focs focs-co

Air cooled liquid chillers
Range: from 144 kW to 1744 kW

- High efficiency semi-hermetic screw compressors
- R134a refrigerant
- 65 size for 3 version

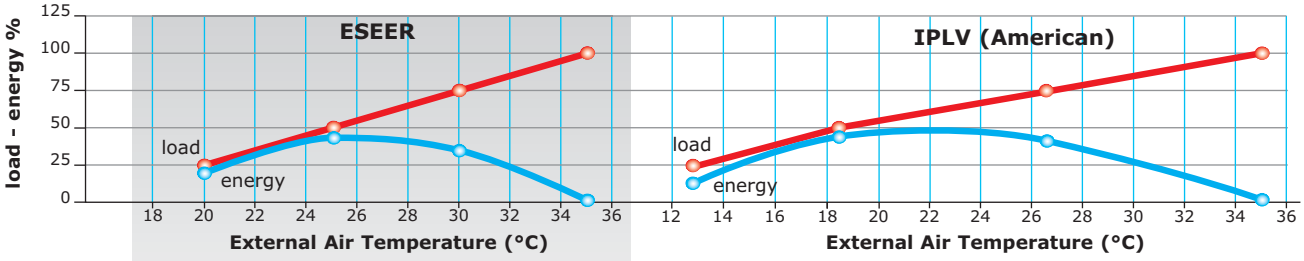
CLIMAVENETA

RECORD PERFORMANCE FOR RECORD SAVINGS (1)

Accurately designed to optimise performance whilst maintaining elevated EER values, these units belong to energy efficiency **"Class A"**, as specified by EECCAC (2) .
"Class A" means that EER values are guaranteed higher than 3.1.
It means making a safe investment for system management. It therefore means having the lowest Total Cost of Ownership (3) currently available on the market.

ELEVATED IPLV (INTEGRATED PART LOAD VALUE)

The power consumption of air-conditioners is becoming an increasingly more important issue at European level. An installed chiller produces delivers its rated power output for extremely short periods of time and most of the power output is produced with part loads ranging from 50% to 75%.
The IPLV parameter allows an assessment of the efficiency of the unit bearing in mind part load operation. Chillers are also required to deliver 100% of their available cooling power at rated conditions only for 1.4% of their total operating time according to European calculations, and as little as 0.5% according to American calculations.
The power produced by a unit in these conditions amounts to 3% and as little as 1% respectively of the total power produced during its lifetime.



	ESEER			IPLV (American)		
Load	Air Temp.	Time	Energy	Air Temp.	Time	Energy
100 %	35 °C	1,4 %	3 %	35 °C	0,5 %	1 %
75 %	30 °C	19,9 %	33 %	26,7 °C	28,7 %	42 %
50 %	25 °C	37,1 %	41 %	18,3 °C	46,2 %	45 %
25 %	20 °C	41,6 %	23 %	12,8 °C	24,6 %	12 %

% Energy = percentage of total power produced in the various load conditions

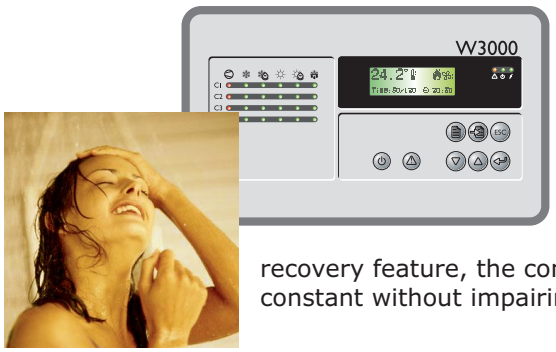
EXCELLENT EURO/kW RATIO

The Euro/kW ratio is comparable with a R407C unit but features the efficiency of a R134a unit. Only by using sophisticated construction technologies it is possible to combine high performance with low costs. The high efficiency of R134a refrigerant, the use of purpose-designed compressors and a sophisticated control unit have contributed towards the development of compact and reliable units at extremely competitive costs even compared with the lowest performing units running on R407C.

RECORD FIGURES FOR RECORD GUARANTEES

AMBIENT AIR AT 46 °C

Value guaranteed with the basic version.
The use of R134a refrigerant allows the unit to work at high temperatures without straining the compressor, thereby increasing reliability. The elevated air flow does not increase noise output thanks to large exchange area of the coils.



HOT WATER AT 55 °C

All units can be supplied with a total or partial recovery feature on request. These solutions allow hot water to be delivered to users at high temperatures. In the units fitted with the total recovery feature, the control unit keeps the hot water outlet temperature constant without impairing performance.

