



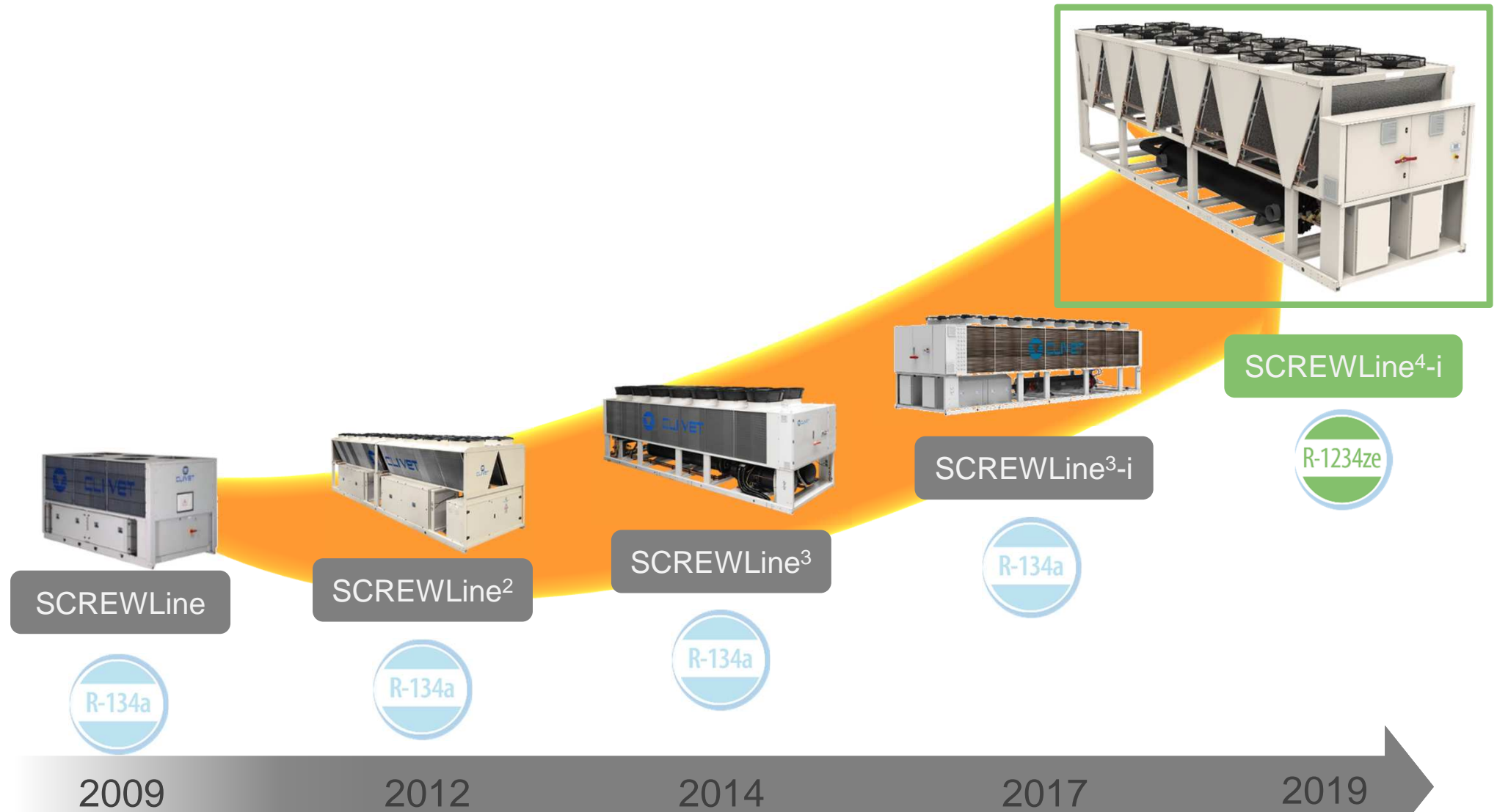
## **SCREWLine<sup>4</sup>-i**

**WDAT-iZ4 120.1 – 580.2**

Product Presentation

# SCREWLine<sup>4</sup>-i, Air source – The evolution

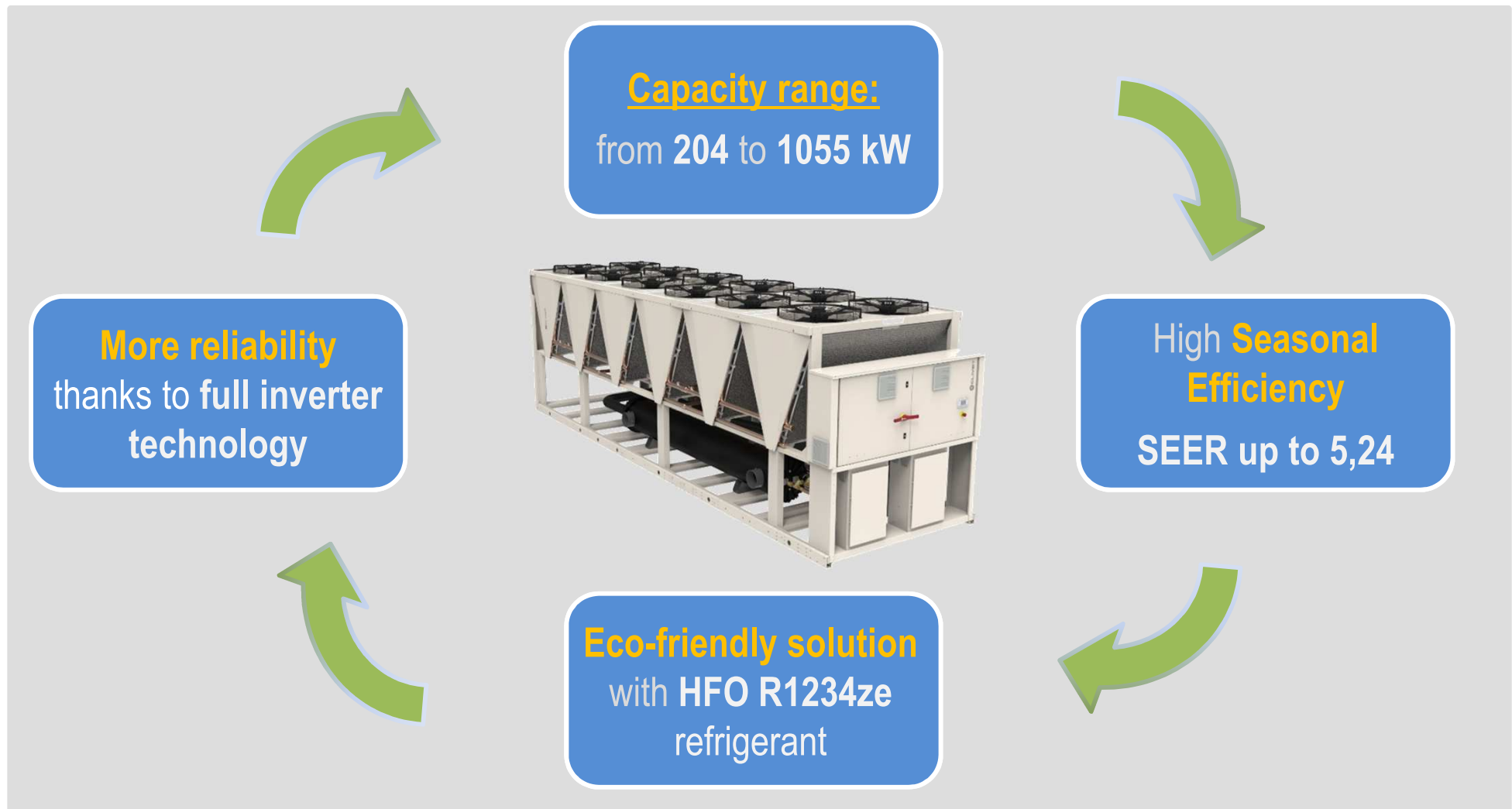
## SCREWLine, air cooled liquid chiller





## SCREWLine<sup>4</sup>-i, Air source – Main Features

SCREWLine<sup>4</sup>-i is the most **technologically advanced solution** available on the Market with inverter screw compressors and HFO R1234ze refrigerant



