



TRANE®

Water-Cooled Screw Chillers and Water/Water Heat Pumps

XSTREAM

Model RTWF (R134a / R513A) 370 - 1860 kW

Model RTWF G (R1234ze) 355 - 1420 kW

Model RTHF (R134a) 1140 - 3670 kW

Model RTHF G (R1234ze) 750 - 2670 kW



IR Ingersoll Rand®

Trane XStream™

Water-Cooled Chillers and Water/Water Heat Pumps

There is world-wide demand for increasingly efficient products to reduce energy and resource consumption. As part of our sustainable product policy, Trane has always been committed to respecting the environment by reducing energy consumption through the delivery of high performing and efficient products and systems.

Trane XStream™ series provides reliable temperature control in the most demanding applications. Exceptional efficiency keeps your operating costs and environmental impact low. Smart and easy to use controls ensure you get the best out of your system day after day, year after year.

Trane XStream are available with a choice of 3 refrigerants: R134a, R513A or R1234ze which has a GWP value of less than one to exceed current F-Gas legislation requirements and help customers reduce carbon dioxide (CO₂) emissions and achieve extreme part load and full load efficiencies.

XStream chillers and heat pumps are ideal for

- Cooling and heating applications
- High and medium temperature industrial process applications



Office buildings



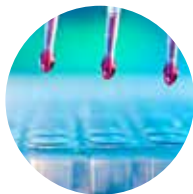
Healthcare



Data Centers



Automotive industry



Pharmaceutical industry



Food and beverage industry



Hospitality industry

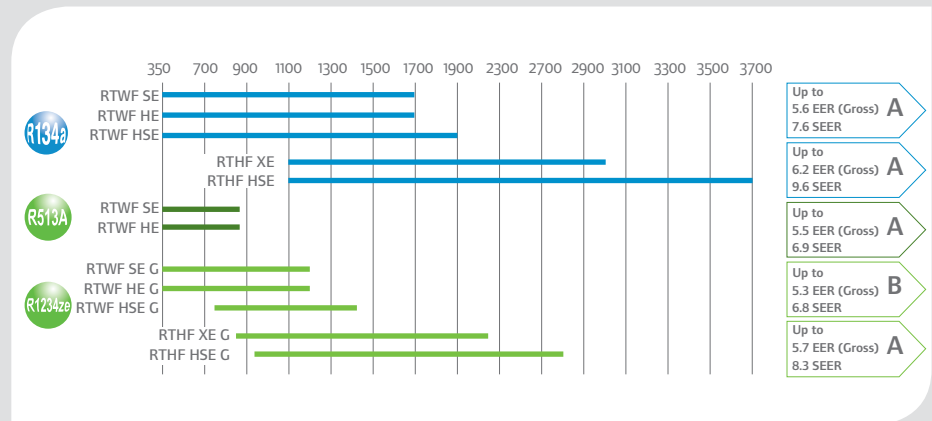


District Cooling
District Heating

Range Description

A model for every need

Whether your priority is to reach ultra high efficiencies, benefit from low first costs, or have a quicker return on investment, there is a model in the Trane XStream range that will meet your needs.



Outstanding energy efficiency



The design of our new XStream chillers and heat pumps has been guided by the need to achieve the lowest energy consumption. Units deliver market leading part load and full load efficiency performance.

You can choose from four efficiency levels:

- Standard Efficiency (SE)
- High Efficiency (HE)
- Extra High Efficiency (XE)
- High Seasonal Efficiency (HSE) with integrated variable speed: Trane Adaptive Frequency™ Drive.

Trane exceptional reliability



With equipment as critical as an HVAC system or industrial process, quality is non-negotiable. At Trane we manufacture and design the core components and put our systems through extremely rigorous performance and reliability tests. All Trane units are given a complete test before leaving our factory. As a result, Trane customers benefit from proven, industry-leading reliability and durability.

Extreme versatility



Whether you have seasonal comfort requirements or a sensitive industrial application there is a model from the XStream range that will satisfy your needs.

By selecting the appropriate efficiency version, you can minimize your Total Cost of Ownership.

For even greater system efficiency, Trane XStream units are fully compatible with Variable Primary Flow (VPF) applications and Series chiller arrangements.