65 SIZE FOR 3 VERSIONS FROM 144 kW TO 1744 kW

The wide range of sizes offers a precise solution to all system requirements.

(1) Information referred to the FOCS-CA line.
(2) Energy Efficiency and Certification of Central Air Conditioners.
(3) Sum of purchase, running and maintenance costs for the entire rated lifetime of the product.

COMPRESSORS

An improved generation of screw compressors featuring an extremely compact structure and optimised for R134a has allowed the volumetric displacement to be substantially increased without modifying the shape of the compressor.
Elevated cooling capacities can thus be achieved with improved volumetric efficiency.

- **Screw profile: dual rotor design**

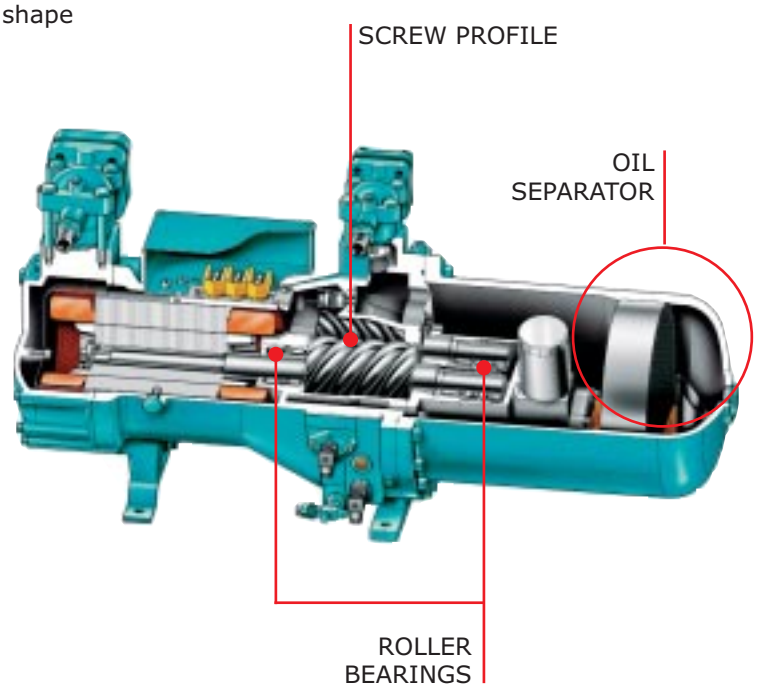
Compared with a traditional screw compressor, the profile has been modified so that the increased volumetric flow rate requires just a 10% increase in size, a fundamental aspect of rotors. It was therefore possible to modify the body without affecting the external shape of the compressor.

- **Roller bearings**

Thanks to the favourable torque load and the reduced pressure difference, the bearings work in easier conditions and therefore last longer.

- **Oil separator**

The compressors contain an integrated three-stage oil separator which can guarantee extremely high separation levels, in spite of the increase in volumetric flow.
This is achieved thanks to the fact that the limited density of the vapour and the outlet temperature of the R134a allow outstanding oil separation.

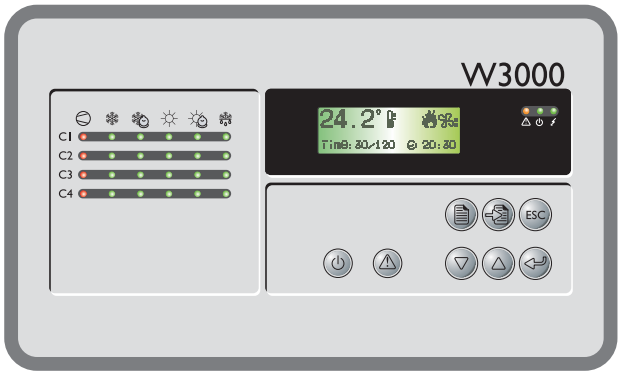


NEW CONTROL UNIT

The main characteristics of the new control unit concern the user interface, unit management, compatibility and Service functions.

User interface

Positioned in an easily accessible area on the outside of the unit and protected by a transparent cover.
It integrates a graphics display with a multilanguage menu for reading and setting parameters, a synoptic panel which, by now a traditional feature of Climaveneta, offers an immediate view of compressor status.



Unit management
Special control algorithms optimise energy saving and guarantee maximum system reliability: compressor starting/stopping management with hourly rotation + FIFO, thermoregulator management of available resources, variation and control of operating parameters, monitoring of critical temperatures and phase sequences. The software, especially developed by Climaveneta, offers modulating control of unit capacity from 100% to a minimum which, depending on its size, can be as little as 12.5%.
An additional device which allows Focs/Focs-ca units to be connected together is also available.