# SCREWLine<sup>4</sup>-i, Air source – Capacity Range

WDAT-iZ4 serie is available from **204 kW** to **1055 kW**

**Range 204 – 510 kW:** Unit with 1 refrigeration circuit e 1 inverter compressor

SIZES	120.1	160.1	200.1	240.1	290.1
Cooling caapcity	204	256	360	420	510
EER	3,16	3,00	3,12	2,95	3,05
SEER	5,01	5,00	5,05	5,00	5,14
N° compressors	1	1	1	1	1
N° circuits	1	1	1	1	1



**Range 422 – 1055 kW:** Unit with 2 refrigeration circuits e 2 inverter compressors

SIZES	250.2	280.2	320.2	360.2	400.2	440.2	480.2	540.2	580.2
Cooling capacity	422	482	540	630	710	790	880	965	1055
EER	3,15	3,10	3,00	2,97	2,94	3,00	2,92	3,00	3,03
SEER	5,24	5,22	5,10	5,23	5,17	5,23	5,13	5,19	5,24
N° compressors	2	2	2	2	2	2	2	2	2
N° circuits	2	2	2	2	2	2	2	2	2

# SCREWLine<sup>4</sup>-i, Air source – Eco-friendly solution

**R1234ze** = nearly zero environmental impact, **Eco-friendly solution**

The environmental benefits of R1234ze compared to R-134a

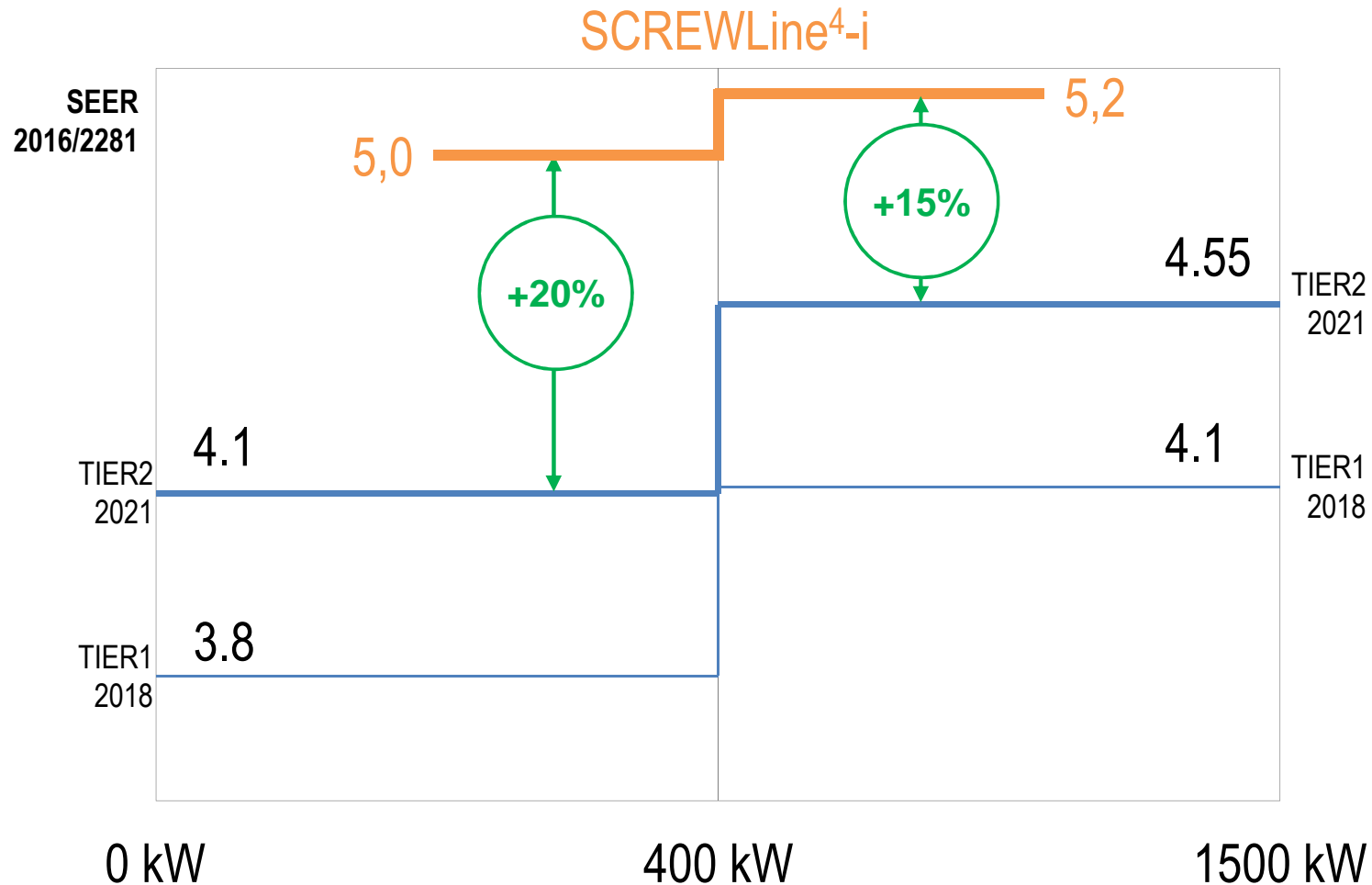
Refrigerant		
Refrigerant type	HFO	HFC
GWP	< 1	1430
Dispersion in the atmosphere	16 days	14 years
ASHRAE 34, ISO 817 classification	A2L	A1



