

COOLING 49-1133 kW

HEATING 52-1156 kW

COOLING + HEATING 50-1495 kW

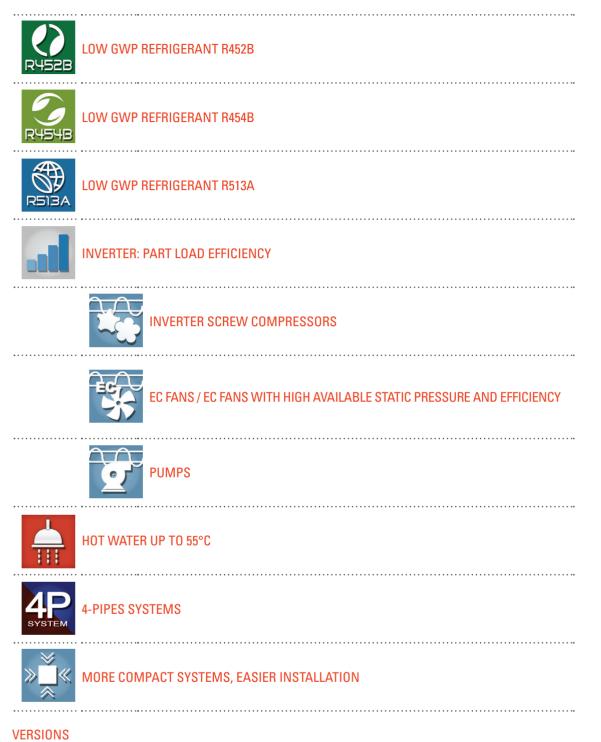


MULTIFUNCTIONAL UNITS FOR 4-PIPE SYSTEMS





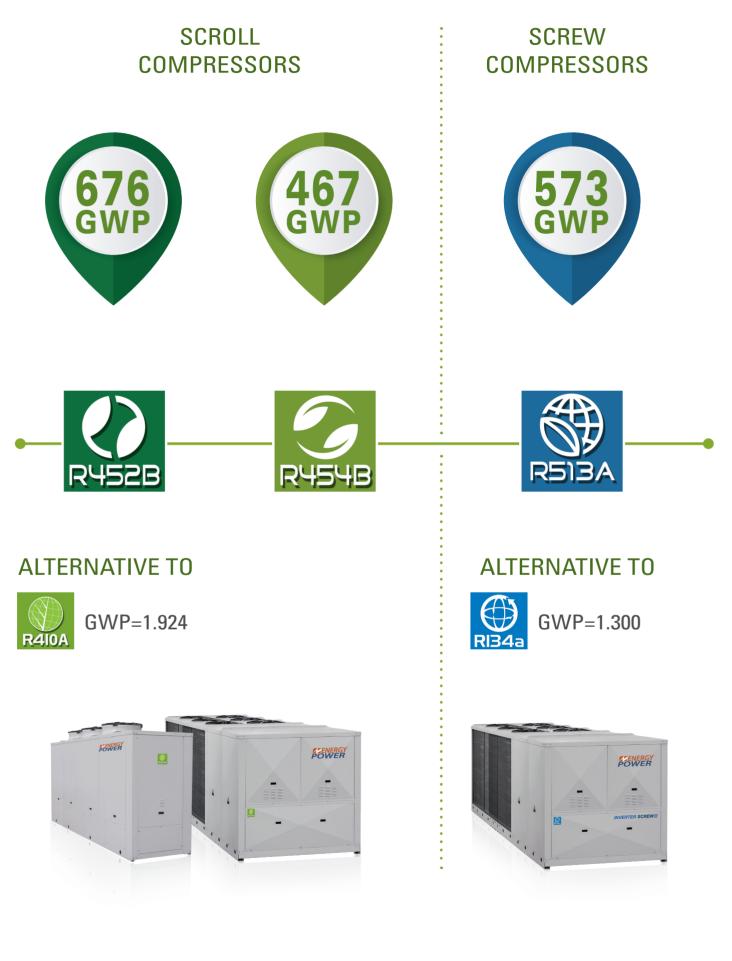
MULTIFUNCTIONAL UNITS FOR 4-PIPE SYSTEMS



- Cooling only
- Heating only
- Cooling + Heating

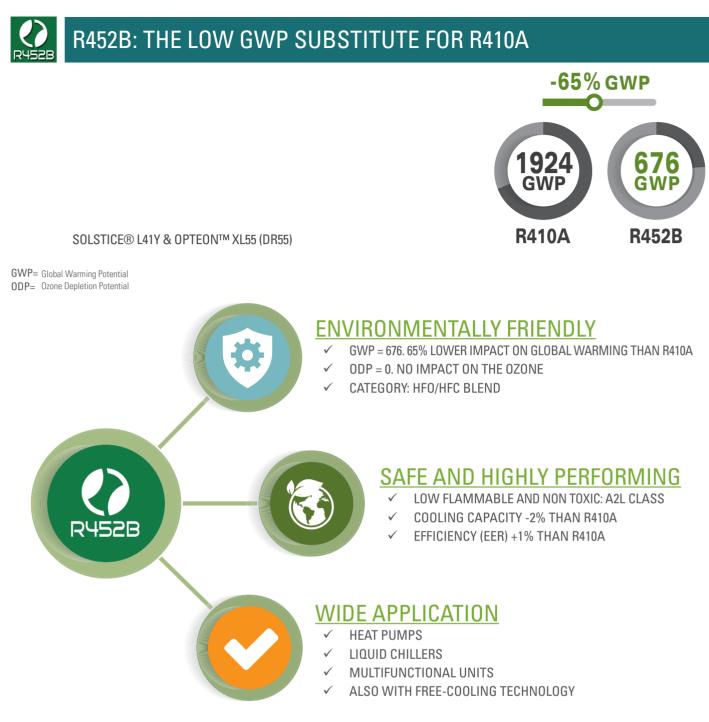


LOW GWP REFRIGERANTS OVERVIEW



GWP = Global Warming Potential **Fujitsu General Air Conditioning (UK) Ltd <u>www.fujitsu-general.com/uk</u> Specifications subject to change without notice, images are for illustration purposes only**

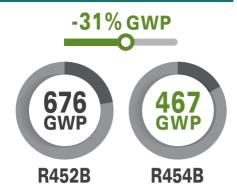




GWP = Global Warming Potential







OPTEON™ XL41 (DR5A)

GWP= Global Warming Potential ODP= Ozone Depletion Potential



ENVIRONMENTALLY FRIENDLY

- ✓ GWP = 467. 31% LOWER IMPACT ON GLOBAL WARMING THAN R452B
- \checkmark ODP = 0. NO IMPACT ON THE OZONE
- ✓ CATEGORY: HFO/HFC BLEND

SAFE AND HIGHLY PERFORMING

- ✓ LOW FLAMMABLE AND NON TOXIC: A2L CLASS
- ✓ COOLING CAPACITY -2% THAN R452B
- ✓ EFFICIENCY (EER) -1% THAN R452B

WIDE APPLICATION

- ✓ HEAT PUMPS
- ✓ LIQUID CHILLERS
- ✓ MULTIFUNCTIONAL UNITS
 - ALSO WITH FREE-COOLING TECHNOLOGY

GWP = Global Warming Potential

R454B