Compatibility
Compatible with the supervision systems of Climaveneta, De'Longhi and many other BMS systems present on the market: METASYS®, MODBUS®, LONWORKS®, SIEMENS®, TREND®.

FWS supervision
The controller is also compatible with the innovative Climaveneta FWS (Field Web Server) supervision system.

Service
The new **"black box"** logs data relative to 200 variables, acquired every 30 seconds during the 10 minutes preceding an event, for 400 separate events.
The software is compatible with the Climaveneta Service programme: through a remote Internet link it is possible to monitor the unit, implement preventive and corrective action and consequently offer a more effective and higher quality of service.

HEAT RECOVERY
While producing cooling power, it is also possible to produce hot water at temperatures up to 55°C. If requested when ordering, two heat recovery systems are available: partial, which can recover approximately 20% of the available cooling power, and total, which can produce a heating power equal to the cooling power. In the total recovery model, the control unit maintains the temperature of the exchanger outlet water within the set point value.
The tube bundle exchangers with shell in steel and tube bundle in copper are lined with a layer of closed-cell insulating material.

SILENCED VERSIONS
Two levels of noise reduction are available for all sizes: silent-running and very silent-running. The low noise levels are achieved by reducing fan speed and optimising the circuitry and generously sizing the coils to ensure correct operation. A dedicated control device allows the unit to work at ambient air temperatures of up to 46°C. The compressors and cooling circuit components are housed in a large closed and soundproofed chamber.

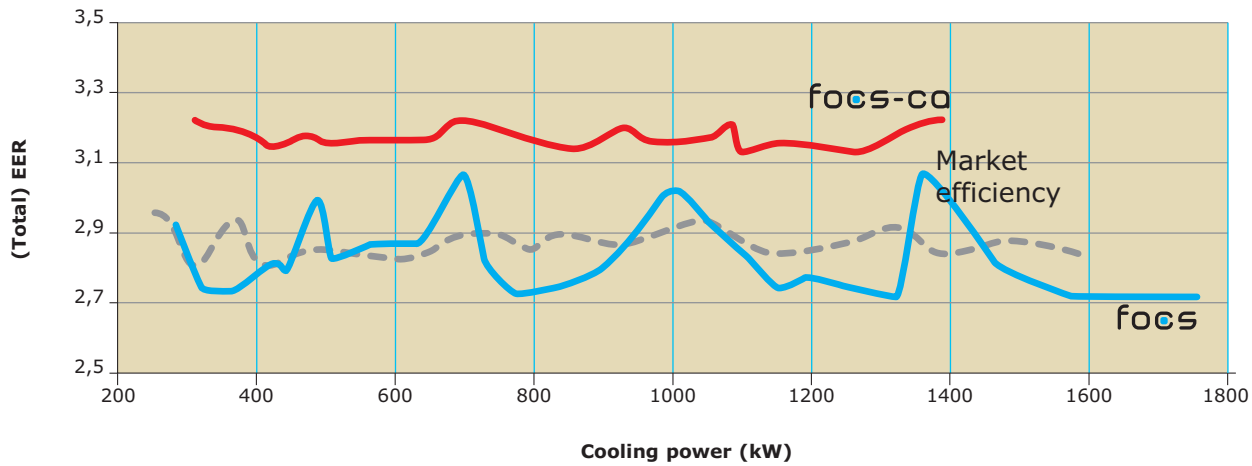
ON-BOARD PUMPS (FOCS 1532*-2632*)
The units can be fitted with a pumping unit attachment which can be sized on request. It is powered directly by the unit and monitored by the control unit. Special functions are available to manage pump commands, report faults and optimise operating times.

FOCS

MODELS			0751	0851	0951	0961	1021	1301	1532* 1542	1732* 1742	1932* 1942	1952* 1962	2432* 2442	2632* 2642	1502	1702	1902	1922
Cooling capacity	(1)	kW	144	162	182	201	234	266	277	329	366	398	466	516	294	328	364	414
Total power input	(1)	kW	52	61	69	75	85	93	104	121	139	154	179	193	101	120	134	147
Total EER	(1)		2,91	2,73	2,72	2,82	2,8	3	2,91	2,73	2,72	2,82	2,8	3	2,91	2,73	2,72	2,82
Sound power level	(2)	dB(A)	94	94	94	94	96	96	97	97	97	97	99	99	98	98	99	99
Sound pressure lev.	(3)	dB(A)	76	76	76	76	77	77	78	78	78	78	79	79	82	82	83	83
Dimensions A	(4)	mm	3110	3110	3110	3110	4610	4610	4610	4610	4610	4610	5610	5610	4000	4000	4000	4900
B	(4)	mm	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222	2260	2260	2260	2260
H		mm	2150	2150	2150	2150	2150	2150	2150	2420	2420	2420	2430	2430	2430	2430	2430	2430
Operating weight		kg	1680	1710	1780	1860	2590	2720	2970* 3490	3160* 3680	3300* 3810	3320* 4100	4400* 5140	4620* 5340	3730	3760	3850	4740