# SCREWLine<sup>4</sup>-i, Air source – Seasonal Efficiency (Comfort application)

WDAT-iZ4 reaches very **high seasonal efficiency** values (**SEER = 5,24**)

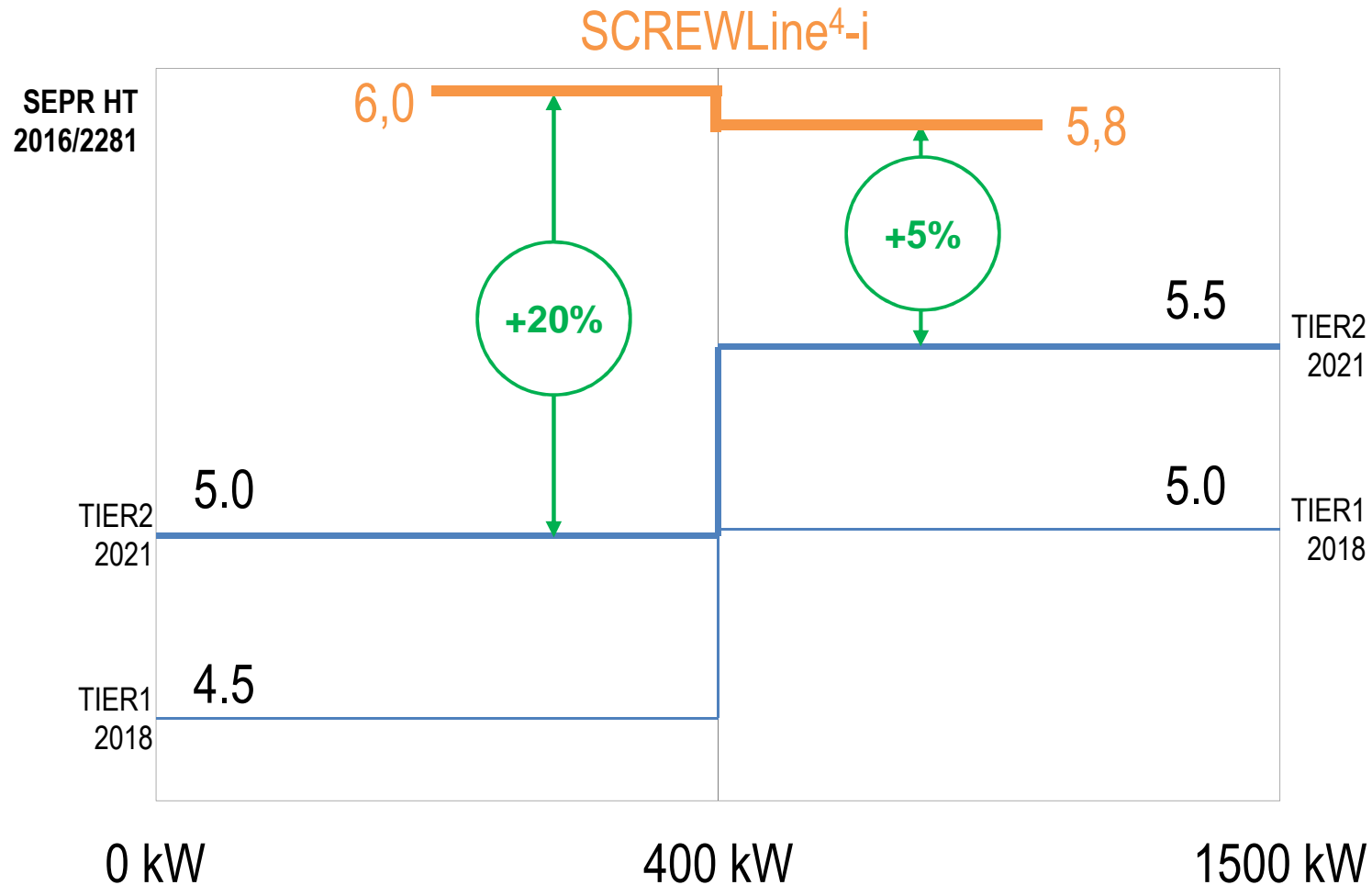
It's already conforming today to **2021 requirements (Tier 2)**



# SCREWLine<sup>4</sup>-i, Air source – Seasonal Efficiency (Industrial application)

WDAT-iZ4 reaches very high seasonal efficiency values (SEPR HT = 6,45)

It's already conforming today to 2021 requirements (Tier 2)

