

# ZEUS

## Turbocor Chiller

The New  
Frontier  
of **Chilling**



# Range

Three different versions



## Water Cooled



## Air Cooled



## Free Cooling

R134a R513A **44 models 270÷4200 kW**

HFO  
1234ze **18 models 230÷2340 kW**

- Models suitable to high condensing temperature
- Wide customization

EER up to 6.00 | ESEER up to 9.69 | IPLV up to 10.51

R134a R513A **13 models 250÷1400 kW**

HFO  
1234ze **14 models 190÷1280 kW**

- Full capacity for air temperature up to 45°C
- Modular V shape condenser with microchannels coils & EC fans
- Low Noise & Extra Low Noise versions available

EER up to 3.72 | ESEER up to 5.30 | IPLV up to 6.08

R134a R513A **250÷1400 kW**

HFO  
1234ze **190÷1280 kW**

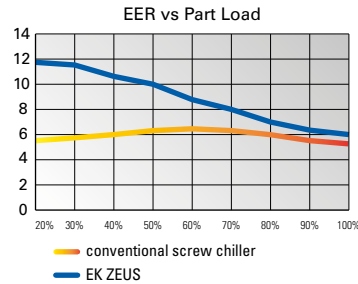
- Free cooling version of air cooled chillers
- Widest exploitation of free cooling for the greatest savings

# Benefits

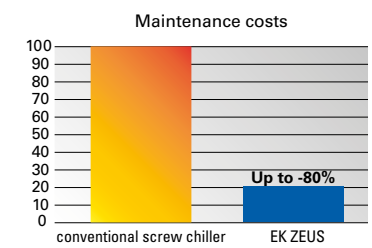
The Revolutionary  
Technological Choice



**Lowest Operating Costs**  
Great Energy savings for both water and air cooled versions



- Low Maintenance & Installation Costs**
- Low refrigerant content
  - NO inrush current (<2A)
  - NO oil changes
  - NO oil reservoirs
  - NO issues due to oil return
  - NO reduction of heat transfer
  - NO friction on bearings
  - Easiest accessibility
  - Auto-diagnosis features



**Low Noise**  
Extremely silent:  
Lw < 88 dB (A) @ 270 kW  
Lw < 97 dB (A) @ 420kW



- High Reliability**
- Top quality components
  - Full serviceability
  - Compressors redundancy
  - Remote control

## Benefit for the main applications



### Process Cooling

- Greatest levels of ROI, thanks to intensive use
- Redundancy to ensure equipment operability
- Low maintenance costs
- Fast restart capability
- Lower costs for cables and generators
- Unbeatable performances at partial loads and/or higher design chilled water temperature



### Comfort Cooling

- Best energy performances for strongly variable cooling demand
- Short pay-back periods
- Highest level of comfort
- Low noise impact

# Main features

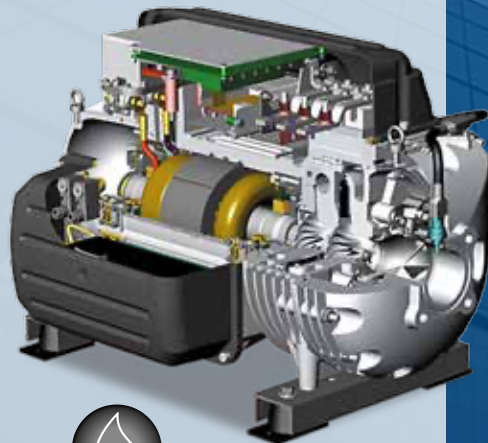
Only cutting-edge technology

## TURBO



**Oil free, double stage centrifugal compressors are the heart of the chiller**

- High-efficient
- Extremely silent
- Lightweight
- No-inrush current ( $< 2 \text{ A}$ )



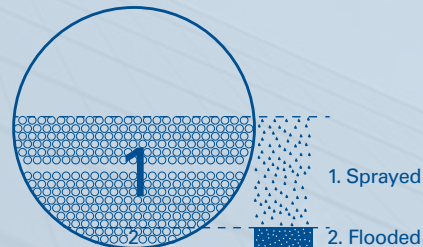
**OIL FREE**

## FL SPRAY



**Flooded evaporator with patented "spray system" offers great performances at all loads and some unique features:**

- High heat transfer (approach  $< 1.0 \text{ K}$ )
- Reduced refrigerant content (-70%)
- Low water pressure drops
- Water flow modulation allowed



## S & T



**Water cooled uses S&T condensers are made of high efficiency tubes**

- High heat transfer (approach  $< 1.2 \text{ K}$ )
- 2-Passes or 4-passes
- Low water pressure drops
- Water boxes as option
- Marine version as option