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R513A: THE LOW GWP SUBSTITUTE FOR R134a



OPTEON™ XP10

GWP= Global Warming Potential ODP= Ozone Depletion Potential



ENVIRONMENTALLY FRIENDLY

- ✓ GWP = 573. 56% LOWER IMPACT ON GLOBAL WARMING THAN R134a
- \checkmark ODP = 0. NO IMPACT ON THE OZONE
- ✓ CATEGORY: HFO/HFC BLEND

SAFE AND HIGHLY PERFORMING

- ✓ NON FLAMMABLE AND NON TOXIC: A1 CLASS
- ✓ COOLING CAPACITY -2% THAN R134a
- ✓ EFFICIENCY (EER) -1% THAN R134a

WIDE APPLICATION

- ✓ HEAT PUMPS
- ✓ LIQUID CHILLERS
- ✓ MULTIFUNCTIONAL UNITS
- ✓ EXCELLENT FOR INDUSTRIAL PROCESS APPLICATIONS WITH LOW WATER TEMPERATURE
- ✓ ALSO WITH FREE-COOLING TECHNOLOGY



R513A





COMPLIANCE WITH ErP DIRECTIVES

ECODESIGN

The EUROPEAN UNION Regulations designed to precisely determine the Minimum Energy Efficiency Standards for Electric related Products ErP.

Mandatory compliance for the following standards:

- Main components: fans, pumps, motors.
- Complete units: liquid Chillers / Heat Pumps.

DIFFERENT REGULATIONS AND STANDARDS:

Heat pump units. Regulation n. 813/2013. Units are compliant with ErP Regulation by exceeding the minimum standards of seasonal energy efficiency in heating, SCOP.