The Future of F-Gases

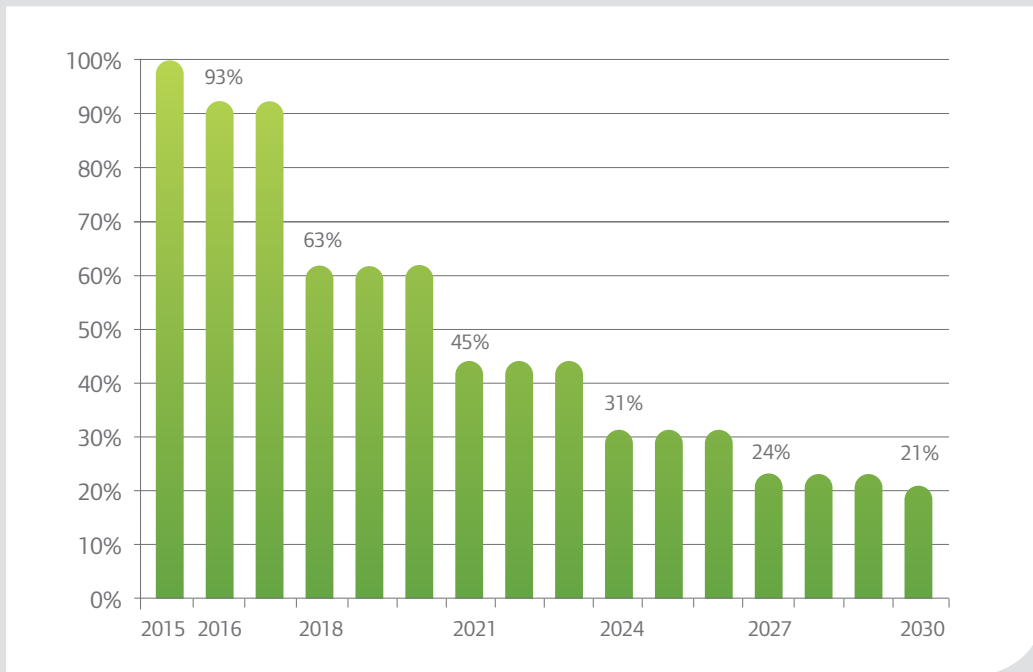
The fluorinated refrigerants phase-down, as defined in the new EU F-Gas Regulation, is a step-by-step approach where the quantities of HFCs expressed in CO₂ equivalent that are placed on the market are gradually reduced. As a result of the phase-down, HFC consumption will be reduced by 79% by 2030.

This is an unprecedented reduction and means that industry and users need to make, over time, the transition to refrigerants with a lower global warming potential.

Trane, recognized as a leading innovator in the HVAC industry, introduces this new, next generation, lower GWP refrigerant in Sintesis and other products to be front running in the marketplace and to support your strong sustainability objectives.

Ingersoll Rand and Trane - providers of sustainable solutions.

HFC consumption



Baseline value (100%) is the annual average of total quantity of CO₂ equivalents placed on the EU market from 2009 to 2012.

An environmentally sustainable solution

EcoWise™

XStream™ chillers and heat pumps with low GWP refrigerants are part of the Ingersoll Rand EcoWise™ portfolio of products that are designed to lower their environmental impact with next-generation, low global warming potential (GWP) refrigerants and high-efficiency operation.



New R1234ze

Ozone depletion potential = 0

Low global warming potential (GWP<1)

Refrigerant	Global Warming Potential (GWP)
R410A	1924
R407C	1774
R134a	1300
R513A	572
R1233zd	1
R1234ze	<1

What is GWP?

GWP is the global warming impact relative to the impact of the same quantity of carbon dioxide over a 100 year period.

What is ODP?

Ozone depletion potential of a chemical is the amount of degradation to the ozone layer it can cause.

XStream chillers

The smart choice for cooling applications

Because chillers rarely operate at design conditions, Trane developed the XStream range to achieve industry-leading part load efficiencies without compromising the environment.

Unique and innovative features



- Multiple compressor design allows outstanding part load efficiencies by switching compressors off while utilizing the entire heat exchanging surface for the remaining compressor(s)
- XStream chillers and heat pumps take advantage of crossflow serial heat exchanger design to reduce compressor workload under all operating conditions.