# Main features

Only cutting-edge technology

## MCX



**Air cooled & free cooling chillers are equipped with microchannels coils**

- Extremely low refrigerant content
- Higher heat transfer & lower air pressure drops
- High resistance against corrosion
- Lightweight & fully recyclable



## EC FAN



**To exalt air performances of air cooled & free cooling chillers, ZEUS Turbocor chillers uses axial EC fans with outlet diffuser as standard:**

- Higher air volume
- Top efficiency
- Extremely silent



## ECO



**In many models, high-efficiency BPHEs are combined to each compressor:**

- Low refrigerant pressure drops
- Up to +12% in chiller capacity
- Up to +8% in chiller efficiency



## ExV



**For a perfect control of the refrigerant flow, ZEUS Turbocor chillers adopt:**

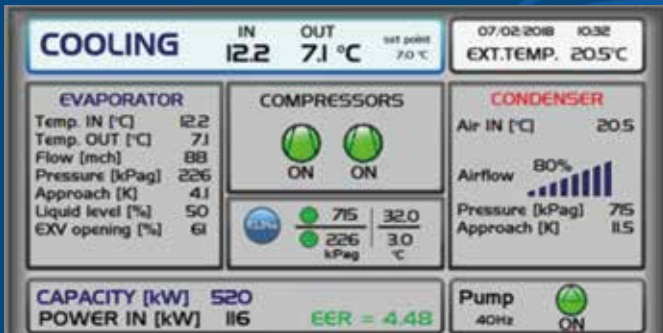
- Single or twin electronic expansion valve
- PID controller
- Perfect liquid level control in all conditions



# Advanced Control

Maximum focus  
on efficiency

Proprietary software  
& HW layout



Main Features

ZEUS Turbocor chillers are equipped with an advanced proprietary software.

Hardware architecture reflects the need of advanced performances:

- Main PLC for chiller control
- Additional PLC for compressors management
- Individual Drivers for EXVs
- Touch screen display 7"

All devices are fed by UPS, allowing the fastest restart of the machine after a power outage.

- Easy integration of additional devices:
  - centrifugal VSD pumps
  - condensing control valves
  - cooling towers / dry coolers / hybrid coolers
- Automatic strategies to start and manage the machine at severe operating conditions
- Advanced functionality of self-diagnosis: each component is constantly monitored with respect to its optimal behavior
- High connectivity features for BMS integration & remote control
- These features facilitate the commissioning of the chiller and grant the best conduction of the machine both in terms of reliability either performances.

# Main applications

Solutions  
for every need

Shopping centres



Hospitals and clinics



Laboratories



Offices and business centres



Cinemas and theatres



Factories



Hotels



Data Center



School & University



# ZEUS

Water Cooled



R134a

R513A

Refrigerant  
R134a | GWP=1.430Refrigerant  
R513A | GWP=573

Compressors nr.	Models nr.	Cooling capacity kW		Nr. circuits		Max Dimensions mm			Operating weight kg		Sound power Lw dB(A)		MOC <sup>(1)</sup> A	
		min.	max	min.	max	L	W	H	min.	max	min.	max	min.	max
1	8	<b>270</b>	<b>700</b>	1	1	2.410	1.360	1.930	1.835	2.520	88	91	140	215
2	8	<b>540</b>	<b>1.400</b>	1	2	3.570	1.565	2.045	2.810	4.205	90	93	275	425
3	6	<b>1.140</b>	<b>2.100</b>	1	1	4.825	1.740	2.160	4.470	5.480	91	94	515	635
4	8	<b>1.080</b>	<b>2.800</b>	1	2	4.825	1.825	2.230	4.555	6.650	92	95	545	845
5	7	<b>1.350</b>	<b>3.500</b>	1	1	4.825	1.975	2.350	5.280	7.825	92	96	680	1.055
6	7	<b>1.860</b>	<b>4.200</b>	1	2	6.315	2.030	2.350	6.525	10.000	93	96	815	1.265

<sup>(1)</sup> Maximum Operating Current, referred to standard voltage 400 V / 3 ph / 50 Hz

Please refer to ZEUS Turbocor Chiller Selection Software for detailed data sheet and performances at the desired design operating conditions.