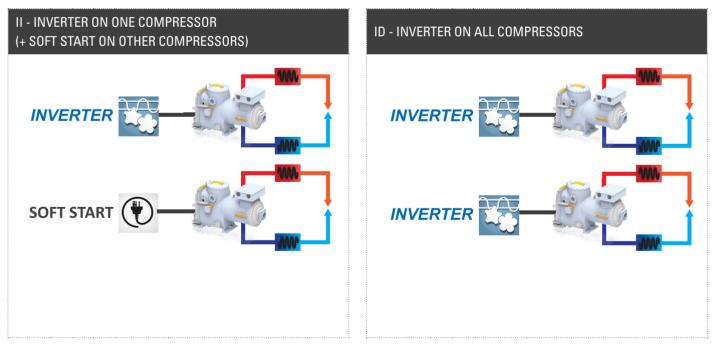
INVERTER CONTROL ON SCREW COMPRESSOR(S)

Designed for high temperature applications: high power and efficiency. **Features:**

- High efficiency Screw Rotor profile hyper volumetric efficiency.
- High efficiency motor.
 Consolity control with Stoplage res
- Capacity control with Stepless regulation.
- ECONOMIZER.
- Low friction components: high reliability and efficiency.
- High performance INTEGRAL OIL SEPARATOR.

The SCREW compressor can be managed by an **INVERTER VARIABLE FREQUENCY DRIVE** that electronically modulates the compressor SPEED according to the required cooling load.

Available as options:



- Delivered & absorbed power is PROPORTIONALLY modulated on the compressor with Inverter.
- No step regulation.
- Minimized absorbed power when working at part load.

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AIRSTAGE

INVERTER SCROLL COMPRESSOR

TOP SCOP: EFFICIENCY AT PART LOAD



TER: TOTAL EFFICIENCY RATIO

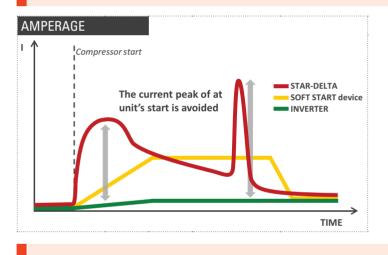
When hot water and chilled water are produced simultaneously, the real efficiency of the unit is the sum of hot and cold performances. TER reaches its maximum value in load balancing conditions.



EER, COP are overcome by

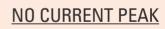
TER = Cooling capacity + Thermal capacity





NO CURRENT PEAK AT START-UP

- Avoid torque surges.
- Down-size the building's electrical system: save fixed costs charged by utilities.
- Reduce mains and power backup loads.



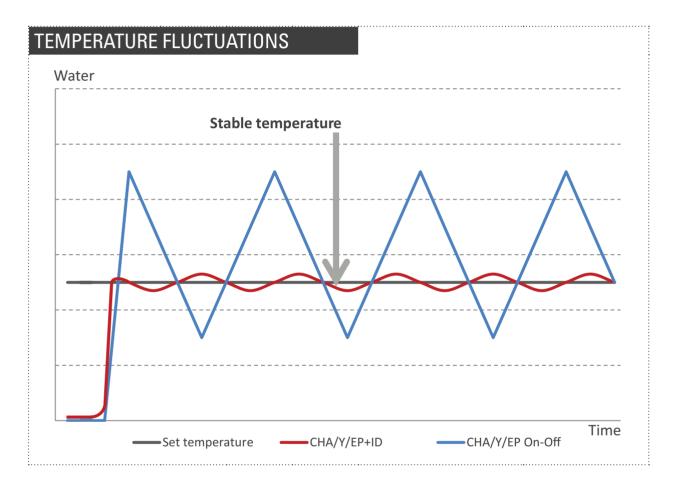


MORE COMFORT



CONSTANT LEVEL OF WATER TEMPERATURE: MORE COMFORT

- Water temperature remains stable.
- No temperature fluctuations.
- More comfort to the final user.







MULTIFUNCTIONAL OPERATION

SIMULTANEOUS PRODUCTION OF COOLING, HEATING AND DOMESTIC HOT WATER

On complex buildings where there is simultaneous need of cooling and heating, EnergyPower is capable to provide them at the same time with the maximum efficiency in every season of the year.

EnergyPower allows to combine the three contemporary functioning modes – cooling, heating and domestic hot water production – to reach several working configurations.

Working configurations:

	COOLING ONLY
	HEATING ONLY
	DOMESTIC HOT WATER PRODUCTION ONLY
	COOLING + HEATING
	COOLING + DOMESTIC HOT WATER PRODUCTION
	HEATING + DOMESTIC HOT WATER PRODUCTION
	COOLING + HEATING + DOMESTIC HOT WATER PRODUCTION





MULTIFUNCTIONAL OPERATION

MORE COMPACT SYSTEMS, EASIER INSTALLATION

Despite traditional systems, where cooling and heating are provided by two independents units (liquid Chiller and Heat Pump, or liquid Chiller and Boiler) and dedicated piping, EnergyPower centres both sources on one single unit.