Variable Primary Flow (VPF) capabilities

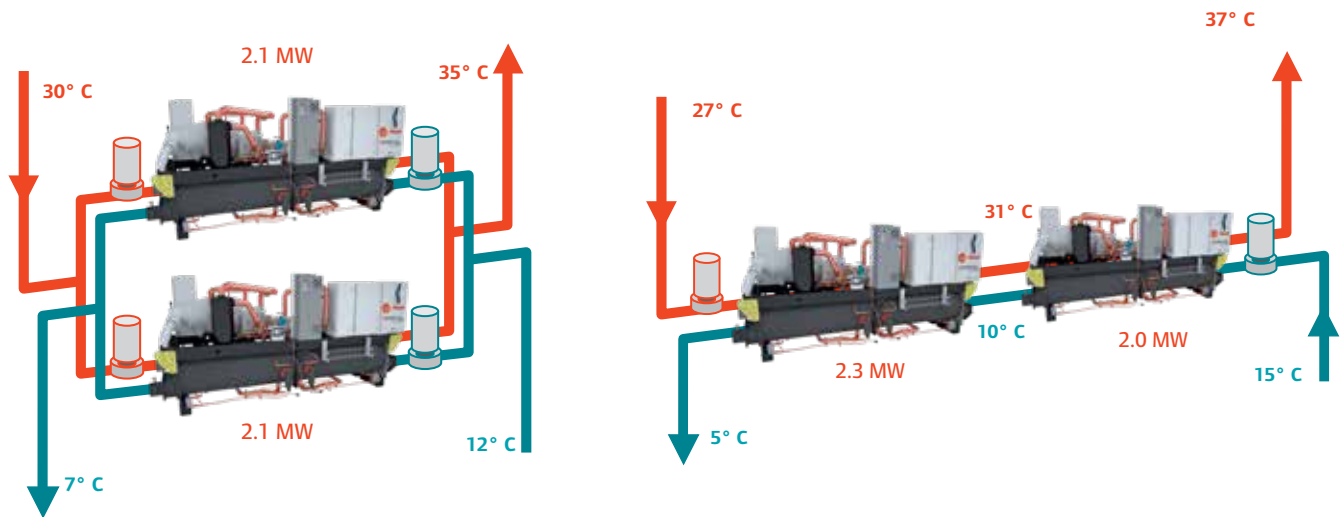


VPF systems provide building owners with multiple cost savings derived directly from pump operation. The XStream series is designed to make VPF easy to use.

- The evaporator on the XStream series can run safely with up to 50% water flow reduction
- The microprocessor and capacity control algorithms are designed to handle a maximum of 10% change in water flow rate per minute in order to maintain $\pm 0.3^{\circ}\text{C}$ temperature control leaving the evaporator.
- For applications in which system energy savings are the priority and tight temperature control is classified as $\pm 1.1^{\circ}\text{C}$, up to 30% change in flow per minute is possible.
- With the help of a TRANE software analysis tool, you can determine whether the anticipated energy savings justify the use of VPF in a particular application.

Multiple chiller plants

Overall efficiency can be further improved by using an alternative chiller lay-out to the conventional parallel-piped configuration. For example, chillers can be piped in series, on the evaporator side, on the condenser side or both.



This layout provides the opportunity for

- Lower chilled water design temperature with larger ΔT
- Reduced design flow
- Installation and operational cost savings by fewer installed pumps and valves, reduced pipe diameters and chiller downsizing
- Maximized system efficiency
- Continuous temperatures allow better stability of controls

By combining series configuration with Variable Primary Flow (VPF) it is possible to further increase system efficiency.



XStream heat pumps

Ideal for heating applications

The market for heat pumps in Europe has grown substantially year over year as the advantages of heat pumps are proven. Trane introduces new technologies creating sustainable solutions using renewable energy.

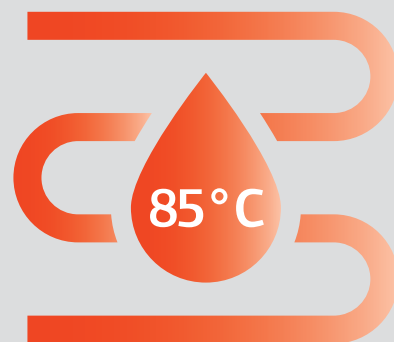
Unique and innovative features



Trane XStream heat pumps are a smart alternative to traditional boilers with features which effectively address the needs of geothermal and district heating applications:

- Compressors specially designed for high temperature applications
- Large capacities up to 2020 kW (at Eurovent Air Conditioning heating conditions)
- High condensing water temperatures of up to 85°C (RTWF G) allowing operation as a high temperature heat pump or a high condensing temperature cooling system.
- High performance up to 4.8 COP (at Eurovent Air Conditioning heating conditions)
- Operates down to 10% part load requirements.

High condensing water temperatures of up to **85°C**.