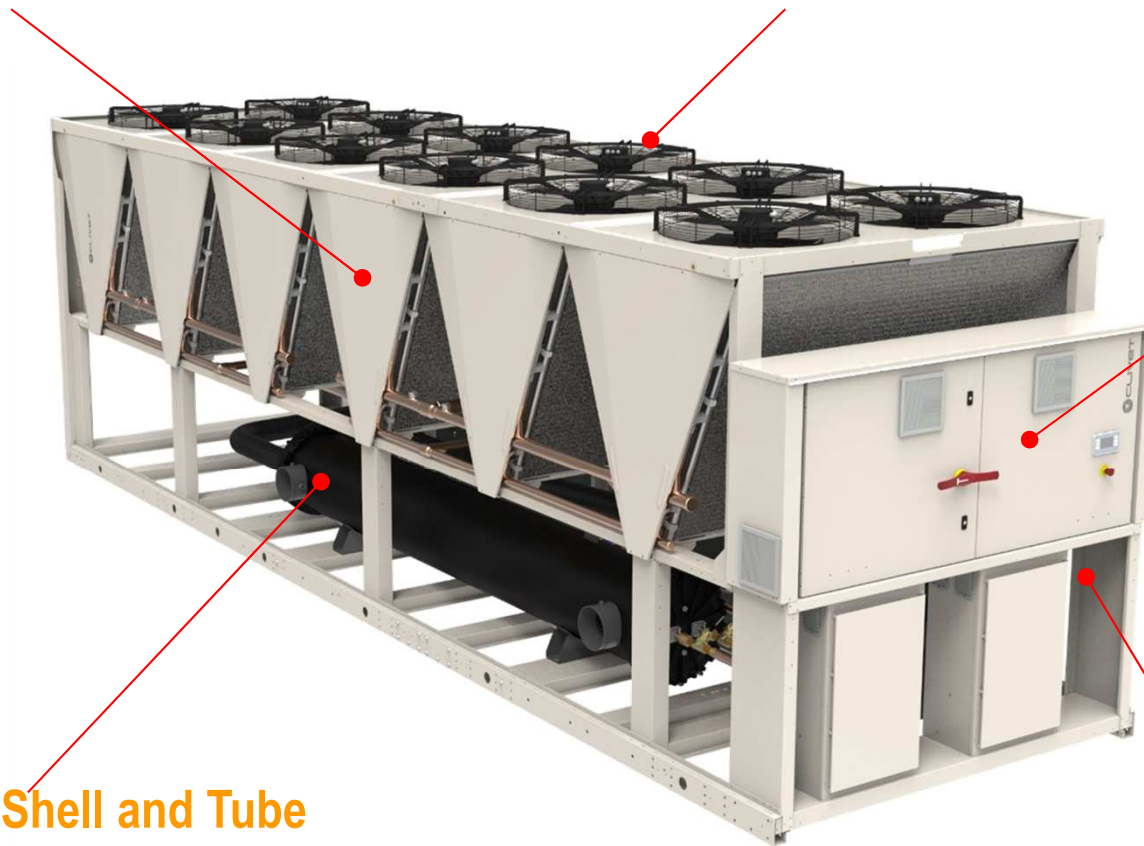


# SCREWLine<sup>4</sup>-i, Air source – Technologies for high efficiency

Full aluminum **Micro-channel coils**

Fans with **electronic speed control**  
(ECOBREEZE)

Automatic  
control



High efficiency **Shell and Tube evaporator** (standard Victaulic connections)

**Compressors with infinitely variable capacity control – FULL INVERTER TECHNOLOGY**



# Inverter screw compressor: Minimum turndown

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**SCREWLine<sup>4</sup>-i** is equipped with **inverter screw compressor**:

- Perfectly match the cooling load of the plant in any condition
- Follow the load also with a great staging
- Ensure high efficiency values, reducing operating costs
- Reduce the sound levels at partial loads
- Ensure a null starting current

**Screw** INVERTER

# Inverter screw compressor: Minimum turndown

The unit, thanks to the two inverter compressors, has a turndown capability of 15% of its nominal capacity, allowing very precise capacity control and a smooth transition from very low to high capacity

T out 35°C  
Load 100%



**EER 2.9**

Really unlikely

T out 30°C  
Load 75%



**EER 3.8**

Very likely

T out 25°C  
Load 50%



**EER 4.9**

Very likely

T out 20°C  
Load 25%



**EER 5.7**

Likely

Thanks to this turndown capability the water content of the system could be reduced at a minimum quantity, avoiding the use of large buffer tanks to ensure reliable and accurate operation