The result is a noticeable gain on occupied space on service areas and simplification of system configuration, with reduced on-site operations for installation and maintenance.



FULL CONTROL WITH WEB MONITORING



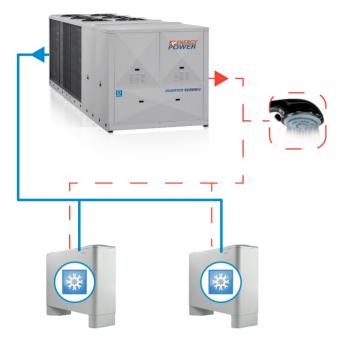
MULTIFUNCTIONAL OPERATION



HOT

COOLING ONLY

The solenoid valve diverts the condensing part into the finned coil that dissipates warm air to external ambient.





HEATING AND DOMESTIC HOT WATER PRODUCTION

The solenoid valve diverts the evaporation into the finned coil that dissipates cold air to external ambient.







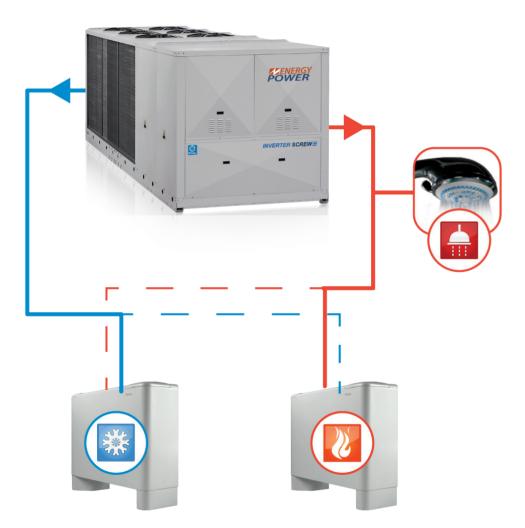
MULTIFUNCTIONAL OPERATION



COOLING, HEATING AND DOMESTIC HOT WATER PRODUCTION

Evaporation and condensation are diverted by the solenoid valve to the two shell and tube exchangers, excluding the external finned coil. The unit evaporates into the cold side of the exchanger and condenses into the hot side of the exchanger. This way the unit behaves like a watercooled liquid Chiller, allowing to recover the energy produced and using it for the air conditioning of

I his way the unit behaves like a watercooled liquid Chiller, allowing to recover the energy produced and using it for the air conditioning of the building, for the production of domestic hot water and for the ambient heating.





EC INVERTER FANS

EC INVERTER FANS

Fans are electronically controlled by EC MOTORS = Electronically Commutated Motors that modulate the airflow regulating the fans speed proportionally to the required cooling load and according to external air temperature.







EC INVERTER FANS WITH HIGH AVAILABLE STATIC PRESSURE

EC INVERTER FANS WITH HIGH AVAILABLE STATIC PRESSURE

EC Inverter fans with SPECIAL TALLER DIFFUSER for higher efficiency and improved available static pressure.



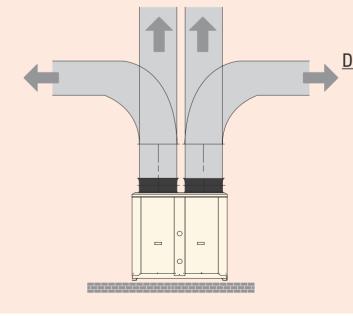




DUCTED INSTALLATION ON DISCHARGE LINE

HIGHER EFFICIENCY

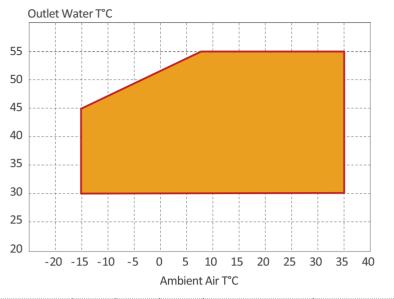
MAXIMUM SILENCE



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DOMESTIC HOT WATER UP TO 55°C





ON BOARD CONTROLLER WITH LCD DISPLAY

ON BOARD CONTROLLER WITH LCD DISPLAY

Communication Controller with included Display mounted on unit's door. Coommunication Controller-Display through proprietary device. Connections to peripheral equipment takesplace through a gateway via CANBUS connection.

- 3 levels of access: user service manufacturer
- 4 push buttons and digit icons visualization

WM - WEB MONITORING - WIRELESS REMOTE MONITORING

Web Monitoring is the system for remote monitoring via GPRS/EDGE/3G/TCP-IP protocol. The User/installer can, through a dedicated Web portal, monitor the functioning of the unit visualizing data as:

- Unit Status
- Variables
- Functioning Parameters
- Alarms
- Warning messages
- Statistics on functioning data

The User / Installer receives WARNING e-mails on Alarms and Variables over the range.