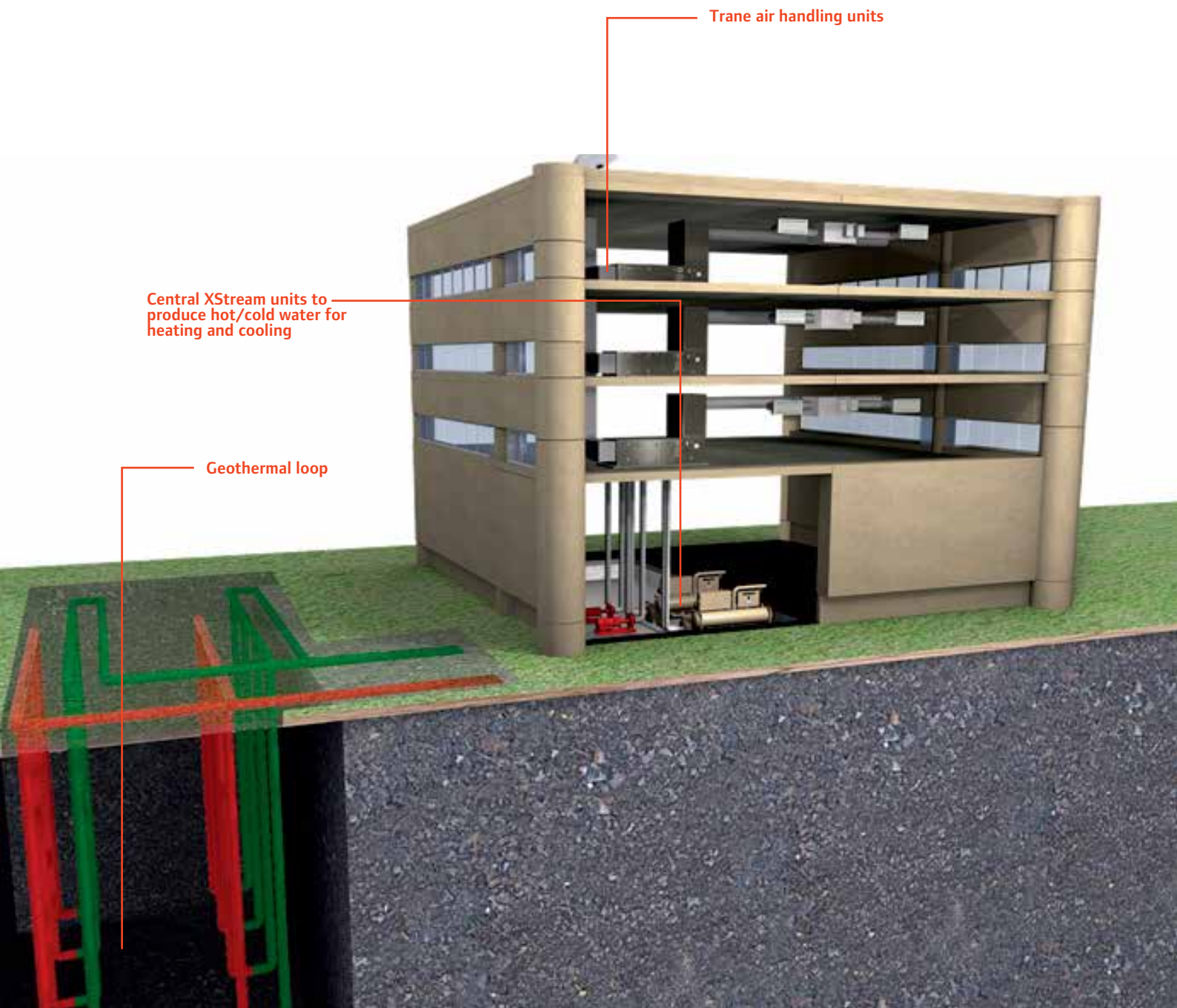


Peace of mind while saving energy costs

Thanks to the high leaving-condenser temperatures that RTWF/RTWF G models are able to achieve, costly auxiliary heating sources to treat Legionella bacteria can now be scaled back or totally eliminated.

Geothermal applications

The technologies built into Trane's XStream series heat pumps make them ideally suited to geothermal applications.



