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TPL

HiRef

Innovators above
the standards

SERVICES

DATA CENTER

INDUSTRY



Air condensed chillers and heat pumps

TPL

with Scroll compressors

Range: 365.3-1199.3 kW



The new TPL range chillers and heat pumps are high power density air/water units available for use with R410A refrigerant or, in the “A2L” version, with low environmental impact R454B refrigerant. The TPL range is designed to manage **the conditioning of industrial plants and thermal loads in technological applications, where 24/7 reliability in all working conditions, one of the assets of these units, is a critically important requirement.** The TPL range uses latest generation Scroll compressors, braze-welded plate exchangers optimised for use with high pressure refrigerants (R410A/R454B) and axial fans suitable for outdoor installation.

Main advantages



Plate heat exchangers

The TPL range uses braze-welded plate exchangers with asymmetrical channels, suitable for the use of high and medium pressure refrigerant gases. The configuration with asymmetrical channels allows **high exchange efficiencies to be reached while maintaining pressure drops low** on the water side – **reducing pumping costs** at both full and partial load.

Maximum efficiency at partial loads

The adoption of the multi-Scroll solution, the use of electronically controlled expansion valves, selection of plate heat exchangers, fan modulation and variable flow rate controlled with circulation pumps are all key features that make the **TPL range particularly efficient at partial loads.**



Available versions



COOLING ONLY



FREE-COOLING



REVERSIBLE HEAT PUMP

Types of system



AIR/WATER

Additional benefits

- 3 different soundproofing setups available: Standard, Low Noise and Super Low Noise
- Electric control panel with IP55 protection rating
- High power density units in both chiller and heat pump modes
- Radial EC motor fans (optional)
- Electronic expansion valve
- Easy accessibility thanks to the optimisation of the internal space
- Programmable microprocessor control with proprietary software
- Compliance with ERP regulations

Technological components



Multi-protocol communication interface

HiRef units can be integrated with the customer's external supervision Building Management System (BMS), using the most popular communication protocols, including Modbus RTU, Modbus/IP, BacNet, LonWorks, SNMP.



Scroll compressors

Scroll compressors include a mobile scroll, driven by the motor, which completes orbital revolutions and a fixed scroll that is coupled to it. The orbital motion creates a series of gas pockets that move from one scroll to the other. When moving closer to the centre of the scroll, where exhaust takes place, the gas is compressed to smaller and smaller volumes until the desired delivery pressure is reached. Scroll technology improves volumetric efficiency and flow continuity, reduces noise and leakage and eliminates harmful volumes and downtime.



Axial fans

In axial fans air moves in a parallel direction to the rotation axis and allows large air flows to be processed. Thanks to their low head compared to radial fans, they are used on remote condensers and on components with free outlet into the atmosphere, where there are no high pressure drops due, for example, to ducting.



Corrosion resistant material

The HiRef outdoor units are protected by a metal structure resistant to corrosion and weathering. They are also made of galvanised steel sheet, with epoxy-polyester powder coating, oven-polymerised at 180°C, to offer a C3 degree of protection. On request, it is possible to order specific paint finishing treatments or a metalwork structure built entirely in stainless steel, to obtain a higher degree of protection from high impact adverse weather events.



A2L Ready

Some ranges of liquid chillers, in addition to safety class A1 refrigerants R410A and R134a, can also be supplied with class A2L slightly flammable refrigerants with low environmental impact R454B and R1234ze. HiRef makes these product sub-ranges available also in the "A2L Ready" version, filled with a safety class A1 refrigerant, factory-ready and equipped with all the necessary safety sensors to allow, if the customer requests it, fast refrigerant switching at a later stage.



Low GWP refrigerant

The Global Warming Potential (GWP) index is a numerical indicator that identifies the environmental impact of a substance. It measures the extent to which a gas contributes to the greenhouse effect, in relation to carbon dioxide (CO₂) whose baseline value is equal to 1. This parameter is used to determine the amount in kilograms of CO₂ corresponding to the environmental impact of the release of a refrigerant gas into the atmosphere. The use of low GWP refrigerants, such as R513A, R454B, R1234ze, CO₂, allows the environmental impact of air conditioning systems to be significantly reduced.



Plate heat exchanger

Brazed plate heat exchangers ensure efficient heat transfer with minimised footprint, eliminate the need for thick frame plates and seals, and ensure high thermal power density. They have a long life cycle, are maintenance-free and withstand both high temperatures and extremely high pressures. This type of exchanger is used in a wide range of applications including cooling, heating, evaporation and condensation.

Technical table

TPL		374	414	456	486	536	616	658	748	818	900	942	107
VERSION F - USER WATER TEMPERATURE 12/7°C 20% ETHYLENE GLYCOL, OUTSIDE AIR 35°C, 40% R.H.													
COOLING CAPACITY	kW	365.3	421	451.4	507.5	556.6	613.7	683.1	752.4	824.9	940.1	1042.4	1097.7
TOTAL POWER INPUT	kW	132.7	146.5	163.1	190.6	193.4	224.7	253.7	264.7	309.1	327.1	371.3	404.3
COP	-	2.75	2.87	2.77	2.66	2.88	2.73	2.69	2.84	2.67	2.87	2.81	2.72
VERSION C - USER WATER VALUES 12/7°C, 35°C OUTSIDE AIR, 40% U.R.													
COOLING CAPACITY	kW	369.7	426	457.6	515.3	565.2	622	694.9	764.2	837.9	957.7	1062	1112.9
TOTAL POWER INPUT	kW	131.2	144.9	161.1	187.9	190.2	221.1	249.8	261	305	320.9	364.8	398.5
EER	-	2.82	2.94	2.84	2.74	2.97	2.81	2.78	2.93	2.75	2.98	2.91	2.79
SEPR	-	5.66	5.69	5.75	5.67	5.87	5.7	5.71	5.9	5.73	6.01	5.95	6
SEER	-	4.81	4.87	4.95	4.96	5.14	5.02	4.71	4.85	4.71	4.96	5.09	5.05
VERSION F - UTILITY WATER TEMPERATURE 12/7°C, ETHYLENE GLYCOL 20%													
FULL FREE-COOLING TEMPERATURE	°C	-10.3	-6.6	-7.8	-9.8	-6.8	-8.3	-10.3	-8.5	-10.1	-9.4	-11.3	-9.4
VERSION H - USER WATER VALUES 40/45°C, 7°C OUTSIDE AIR, 89% U.R.													
TOTAL POWER INPUT	kW	130.8	150.6	161.7	181.8	199.6	226.1	236	254.3	286.2	322.5	358.4	394.1
THERMAL POWER	kW	391.8	476.4	511.6	578.4	601	679.4	734.6	769.2	855.8	997.6	1114.5	1199.3
COP	-	3	3.16	3.16	3.18	3.01	3	3.11	3.02	2.99	3.09	3.11	3.04
SEER	-					5.14	5.02	4.71	4.81	4.67	4.71	4.85	5.13
SCOP	-	4.03	4.06	3.98	4.05								
SOUND POWER LEVEL	dB	90	92	91	92	91		93		95	93	95	94
SOUND POWER LEVEL LOW NOISE	dB	87	89	90	89		91	90	92	91	93	92	
SOUND POWER LEVEL SUPER LOW NOISE	dB	86	87	88			89	90	89	90			
DIMENSIONS [LxHxD]	mm	3415 x2652 x2256	4415x2652x2256			5415 x2652 x2256	5415x2650x2256		6415x2650x2256		7415x2650x2256		8415 x2650 x2256

20% Ethylene glycol | Also available with 60 Hz power supply | Data declared with use of R410A refrigerant

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