The unit is constantly monitored and the User / Installer is promptly informed about its operation without being physically onsite. Standard on all models.



TOUCH SCREEN (OPTION)



RANGE OVERVIEW

AIRCOOLED

R410A

	KOWW I	AGRAM	ASINO2X
	СНА/К/ЕР R4I0A 182-Р÷693-Р	CHA/K/EP 604-P÷2406-P	
Z SENERGY POWER	СНА/G/ЕР RЧ52B 182-Р÷693-Р	CHA/G/EP 604-P÷2406-P	
POWER	СНА/L/ЕР RЧ5Чв 182-Р÷693-Р	CHA/L/EP 604-P÷2406-P	
	 Ri34a		CHA/Y/EP 1352÷4402
			CHA/J/EP 1352÷4402
VERSIONS			
Cooling only	✓	\checkmark	\checkmark
Heating only	✓	✓	\checkmark
Heating + Domestic hot water production	✓	\checkmark	\checkmark
Cooling + Heating	✓	\checkmark	\checkmark
Cooling + Heating + Domestic hot water production	n 🗸	\checkmark	\checkmark
KEY FEATURES			
Models Cooling (kW)	11 48.6-190	12 167-643	10 278-1133
Heating (kW)	52.2-203	180-693	283-1156

On-off Scroll compressors On-off Scroll compressors **INVERTER Screw compressors**

		OII-OII SCIOII COMPLESSOIS		INVENTER Sciew compressors
Key features				
Hot water up to		55°C	55°C	55°C
Evaporator		Plate	Plate	Shell and tube
Condenser		Plate	Plate	Shell and tube
Air side heat exchanger		Cu/Al	Cu/Al	Cu/Al Microchannel
Cold side pump		\checkmark	\checkmark	\checkmark
Hot side pump		\checkmark	\checkmark	
	Standard	\checkmark	\checkmark	\checkmark
Noise levels	Silenced	\checkmark	\checkmark	\checkmark
	Super silenced	\checkmark	\checkmark	\checkmark

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TECHNICAL DATA

CHA/K/EP 182-P÷693-P



Multifunctional units for 4-Pipe systems with Scroll compressors and plate exchangers

R452B: CHA/G/EP 182-P÷693-P

R452B: CHA/L/EP 182-P÷693-P

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			182-P	202-P	242-P	262-P	302-P	363-P	393-P	453-P	502-P	603-P	693-P
	Cooling capacity	kW	48,6	55,9	63,2	72,2	81,8	92,7	105	118	134	159	190
Cooling only (1)	Absorbed power	kW	16,8	19,3	21,9	24,4	27,9	32,5	38,0	42,3	46,5	57,4	68,5
	EER		2,89	2,90	2,89	2,96	2,93	2,85	2,76	2,79	2,88	2,77	2,77
	Heating capacity	kW	52,2	59,7	67,0	75,5	86,0	98,4	111	127	142	171	203
Heating only (2)	Absorbed power	kW	16,0	18,7	21,2	23,4	26,5	30,0	35,1	39,5	42,8	52,5	61,2
	СОР		3,26	3,19	3,16	3,23	3,25	3,28	3,16	3,22	3,32	3,26	3,32
	Cooling capacity	kW	49,6	56,5	62,9	71,8	83,3	94,0	110	126	140	168	203
Cooling + Heating (3)	Heating capacity	kW	64,9	73,9	82,5	94,1	109	123	143	163	181	217	261
0 000	Absorbed power	kW	15,3	17,4	19,6	22,3	25,2	29,4	32,6	37,2	40,7	49,0	58,4
	TER		7,48	7,49	7,42	7,44	7,63	7,38	7,76	7,77	7,89	7,86	7,95
Length	-	mm	2350	2350	2350	2350	2350	2350	2350	2350	3550	3550	3550
Width		mm	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100
Height		mm	1920	1920	1920	2220	2220	2220	2220	2220	2220	2220	2220