Features

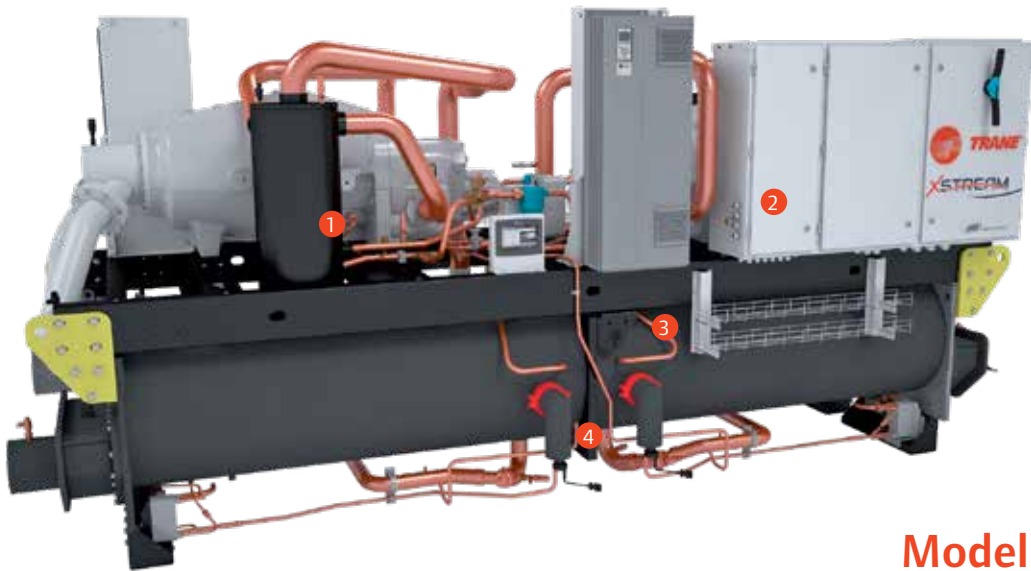
Innovative solutions to your needs

1 Trane industry-leading compressor*

- Direct drive, twin screw helical rotary design
- Infinite capacity modulation
- Semi hermetic design eliminating shaft seals
- Trane unequaled reliability

Two different refrigerant alternatives on RTWF

- R134a
- R1234ze with GWP<1



Model RTHF

3 Trane combined smart control and interface*

- Leading TD7 touch screen with 7" color display
- Clear presentation of critical information
- Monitor settings, data trending, reports and alarms
- Simple, intuitive navigation
- Effective operation, monitoring and management
- Durable construction for both indoor and outdoor use

4 Heat exchangers*

- Single pass
- Counter flow configuration



Connectivity

- Full interoperability via SmartCom interface Lontalk®, BACnet® and Modbus
- Full remote control capability via Trane BMS or Chiller Plant Controls

* Trane Proprietary Technology

2 Adaptive Frequency™ Drive on HSE version*

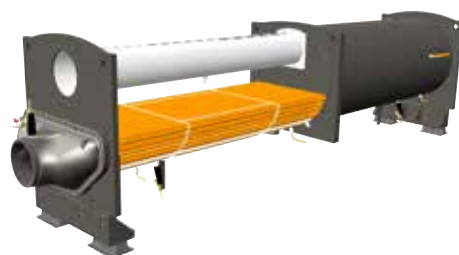
- Improved efficiency under part load conditions
- Improved capacity modulation



Model RTWF

Trane patented Compact - High performance - Integrated design - Low charge (CHIL) flooded evaporator*

- Reduced refrigerant volume
- Increased efficiency
- Reduced carbon footprint



Tracer™ UC800 controller*

- New generation Trane control platform for chillers
- Advanced algorithms for the most challenging conditions
- Maintains efficient and reliable operation



General specifications

General Data for cooling performances

		RTWF	RTWF G	RTHF	RTHF G
Refrigerant		R134a / R513A	R1234ze	R134a	R1234ze
Condenser leaving water temperature (Min/Max)	(°C)	+10 / +68	+10 / +80 (1) +10 / +85 (2)	+10 / +50	+10 / +50
Evaporator leaving water temperature (Min/Max)	(°C)	-12 / +20	-12 / +27	-12 / +20	-12 / +20
Power Supply	(V/Ph/Hz)		400/3/50		

(1) Sizes 095 to 165

(2) Sizes 220 to 420

RTWF SE (Standard Efficiency)