FOCS-CA

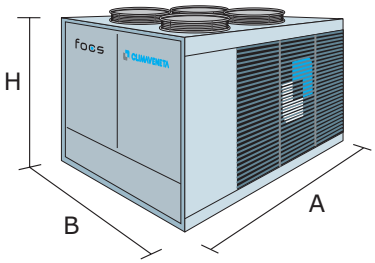
MODELS				1502	1702	1902	1922	1972	2022	2602	2652
Cooling capacity	(1)	kW		310	358	406	441	468	493	558	593
Total power input	(1)	kW		95	111	129	139	147	156	176	187
Total EER	(1)			3,26	3,23	3,15	3,17	3,18	3,16	3,17	3,17
Sound power level	(2)	dB(A)		97	97	98	98	98	98	98	99
Sound pressure level	(3)	dB(A)		81	81	82	82	82	82	82	83
Dimensions	A	(4)	mm	4900	4900	4900	4900	4900	4900	5800	5800
	B	(4)	mm	2260	2260	2260	2260	2260	2260	2260	2260
	H		mm	2430	2430	2430	2430	2430	2430	2430	2430
Operating weight			kg	4550	4640	4980	5050	5590	6010	6310	6400



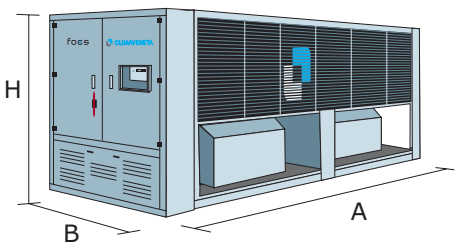
HFC R-134a

1972	2022	2602	2652	2702	2712	2722	3152	3602	3902	4202	4212	4222	4822	5403	5423	5703	6903	7203	7223	8404
439	480	529	562	598	625	681	730	785	831	900	968	1033	1157	1198	1317	1237	1433	1486	1609	1744
157	160	185	195	208	217	222	260	289	302	321	352	382	384	431	486	450	520	536	593	643
2,8	3	2,86	2,88	2,88	2,88	3,07	2,81	3,03	3,03	2,8	2,92	2,86	2,76	2,78	2,74	2,71	3,07	2,81	2,71	2,71
99	99	99	99	99	101	101	101	101	102	102	103	103	104	105	105	105	105	105	105	105
83	83	83	83	83	84	84	84	84	85	85	85	85	86	86	86	86	86	86	86	86
4900	4900	4900	4900	4900	5800	5800	5800	5800	7000	7000	9400	9400	9400	10300	10300	10300	11200	11200	11200	11200
2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260
2430	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430
5300	5810	5810	5910	6030	6190	6520	7190	7810	8220	8750	9680	9950	10360	12080	12260	12190	12680	12820	12950	16740

2702	2712	2722	3152	3602	3902	4202	4212	4802	4822	5403	5414	5424
641	666	691	780	849	924	963	1035	1089	1187	1261	1332	1381
202	208	214	245	272	289	303	324	340	365	405	416	429
3,17	3,2	3,23	3,18	3,12	3,2	3,19	3,22	3,18	3,11	3,13	3,11	3,2
99	99	99	100	100	102	102	102	102	103	103	103	103
83	83	83	83	83	84	84	84	84	85	85	85	85
5800	5800	5800	7000	7000	9400	8500	11200	11200	11200	11200	11200	11200
2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260
2430	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430
6600	6650	6690	8050	8790	9940	10170	10850	10690	11120	12470	13410	13480



FOCS



FOCS-CA

Data referred to:
1) Evaporator water (in/out) 12/7 °C
Condenser air (in) 35 °C
2) Acoustic power measured according to ISO 3744 and Eurovent 8/1.
3) Acoustic pressure measured in free field conditions on a reflecting plane. Average value on the condensing coil side, 1 metre from the outer surface and 1 metre above the base of the unit.
4) Free space required around the unit:
Electrical panel side 1500 mm
Opposite side from electrical panel 1500 mm
Condensation coil side 2000 mm

* Units with pumps on board.

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