CHA/K/EP 604-P÷2406-P





R452B: CHA/G/EP 604-P÷2406-P

R452B: CHA/L/EP 604-P÷2406-P

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			604-P	724-P	804-P	904-P	1004-P	1104-P	1206-P	1506-P	1806-P	2006-P	2206-P	2406-P
	Cooling capacity	kW	167	190	216	241	264	301	339	395	459	522	583	643
Cooling only (1)	Absorbed power	kW	57	69	75	85	93	104	114	140	169	193	210	225
	EER		2,93	2,75	2,88	2,84	2,84	2,89	2,97	2,82	2,72	2,70	2,78	2,86
	Heating capacity	kW	180	204	231	257	281	318	361	427	515	570	632	693
Heating only (2)	Absorbed power	kW	55	64	72	79	86	97	109	128	159	168	195	208
	COP		3,25	3,20	3,22	3,25	3,28	3,28	3,31	3,34	3,24	3,39	3,24	3,33
	Cooling capacity	kW	170	195	214	243	270	303	334	405	465	543	594	652
Cooling + Heating (3)	Heating capacity	kW	220	255	281	318	351	396	436	527	613	712	777	849
3 3	Absorbed power	kW	50	60	67	75	81	93	102	122	148	169	183	197
	TER		7,80	7,50	7,39	7,48	7,67	7,52	7,55	7,64	7,28	7,43	7,49	7,62
Length		mm	3350	3350	3350	3350	3350	5000	5000	5000	6200	6200	7200	7200
Width		mm	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
Height	-	mm	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100

TECHNICAL DATA

CHA/Y/EP 1352:4402



Multifunctional units for 4-Pipe systems with Inverter Screw compressors and shell and tube exchangers

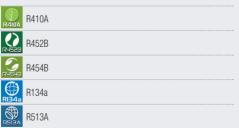
R513A: CHA/J/EP 1352÷4402

			1352	1402	1602	1802	1952	2302	2702	3302	3902	4402
	Cooling capacity	kW	278	312	366	423	484	564	676	822	978	1133
Cooling only (1)	Absorbed power	kW	89	100	116	133	153	177	210	258	315	365
	EER		3,12	3,12	3,16	3,18	3,16	3,19	3,22	3,19	3,10	3,10
	Heating capacity	kW	283	320	375	431	490	572	672	838	990	1156
Heating only (2)	Absorbed power	kW	86	91	107	122	139	159	190	231	271	313
	СОР		3,29	3,52	3,50	3,53	3,53	3,60	3,54	3,63	3,65	3,69
	Cooling capacity	kW	276	318	370	429	492	575	686	834	996	1181
Cooling + Heating (3)	Heating capacity	kW	359	404	469	544	621	726	865	1054	1261	1495
0 000	Absorbed power	kW	83	87	99	115	130	152	179	220	265	314
	TER		7,65	8,30	8,47	8,46	8,56	8,56	8,66	8,58	8,52	8,52
Length		mm	5550	5550	6700	7750	8900	8900	10050	11100	11100	11100
Width		mm	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
Height	-	mm	2100	2100	2100	2100	2100	2500	2500	2500	2500	2500

LEGEND

COMPRESSOR	EXCHANGER	SOLUTION
Scroll compressor	Plate exchanger	4-Pipe system
Inverter Screw compressor	Shell and tube exchanger	Domestic Hot Water

REFRIGERANT



NOTES

 $1. Chilled water from 12 to 7 °C, ambient air temperature 35 °C. \\ 2. Heated water from 40 to 45 °C, ambient air temperature 7 °C d.b./6 °C w.b. \\ 3. Chilled water from 12 to 7 °C, heated water from 40 to 45 °C. \\$



CASE STUDIES

FUITSU | AIR CONDITIONING

EXPEDITORS, Amsterdam, Netherlands

BAWELSE PARK Multifunctional Centre, Breda, Netherlands CEA CADARACHE Office Building, Cadarache, France BRYN EIENDOM - ØSTENSJØVEIEN 34 Business Centre,

Oslo, Norway

VOLKSWAGEN Plant, Bratislava, Slovakia

OPERA Business Centre, Bucarest, Romania SEALYNX Car Components Factory, Darmanesti, Romania BAT YVA Plant, Moscow, Russia

FEDERATION TOWERS Business Centre, Moscow, Russia

VEREYSKAYA PLAZA III Business Centre, Moscow, Russia TUPRAS - TURKISH PETROLEUM REFINERIES, Kırıkkale, Turkey KOLUMAN OTOMOTIV - MERCEDES BENZ, Tarsus, Turkey UZBAT British American Tobacco, Tashkent, Uzbekistan QPD – QATAR PETROLEUM DEVELOPMENT Offshore Platform, Qatar

ROWAD National Plastic Factory, Hail Industrial City,

Saudi Arabia

NITROKIM Chemical, Tunis, Tunisia SARL AMOUDA ENGINEERING Cement Factory, El Beida, Algeria BARROW OXFORD & GLENHOVE Business Centre, Johannesburg, South Africa AGGREKO Offshore Platform, Singapore GREEN SMART SHIRTS Garment Company, Gazipur - Dhaka, Bangladesh WANG CHEONG Building, Sheung Shui, Hong Kong LSG SKY CHEF - Lufthansa Catering Services, Chep Lap Kok, Hong Kong LINDT CHOCOLATE Plant, Sidney, Australia

>> INSTITUTIONS AND PUBLIC BUILDINGS.