Unit size		RTWF 100 SE	RTWF 120 SE	RTWF 140 SE	RTWF 150 SE	RTWF 170 SE	RTWF 180 SE	RTWF 190 SE	RTWF 210 SE	RTWF 230 SE	RTWF 275 SE	RTWF 290 SE	RTWF 310 SE	RTWF 330 SE	RTWF 370 SE	RTWF 410 SE	RTWF 450 SE	RTWF 490 SE
Gross Cooling Capacity (1)	(kW)	368.4	417.1	487.5	544.4	591.8	646.4	703.1	777.6	845.8	939.9	984.0	1043.3	1113.1	1250.6	1398.1	1537.8	1676.9
Gross EER (1)		5.47	5.41	5.33	5.46	5.51	5.44	5.27	5.29	5.27	5.11	5.10	5.11	5.11	5.07	5.13	5.11	5.12
Gross ESEER (Not certified) (1)		7.95	7.99	8.16	8.22	8.10	7.67	7.58	7.53	7.44	7.11	7.06	7.01	7.23	7.08	7.57	7.46	7.21
Net cooling capacity (1) (2)	(kW)	368	417	487	544	591	646	702	777	845	939	983	1043	1112	1250	1397	1537	1676
Net EER (1) (2)		5.18	5.11	5.02	5.15	5.2	5.14	4.98	5.03	5.01	4.88	4.86	4.88	4.88	4.83	4.9	4.88	4.89
Eurovent Energy class - Cooling		A	A	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B
Net ESEER (2)		6.53	6.39	6.45	6.59	6.53	6.32	6.20	6.28	6.26	6.14	6.04	6.01	6.18	6.03	6.46	6.38	6.23
SEER (3)		6.58	6.63	6.70	6.75	6.85	6.90	6.88	6.83	6.78	6.55	6.48	6.28	6.48	6.45	7.23	7.30	7.20
Space cooling efficiency $\eta_{s.c}$ (3)	(%)	255	257	260	262	266	268	267	265	263	254	251	243	251	250	281	284	280
Number of refrigerant circuits		1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2
Number of compressors		2	2	2	2	2	2	2	2	2	3	3	3	3	3	4	4	4
Sound Power Level	(dB(A))	99	99	96	96	96	99	101	101	101	100	100	101	101	101	102	102	102
Weights and dimensions																		
Length	(mm)	3080	3080	3080	3080	3080	3160	3160	3160	3160	4754	4754	4784	4784	4784	4774	4774	4774
Width	(mm)	1190	1190	1190	1190	1190	1225	1250	1250	1250	1727	1727	1727	1727	1727	1823	1823	1823
Height	(mm)	1900	1900	1900	1935	1935	1935	2035	2035	2080	2032	2032	2032	2032	2032	2135	2135	2135
Operating Weight	(kg)	2622	2641	3048	3194	3215	3456	3783	3884	3988	5276	5273	5456	5511	5574	6945	7025	7109

RTWF HE (High Efficiency)



Unit size		RTWF 100 HE	RTWF 120 HE	RTWF 140 HE	RTWF 150 HE	RTWF 170 HE	RTWF 180 HE	RTWF 190 HE	RTWF 210 HE	RTWF 230 HE	RTWF 275 HE	RTWF 290 HE	RTWF 310 HE	RTWF 330 HE	RTWF 370 HE	RTWF 410 HE	RTWF 450 HE	RTWF 490 HE
Gross Cooling Capacity (1)	(kW)	371.2	429.0	499.9	552.6	600.5	658.6	716.5	787.3	854.2	958.0	1003.8	1067.1	1135.0	1268.0	1423.7	1563.6	1706.7
Gross EER (1)		5.55	5.58	5.47	5.57	5.64	5.54	5.40	5.40	5.33	5.43	5.43	5.42	5.41	5.40	5.46	5.41	5.39
Gross ESEER (Not certified) (1)		7.83	7.85	8.10	8.02	7.74	7.65	7.59	7.52	7.44	7.39	7.36	7.29	7.51	7.37	7.79	7.65	7.38
Net cooling capacity (1) (2)	(kW)	371.0	429.0	499.0	552.0	600.0	658.0	716.0	787.0	854.0	957	1003	1066	1134	1267	1423	1563	1706
Net EER (1) (2)		5.33	5.35	5.21	5.36	5.43	5.32	5.18	5.21	5.12	5.26	5.26	5.24	5.24	5.22	5.29	5.23	5.23
Eurovent Energy class - Cooling		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Net ESEER (2)		6.74	6.73	6.73	6.92	6.81	6.66	6.56	6.62	6.46	6.70	6.62	6.56	6.74	6.61	7.01	6.87	6.698
SEER (3)		6.68	6.80	6.90	6.95	7.05	7.08	6.98	6.90	6.83	7.05	7.03	6.78	7.00	7.10	7.60	7.55	7.4
Space cooling efficiency $\eta_{s.c}$ (3)	(%)	259	264	268	270	274	275	271	268	265	274	273	263	272	276	296	294	288
Number of refrigerant circuits		1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2
Number of compressors		2	2	2	2	2	2	2	2	2	3	3	3	3	3	4	4	4
Sound Power Level	(dB(A))	99	99	96	96	96	99	101	101	101	100	100	101	101	101	102	102	102
Weights and dimensions																		
Length	(mm)	3080	3080	3080	3160	3160	3160	3160	3160	3160	4754	4754	4784	4784	4784	4774	4774	4774
Width	(mm)	1190	1190	1190	1215	1215	1250	1250	1250	1250	1727	1727	1727	1727	1727	1823	1823	1823
Height	(mm)	1900	1935	1935	2055	2055	2080	2080	2080	2080	2032	2032	2032	2032	2032	2135	2135	2135
Operating Weight	(kg)	2696	2819	3196	3490	3564	3790	3969	4139	4139	5687	5683	5886	5950	6123	7446	7571	7694

(1) Evaporator 12/7°C and 0.0 m²K/kW, and condenser at 30/35°C and 0.0 m²K/kW

(2) Net performances calculated as per EN 14511-2013.