HFO  
1234zeRefrigerant  
R1234ze | GWP<1

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		min.	max	min.	max	L	W	H	min.	max	min.	max	min.	max
1	3	<b>230</b>	<b>390</b>	1	1	2.410	1.270	1.985	1.770	2.130	86	88	100	155
2	3	<b>460</b>	<b>780</b>	1	2	3.570	1.385	2.100	2.430	3.205	89	91	195	305
3	3	<b>690</b>	<b>1.170</b>	1	1	4.825	1.560	2.100	3.060	3.950	91	92	290	455
4	3	<b>920</b>	<b>1.560</b>	1	2	4.825	1.680	2.220	4.050	4.885	92	93	385	605
5	3	<b>1.150</b>	<b>1.950</b>	1	1	4.825	1.795	2.310	4.530	5.785	93	94	480	755
6	3	<b>1.380</b>	<b>2.340</b>	1	2	6.315	1.680	2.220	5.360	7.200	93	95	575	905

<sup>(1)</sup> Maximum Operating Current, referred to standard voltage 400 V / 3 ph / 50 Hz

Please refer to ZEUS Turbocor Chiller Selection Software for detailed data sheet and performances at the desired design operating conditions.

Capacity and energy performances referred to standard conditions

- Evaporator 12.0/7.0 °C, pure water, FF=0.018 m<sup>2</sup> / K / kW
- Condenser 30.0/35.0 °C, pure water, FF=0.043 m<sup>2</sup> / K / kW

#### ENERGY EFFICIENCY

**Energy Efficiency Ratio** UNI EN 14511-2013: **5.32 ÷ 6.00** kW/kW  
**ESEER** UNI EN 14511-2013: **8.10 ÷ 9.69** kW/kW  
**IPLV** AHRI 550/590-2011: **9.64 ÷ 10.51** kW/kW  
**NPLV** AHRI 551/591-2011: **9.46 ÷ 10.26** kW/kW

#### OPERATING LIMITS

Outlet chilled water outlet temperature: 4±20 °C  
 Max condenser inlet temperature: depending on models (refer to Technical Catalogue)

# ZEUS

## Water Cooled

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Air Cooled  
Free Cooling



R134a

R513A

Refrigerant  
R134a | GWP=1.430Refrigerant  
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Compressors nr.	Models nr.	Cooling capacity		Nr. circuits		Unit's length <sup>(1)</sup>		Operating weight <sup>(2)</sup>		Sound power <sup>(3)</sup>		MOC <sup>(4)</sup>	
		min. kW	max. kW	min.	max.	min. mm	max. mm	min. kg	max. kg	min. Lw dB(A)	max. Lw dB(A)	min. A	max. A
1	4	<b>250</b>	<b>410</b>	1	1	3.335	4.445	2.545	3.175	90	93	160	245
2	4	<b>500</b>	<b>820</b>	1	2	5.555	8.890	3.945	5.665	93	96	315	490
3	1	<b>1.230</b>	<b>1.230</b>	1	1	11.110	11.110	7.655	7.655	97	97	730	730
4	3	<b>1.000</b>	<b>1.400</b>	1	2	10.000	13.335	7.265	9.345	96	98	620	945

<sup>(1)</sup> All units having: Width: 2100mm Height: 2525mm<sup>(2)</sup> Air Cooled series (refer to Technical Catalogue for Free Cooling machines series)<sup>(3)</sup> Standard configuration. **Low Noise** and **Extra Low Noise** versions available (see Technical Catalogue for details)<sup>(4)</sup> Maximum Operating Current, referred to standard voltage 400 V / 3 ph / 50 Hz

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		min. kW	max. kW	min.	max.	min. mm	max. mm	min. kg	max. kg	min. Lw dB(A)	max. Lw dB(A)	min. A	max. A
1	4	<b>190</b>	<b>320</b>	1	1	2.225	3.335	2.055	2.585	89	92	115	175
2	4	<b>380</b>	<b>640</b>	1	2	4.445	6.665	3.405	4.705	92	95	225	355
3	1	<b>960</b>	<b>960</b>	1	1	8.890	8.890	6.790	6.790	96	96	530	530
4	4	<b>760</b>	<b>1.280</b>	1	2	8.890	13.335	6.630	8.855	96	98	450	705

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## ENERGY EFFICIENCY

**Energy Efficiency Ratio** UNI EN 14511-2013: **3.23 ÷ 3.72** kW/kW  
**ESEER** UNI EN 14511-2013: **4.59 ÷ 5.30** kW/kW  
**IPLV** AHRI 550/590-2011: **5.44 ÷ 6.08** kW/kW  
**NPLV** AHRI 551/591-2011: **5.31 ÷ 5.90** kW/kW

## OPERATING LIMITS

Outlet chilled water outlet temperature: 4±20 °C  
 Max air DB temperature: 45 °C at full capacity, 50 °C at reduced capacity

ZEUS

Air Cooled  
Free Cooling