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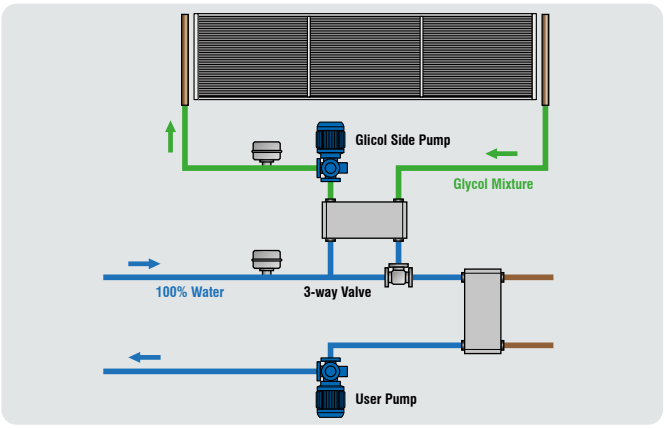
MHA

AIR CONDENSED CHILLERS AND HEAT PUMPS WITH SCROLL BLDC INVERTER COMPRESSORS

30.2–287.6 kW

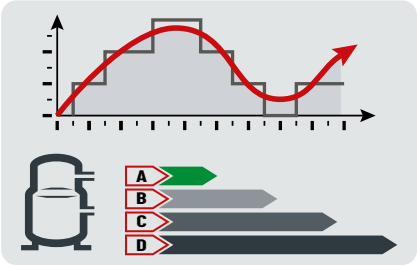
MHA is the HiRef range of air condensed liquid chillers and heat pumps that uses a combination of Scroll ON/OFF compressors and modulating BLDC (Brushless DC-inverter) compressors. **Thanks to timely control of the supplied refrigerating power, based on the achievement of maximum system delivery or energy efficiency, the running costs of the system are minimised**. The excellent configurability of the range in terms of refrigerating circuit, noise levels and available power ratings, together with the numerous accessories and options, make MHA chillers **highly versatile and suitable for a wide range of system applications**.

- Refrigerant R410A
- Available in version: Liquid chiller, Free-Cooling chiller and reversible heat pump
- Variable flow management up to 25% of the nominal flow rate
- Electronically controlled expansion valve supplied as standard
- Quick water connections
- Programmable microprocessor control with dedicated software
- Optional electronic flow switch



Glycol-Free kit

The Free-Cooling versions can be selected with the **"Glycol-Free" kit** (on board the unit) to confine the water-antifreeze mix inside the finned coils. This solution **maximises heat exchange efficiency** at the evaporator with the exclusive use of pure water; it also **dramatically reduces pumping costs.**



Dual management of the delivered power

The control software integrated on the MHA range allows management of the cooling capacity, delivered by the Scroll ON/OFF compressors combined with BLDC modulating compressors, according to a dual logic:

- **Maximum power:** the compressors are driven by the inverters at maximum frequency to quickly reach set-point conditions.
- **Maximum efficiency:** the software calculates the point of highest machine efficiency to minimise running costs. This function is particularly effective in the Free-Cooling versions.

Efficiency and reliability in line with system requirements

Users can select, according to unit size and specific plant engineering requirements, refrigerating circuits with different set-ups:
EFFICIENCY PACK 1: Dual compressor on dual circuit for high system redundancy.
EFFICIENCY PACK 2: Dual compressor (tandem) on single circuit for greater efficiency at partial loads.
EFFICIENCY PACK 3: Three compressors (trio) on single circuit for higher efficiency at partial loads.
EFFICIENCY PACK 4: Four compressors (dual tandem) on dual circuit, for a redundant system that is also efficient with low loads.

Attention to detail and to low noise requirements

Depending on how important noise containment is in the overall plant layout, a standard version or a **Low Noise version** can be chosen. Adopted technical solutions include fan speed control, the use of anti-vibration devices on the refrigerating circuit, compartmentalisation of compressors and pumping kits in a box internally lined with soundproofing material (**the new HI-BOX by HiRef**).