(3) $\eta_{s.c}$ / SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 20 December 2016

RTWF HSE G (High Seasonal Efficiency)



Unit size		RTWF 220 HSE G	RTWF 240 HSE G	RTWF 280 HSE G	RTWF 300 HSE G	RTWF 320 HSE G	RTWF 360 HSE G	RTWF 380 HSE G	RTWF 420 HSE G
Gross Cooling Capacity (1)	(kW)	748.0	803.2	898.2	1010.4	1101.5	1212.0	1308.6	1417.4
Gross EER (1)		4.99	5.02	4.97	5.14	5.10	5.11	4.94	4.84
Gross ESEER (Not certified) (1)		6.71	6.56	6.73	6.66	6.79	6.68	6.46	6.78
Net cooling capacity (1) (2)	(kW)	747.0	803.0	898.0	1010.0	1101.0	1211.0	1308.0	1417.0
Net EER (1) (2)		4.85	4.90	4.84	5.01	4.96	4.98	4.80	4.71
Eurovent Energy class - Cooling		B	B	B	B	B	B	B	B
Net ESEER (2)		6.15	6.08	6.14	6.17	6.21	6.16	5.92	6.18
SEER (3)		6.20	6.20	6.13	6.28	6.40	6.55	6.50	6.43
Space cooling efficiency $\eta_{s.c}$ (3)	(%)	240	240	237	243	248	254	252	249
Number of refrigerant circuits		2	2	2	2	2	2	2	2
Number of compressors		3	3	3	4	4	4	4	4
Sound Power Level	(dB(A))	96	96	96	97	97	97	99	101
Weights and dimensions									
Length	(mm)	4784	4784	4784	4784	4784	4784	4784	4784
Width	(mm)	1727	1727	1727	1823	1823	1823	1823	1823
Height	(mm)	2032	2032	2032	2135	2135	2135	2135	2135
Operating Weight	(kg)	5731	5824	6018	7221	7343	7567	7567	7653

RTHF XE G (Extra Efficiency)



Unit size		RTHF 250 XE G	RTHF 270 XE G	RTHF 305 XE G	RTHF 335 XE G	RTHF 370 XE G	RTHF 400 XE G	RTHF 445 XE G	RTHF 490 XE G	RTHF 520 XE G	RTHF 560 XE G	RTHF 595 XE G	RTHF 630 XE G
Gross Cooling Capacity (1)	(kW)	853.0	943.0	1087.0	1170.0	1313.0	1401.0	1580.0	1685.0	1883.0	1964.0	2070.0	2178.0
Gross EER (1)		5.87	5.85	5.82	5.80	5.77	5.79	6.29	6.12	6.37	6.20	6.02	5.88
Gross ESEER (Not certified) (1)		7.19	7.18	6.96	7.11	7.11	7.18	7.61	7.52	7.72	7.45	7.29	7.27
Net cooling capacity (1) (2)	(kW)	853.0	943.0	1087.0	1170.0	1313.0	1400.0	1579.0	1685.0	1882.0	1964.0	2070.0	2178.0
Net EER (1) (2)		5.79	5.77	5.74	5.71	5.67	5.67	6.2	6.02	6.27	6.1	5.91	5.77
Eurovent Energy class - Cooling		A	A	A	A	A	A	A	A	A	A	A	A
Net ESEER (2)		6.94	6.93	6.72	6.82	6.76	6.78	7.31	7.2	7.41	7.14	6.95	6.9
SEER (3)		7.25	7.14	7.15	7.26	7.06	7.17	7.75	7.46	7.68	7.43	7.41	7.29
Space cooling efficiency $\eta_{s.c}$ (3)	(%)	281.9	277.4	278	282.3	274.5	278.8	302.1	290.3	299.3	289.3	288.4	283.7
Number of refrigerant circuits		2	2	2	2	2	2	2	2	2	2	2	2
Number of compressors		2	2	2	2	2	2	2	2	2	2	2	2
Sound Power Level	(dB(A))	97	97	98	98	98	98	102	103	103	103	103	103
Weights and dimensions													
Length	(mm)	4586	4586	4586	4586	4586	4586	5521	5521	5521	5521	5521	5521
Width	(mm)	1840	1840	1840	1840	1840	1840	2088	2088	2088	2088	2088	2088
Height	(mm)	2395	2395	2395	2395	2395	2395	2457	2457	2457	2457	2457	2457
Operating Weight	(kg)	7508	7560	8745	8745	9679	9679	12881	13356	13356	13356	13456	13566

RTHF HSE G (High Seasonal Efficiency)