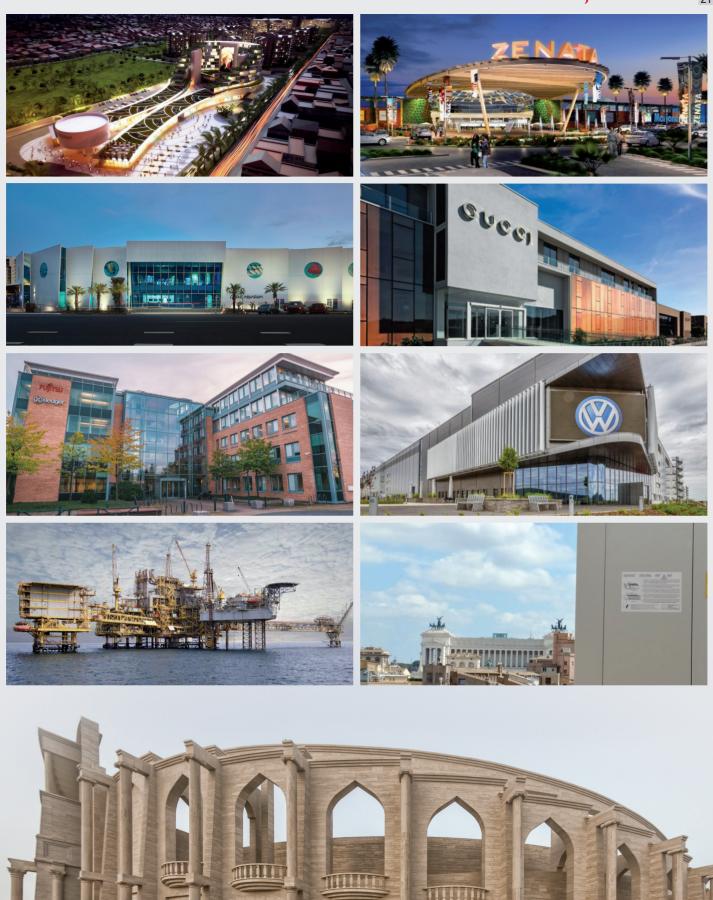
FLORENCE CHAMBER OF COMMERCE, Florence, Italy NATO Military Base, Capodichino, Italy WEDEKIND PALACE - INPS Headquarters, Rome, Italy MINISTRY OF TREASURY, Rome, Italy PALACE OF JUSTICE, Pristina, Kosovo UZBEKISTAN OLYMPIC COMMITTEE, Tashkent, Uzbekistan MINISTRY OF FINANCE, Baku, Azerbaijian

Western Asia, Beirut, Lebanon NORTH KWAI CUSTOMHOUSE, Sheung Wan, Hong Kong HO MAN TIN Government Offices, Sheung Shui, Hong Kong

ESCWA - United Nations Economic and Social Commission for

NORTH POINT Government Offices, Kowloon, Hong Kong NETHERLANDS EMBASSY, Camberra, Australia MAROOCHYDORE POLICE STATION, Maroochydore, Australia

FEDERATION TOWERS, Moscow, Russia



CULTURAL VILLAGE, Doha, Qatar

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MOSE Venice, Italy

venice, italy

MOSE is one of the greatest engineering projects in the World. It is a system of mobile barriers for the defence of Venice and its lagoon from high tides.

The works have been managed by the Italian Ministry of Infrastructure and Transport – Consorzio Venezia Nuova.

MOSE is an integrated system consisting of 4 rows made of 78 mobile gates installed at lagoon inlets that are able to isolate the Venetian Lagoon temporarily from the Adriatic Sea during high tides. The mobile barriers are connected to concrete housing structures with hinges that constrain the gates to the housing structures and allow them to move. They are located below sea level, lying on the seabed.

The installation is completed with a net of submarine tunnels, service rooms and technological systems for the management of barriers opening and of the whole project overall, that need to be kept at controlled levels of temperature and humidity for their right functioning and protection from salt corrosion.

G.I. INDUSTRIAL HOLDING SpA is providing the units for air conditioning and dehumidification of underwater galleries and technological systems, in partnership with the multinational Company SIRAM SpA – VEOLIA Group, responsible for design and execution of the whole HVAC system.

The units provided under CLINT and NOVAIR brands are:

- 89 Heat Pumps and 60 Fan Coil units: 11.000 kW total cooling power
- 128 Air Handling Units: 870.000 m³/h total air flow.