Maximum efficiency at partial loads

The high precision of the hot-wire flow switch (up to 1/10 of the nominal flow rate), combined with pump modulation via the control software, **allows an ideal combination of machine delivery and water flow rate in the primary circuit.** This **optimises the water flow** required at each operating point and **reduces the power absorbed by the hydraulic module,** preventing the risk of ice formation in the evaporator.

Advantages of modulation

DC-inverter compressors are frequency modulated: from an electrical viewpoint, **this significantly reduces inrush current.**

MHA		030	035	061	062	081	082	101	102	104	121	122	124	141	142	144	171	172	174	204	244	294
Utility water temperature 12/7°C, ethylene glycol 20%																						
Full Free-Cooling temperature	°C	1.6	-1.1	2.2	-	0.6	-	-0.3	-	-0.8	0.6	-	0.5	1.2	-	0.6	0.4	-	-0.4	-0.1	0.1	-1.2
Cooling: User water values 12/7°C, 35°C outside air, 40% U.R.																						
Cooling capacity	kW	30.2	40.3	57.8	57.7	75.7	76.4	98.2	98.9	102.4	124.9	127.3	126.6	146.1	147.4	155.7	156.3	156.7	170.4	200.9	252.8	278.6
Total absorbed power	kW	11.3	14.9	18.9	18.8	24.4	24.4	34.2	34.1	37.5	44	43.2	43.4	48.6	48.4	52.3	52.3	52.2	58.7	72.7	86.9	99.4
EER		2.68	2.7	3.07	3.07	3.1	3.13	2.87	2.9	2.73	2.84	2.95	2.91	3.01	3.04	2.98	2.99	3	2.9	2.76	2.91	2.8
SEER		4.5	4.57	4.39	5.17	4.43	5.23	4.18	4.88	4.48	4.28	5.19	4.71	4.27	5.03	4.5	4.19	4.95	4.44	4.55	4.68	4.62
SEPR		5.08	5	6.14	6.08	6.31	6.39	5.62	5.58	5.31	5.7	5.79	5.61	5.9	5.97	5.27	5.75	5.86	5.3	5.35	5.69	5.69
Weight	kg	418	424	600	600	789	789	789	789	789	1085	1085	1085	1390	1390	1390	1430	1430	1470	1620	1943	1985
Heating: User water values 40/45°C, 7°C outside air, 89% U.R.																						
Thermal power	kW	31.7	42.2	-	57.5	-	75.9	-	100.8	106.8	-	133.6	133.5	-	149.8	159	-	160.5	178.1	210.1	257	287.6
Total absorbed power	kW	11.7	15.7	-	19.9	-	26	-	35	38.1	-	45.1	45.7	-	51.8	55.5	-	55.6	61.4	74	89.4	100.4
COP		2.7	2.69	-	2.88	-	2.92	-	2.88	2.8	-	2.96	2.92	-	2.89	2.86	-	2.89	2.9	2.84	2.88	2.86
SCOP		3.28	3.32	-	3.2	-	3.21	-	3.34	3.32	-	3.36	3.22	-	3.22	3.21	-	3.2	3.2	3.36	3.27	3.31
Weight	kg	423	430	-	600	-	789	-	789	789	-	1085	1085	-	1390	1390	-	1430	1495	1655	1980	2025
Sound power	dB(A)	87	92	87	87	88	88	90	90	90	94	94	88	94	94	90	94	94	90	94	94	94
Sound power [Low noise]	dB(A)	85	90	83	83	86	84	86	86	86	90	90	84	90	90	86	90	90	86	90	90	90
Dimensions [LxHxD]	mm	1661 x1468 x914		2440 x1735 x1185		2972x1735x1185					3540x1735x1185			3540x1847x1653						3540 x2247 x1653	4206 x2247 x1653	

Also available with 60 Hz power supply | Free-Cooling version not available for this Efficiency Pack

HiRef S.p.A. · Viale Spagna 31/33 35020 Tribano (PD) – IT · Tel: +39 0499588511 · Fax: +39 0499588522
info@hiref.it · hiref@pec.it · CF/P.IVA: 02191431200 · REA: PD – 327685