Unit size		RTHF 270 HSE G	RTHF 295 HSE G	RTHF 320 HSE G	RTHF 355 HSE G	RTHF 405 HSE G	RTHF 440 HSE G	RTHF 480 HSE G	RTHF 535 HSE G	RTHF 560 HSE G	RTHF 595 HSE G	RTHF 630 HSE G	RTHF 680 HSE G	RTHF 720 HSE G	RTHF 780 HSE G
Gross Cooling Capacity (1)	(kW)	928.0	1017.0	1105.0	1213.0	1396.0	1523.0	1658.0	1811.0	1965.0	2110.0	2255.0	2414.0	2588.0	2759.0
Gross EER (1)		5.61	5.40	5.23	4.94	5.28	5.36	5.20	4.87	6.23	6.08	5.95	5.56	5.32	5.11
Gross ESEER (Not certified) (1)		8.24	8.37	8.38	8.35	8.53	8.29	8.28	8.22	9.09	8.97	8.69	8.44	8.42	8.40
Net cooling capacity (1) (2)	(kW)	928.0	1016.0	1104.0	1212.0	1396.0	1523.0	1657.0	1810.0	1964.0	2109.0	2254.0	2414.0	2587.0	2758.0
Net EER (1) (2)		5.54	5.32	5.15	4.88	5.21	5.27	5.1	4.77	6.12	5.97	5.82	5.48	5.23	5.01
Eurovent Energy class - Cooling		A	A	A	B	A	A	A	B	A	A	A	A	A	A
Net ESEER (2)		7.89	7.95	7.89	7.77	7.92	7.66	7.54	7.37	8.60	8.42	8.12	7.83	7.72	7.61
SEER (3)		7.39	7.36	7.29	7.23	7.99	8.08	7.98	7.87	8.14	8.04	8.01	8.26	8.11	8.02
Space cooling efficiency $\eta_{s.c}$ (3)	(%)	287.5	286.4	283.6	281.2	311.6	315.1	311.4	306.8	317.7	313.6	312.4	322.4	316.4	312.9
Number of refrigerant circuits		2	2	2	2	2	2	2	2	2	2	2	2	2	2
Number of compressors		2	2	2	2	2	2	2	2	2	2	2	2	2	2
Sound Power Level	(dB(A))	97	100	102	105	102	100	102	106	103	103	103	106	107	109
Weights and dimensions															
Length	(mm)	4586	4586	4586	4586	4586	4586	4586	4586	5521	5521	5521	5521	5521	5521
Width	(mm)	1940	1940	1940	1940	1940	1940	1940	1940	2088	2088	2088	2088	2088	2088
Height	(mm)	2395	2395	2395	2395	2395	2395	2395	2395	2457	2457	2457	2457	2457	2457
Operating Weight	(kg)	7730	7720	7720	7720	8960	9959	9959	9959	13676	13816	13926	13926	13926	13926

(1) Evaporator 12/7°C and 0.0 m²K/kW, and condenser at 30/35°C and 0.0 m²K/kW

(2) Net performances calculated as per EN 14511-2013.

(3) $\eta_{s.c}$ / SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 20 December 2016

The Trane advantage



Trane is recognized as a world leader with over **100 years of experience** in creating and sustaining safe, comfortable and energy efficient environments while improving the performance of buildings and processes around the world.

Trane innovative solutions optimize indoor environments with the **broadest portfolio** of energy efficient heating, ventilating and air conditioning systems, building services, parts support and advanced controls in the industry.

To ensure your equipment continues to work at its optimum, throughout the life of the building, Trane provides a full range of service solutions, combined with in-house expertise and the **most extensive service and support network** in the industry.

And with Trane's **extensive rental fleet** all your temporary cooling and heating needs are served: we provide continuous cooling or heating during equipment changeouts or supplemental supply for those times when your cooling loads exceed your current system's capacity. For more information: www.trane-chiller-rental.eu

Ingersoll Rand recognition



For the seventh consecutive year, Ingersoll Rand has been recognized as one of the World's Most Admired Companies according to FORTUNE Magazine.



Ingersoll Rand was recognized at the 2016 Climate Leadership Conference for its refrigerant phase-out efforts by the US EPA, its greenhouse gas emissions reduction goal of 35% by 2020 and its commitment to reduce the climate impact of the refrigerants used in its products by 50% by 2020.



Trane® is a brand of Ingersoll Rand®. Ingersoll Rand (NYSE:IR) advances the quality of life by creating comfortable, sustainable and efficient environments. Our people and our family of brands—including Ingersoll Rand®, Trane®, Thermo King® and Club Car® — work together to enhance the quality and comfort of air in homes and buildings; transport and protect food and perishables; and increase industrial productivity and efficiency. We are a global business committed to a world of sustainable progress and enduring results.



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