All units feature special technical solutions and dedicated materials, specifically developed for long resistance in salty environment.







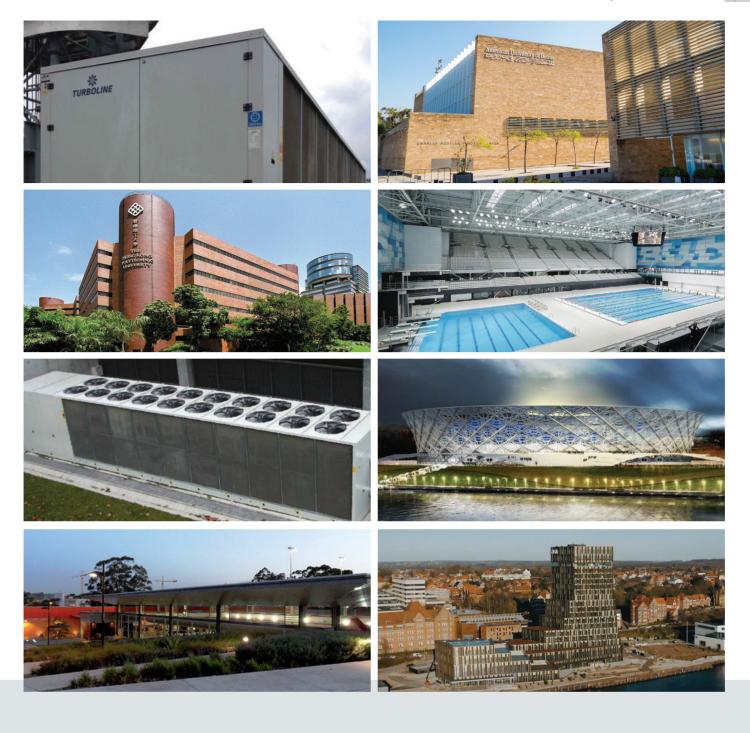
>> SCHOOLS AND UNIVERSITIES.

UNIVERSITA' DEGLI STUDI DI MILANO, Milan, Italy JAUME I University, Valencia-Castellón, Spain PARIS X University, Nanterre, France MILLGATE School, Leicester, United Kingdom KOC College, Istanbul, Turkey AUB - AMERICAN UNIVERSITY BEIRUT, Beirut, Lebanon WITS University - NEW SCIENCE Centre, Johannesburg, South Africa UKZN University, Durban, South Africa

BRITISH COLUMBIA University, Vancouver, Canada NANYANG POLYTECHNIC, Nanyang, Singapore THE HONG KONG POLYTECHNIC University, Kowloon, Hong Kong SUNSHINE COAST INSTITUTE OF TAFE, Maroochydore, Australia

>> SPORT & WELLNESS BUILDINGS. FRANCHI Stadium, Florence, Italy PURE GYM, Bristol, United Kingdom CATEZ Thermal Centre, Brežice, Slovenja DAGÁLY Swimming Centre - 2017 FINA SWIMMING WORLD CHAMPIONSHIP, Budapest, Hungary BIALYSTOK Stadium, Bialystok, Poland FIFA WORLD CUP 2018 FOOTBALL Stadium, Ekaterinburg & Volgograd, Russia VIVA GYM FOURWAYS, Johannesburg, South Africa HONG KONG COLISEUM Leisure & Cultural Services, Kowloon, Hong Kong TONSLEY PARK, Adelaide, Australia

19 SIDNEY UNIVERSITY SPORTS & AQUATIC CENTRE, Sidney, Australia



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MOSE, Venice, Italy

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AIR CONDITIONING

Fujitsu General Air Conditioning (UK) Ltd Unit 150, Centennial Park Elstree Hertfordshire WD6 3SG

Tel - 02087313450 Fax - 02087313479 Applied Technical - appliedproducts@fgac.fujitsu-general.com Applied Sales - sales.applied@fgac.fujitsu-general.com

G.I. INDUSTRIAL

Via Max Piccini, 11/13 • 33061 RIVIGNANO TEOR • ITALY Tel. +39 0432 823011 • Fax +39 0432 773855 www.clint.it • e-mail: info@clint.it

A Company of:



Production Plants:

G.I. INDUSTRIAL HOLDING SpA Via Max Piccini, 11/13 33061 RIVIGNANO TEOR • ITALY

G.I. INDUSTRIAL HOLDING SpA Via G. Ambrosio, 4 33053 LATISANA • ITALY

G.I. INDUSTRIAL HOLDING SpA Via J. Keplero, 27 35028 PIOVE DI SACCO • ITALY

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