<i>P_{TO}</i>	0,013	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW	For air-to-water heat pumps: Rated air flow rate, outdoors			
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items				For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			
Capacity control	Fixed			-	4100	na	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/58	dB	-	na		m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	5826	kWh				
For heat pump combination heater:				Water heating energy efficiency			
Declared load profile	na			η_{wh}	na		%
Daily electricity consumption	<i>Q_{elec}</i>	na	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	na	kWh	Annual fuel consumption	<i>AFC</i>	na	GJ

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Average climate and Low temperature

Model(s):	CTC EcoAir 410 + CTC Basicstyrning		
Air-to-water heat pump:	Yes	Energy efficiency class:	A++ -
Water-to-water heat pump:	No	Controller class:	I -
Brine-to-water heat pump:	No	Controller contribution:	1 %
Low-temperature heat pump:	No	Package efficiency:	155 %
Equipped with a supplementary heater:	No	Package efficiency class:	A++ -
Heat pump combination heater:	No		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	10	kW	Seasonal space heating energy efficiency	η_s	154	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	7,4	kW	T _j = -7 °C	<i>COP_d</i>	3,25	-
T _j = +2 °C	<i>P_{dh}</i>	9,0	kW	T _j = +2 °C	<i>COP_d</i>	3,94	-
T _j = +7 °C	<i>P_{dh}</i>	11,7	kW	T _j = +7 °C	<i>COP_d</i>	5,08	-
T _j = +12 °C	<i>P_{dh}</i>	14,0	kW	T _j = +12 °C	<i>COP_d</i>	6,23	-
T _j = bivalent temperature	<i>P_{dh}</i>	7,8	kW	T _j = bivalent temperature	<i>COP_d</i>	3,42	-
T _j = operation limit temperature	<i>P_{dh}</i>	6,1	kW	T _j = operation limit temperature	<i>COP_d</i>	2,97	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	-5	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-10	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,97	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	2,9	kW
Thermostat-off mode	<i>P_{TO}</i>	0,022	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW	For air-to-water heat pumps: Rated air flow rate, outdoors			
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items				For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			
Capacity control	Fixed			-	4100	<i>m³/h</i>	
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/58	<i>dB</i>	-	na	<i>m³/h</i>	
Annual energy consumption	<i>Q_{HE}</i>	5063	<i>kWh</i>	170410			
For heat pump combination heater:				Water heating energy efficiency			
Declared load profile	na			η_{wh}	na	%	
Daily electricity consumption	<i>Q_{elec}</i>	na	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	na	kWh	Annual fuel consumption	<i>AFC</i>	na	GJ

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *Prated* is equal to the design load for heating *P_{designh}*, and the rated heat output of a supplementary heater *P_{sup}* is equal to the supplementary capacity for heating *sup(T_j)*. (**) If *C_{dh}* is not determined by measurement then the default degradation coefficient is *C_{dh}* = 0,9.

Cold climate and Medium temperature

Model(s):	CTC EcoAir 410 + CTC Basicstyrning		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	I -
Brine-to-water heat pump:	No	Controller contribution:	1 %
Low-temperature heat pump:	No	Package efficiency:	110 %
Equipped with a supplementary heater:	No	Package efficiency class:	-
Heat pump combination heater:	No		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	7	kW	Seasonal space heating energy efficiency	η_s	109	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	6,9	kW	T _j = -7 °C	<i>COP_d</i>	2,56	-
T _j = +2 °C	<i>P_{dh}</i>	8,7	kW	T _j = +2 °C	<i>COP_d</i>	3,28	-
T _j = +7 °C	<i>P_{dh}</i>	11,3	kW	T _j = +7 °C	<i>COP_d</i>	4,25	-
T _j = +12 °C	<i>P_{dh}</i>	13,4	kW	T _j = +12 °C	<i>COP_d</i>	5,21	-
T _j = bivalent temperature	<i>P_{dh}</i>	5,5	kW	T _j = bivalent temperature	<i>COP_d</i>	2,13	-
T _j = operation limit temperature	<i>P_{dh}</i>	3,6	kW	T _j = operation limit temperature	<i>COP_d</i>	1,50	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	5,1	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	1,95	-
Bivalent temperature	<i>T_{biv}</i>	-13	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-22	°C
Cycling interval capacity for heating	<i>P_{Cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,99	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	3,7	kW
Thermostat-off mode	<i>P_{TO}</i>	0,013	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	4100	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	6381	kWh				
For heat pump combination heater:							
Declared load profile	na			Water heating energy efficiency	η_{wh}	na	%
Daily electricity consumption	<i>Q_{elec}</i>	na	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	na	kWh	Annual fuel consumption	<i>AFC</i>	na	GJ
							170410

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Cold climate and Low temperature

Model(s):	CTC EcoAir 410 + CTC Basicstyrning		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	I -
Brine-to-water heat pump:	No	Controller contribution:	1 %
Low-temperature heat pump:	No	Package efficiency:	137 %
Equipped with a supplementary heater:	No	Package efficiency class:	-
Heat pump combination heater:	No		

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low-temperature heat pumps, parameters shall be declared for low-temperature application.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	7	kW	Seasonal space heating energy efficiency	η_s	136	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T _j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T _j			
T _j = -7 °C	<i>P_{dh}</i>	7,5	kW	T _j = -7 °C	<i>COP_d</i>	3,41	-
T _j = +2 °C	<i>P_{dh}</i>	9,1	kW	T _j = +2 °C	<i>COP_d</i>	4,06	-
T _j = +7 °C	<i>P_{dh}</i>	11,8	kW	T _j = +7 °C	<i>COP_d</i>	5,21	-
T _j = +12 °C	<i>P_{dh}</i>	14,0	kW	T _j = +12 °C	<i>COP_d</i>	6,20	-
T _j = bivalent temperature	<i>P_{dh}</i>	5,9	kW	T _j = bivalent temperature	<i>COP_d</i>	2,95	-
T _j = operation limit temperature	<i>P_{dh}</i>	4,1	kW	T _j = operation limit temperature	<i>COP_d</i>	2,07	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	5,7	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	2,74	-
Bivalent temperature	<i>T_{biv}</i>	-14	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-22	°C
Cycling interval capacity for heating	<i>P_{Cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{Cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,97	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	3,4	kW
Thermostat-off mode	<i>P_{TO}</i>	0,041	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW	For air-to-water heat pumps: Rated air flow rate, outdoors			
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items				For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			
Capacity control	Fixed			-	4100	na	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/58	dB	-	na		m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	5337	kWh	170410			
For heat pump combination heater:				Water heating energy efficiency			
Declared load profile	na			η_{wh}	na		%
Daily electricity consumption	<i>Q_{elec}</i>	na	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	na	kWh	Annual fuel consumption	<i>AFC</i>	na	GJ

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