T water flow very stable



T ± 0.5K

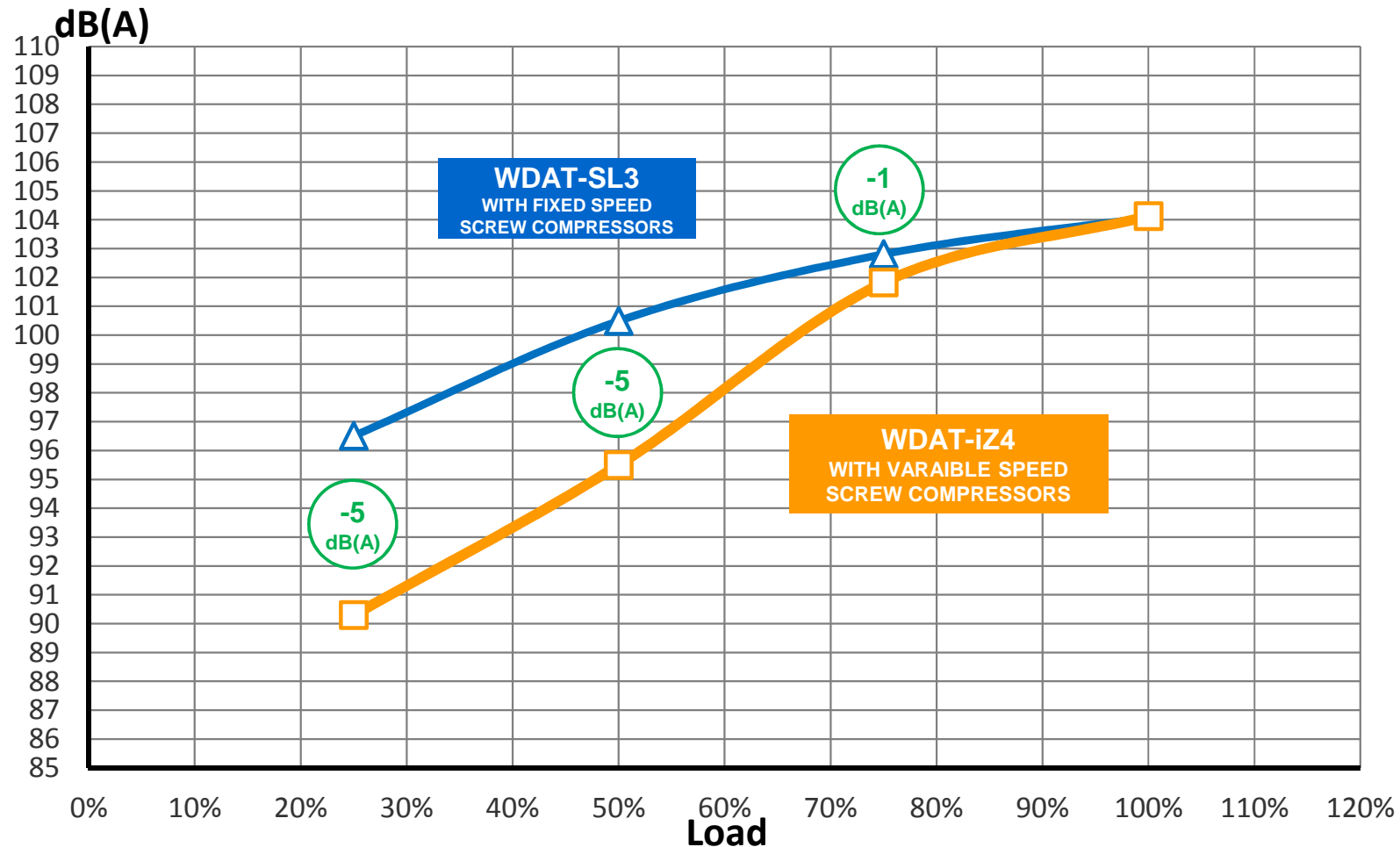


Reduced ON-OFF cycles

Improved reliability and life length

# Inverter screw compressor: Sound level

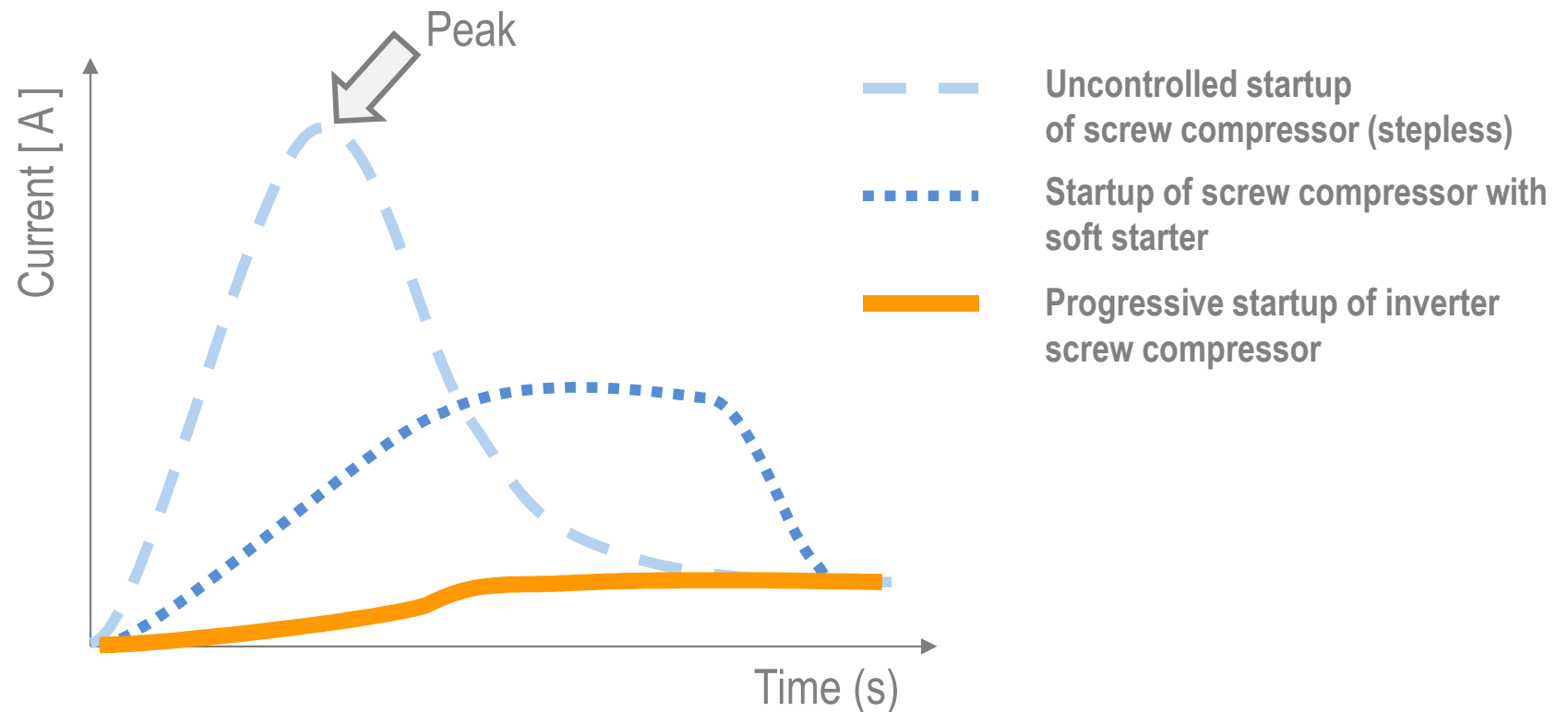
At partial load the sound level of a unit with **variable speed screw compressors** is reduced by **-5 dB(A)** compared to units with **fixed speed screw compressors**



# Inverter screw compressor: In rush current

Thanks to inverter technology the startup phase, usually the most critical, is gradual from minimum to maximum speed:

- Ensures a null starting current
- Avoid the overhead of the host supply
- Avoid mechanical stress on the compressor



## SCREWLine<sup>4</sup>-i, Air source – New layout

Full aluminium microchannel coils, with 'V' structure optimized to improve heat exchange

- Up to 30% of refrigerant charge reduction vs. traditional tube and fin coils
- Long Life Alloy (LLA) for higher corrosion resistance and longer life cycle
- **More compact and lighter unit**





# SCREWLine<sup>4</sup>-i, Air source – Acoustic configurations

**ST** = Standard acoustic version



**SC** = Compressor Soundproofing version



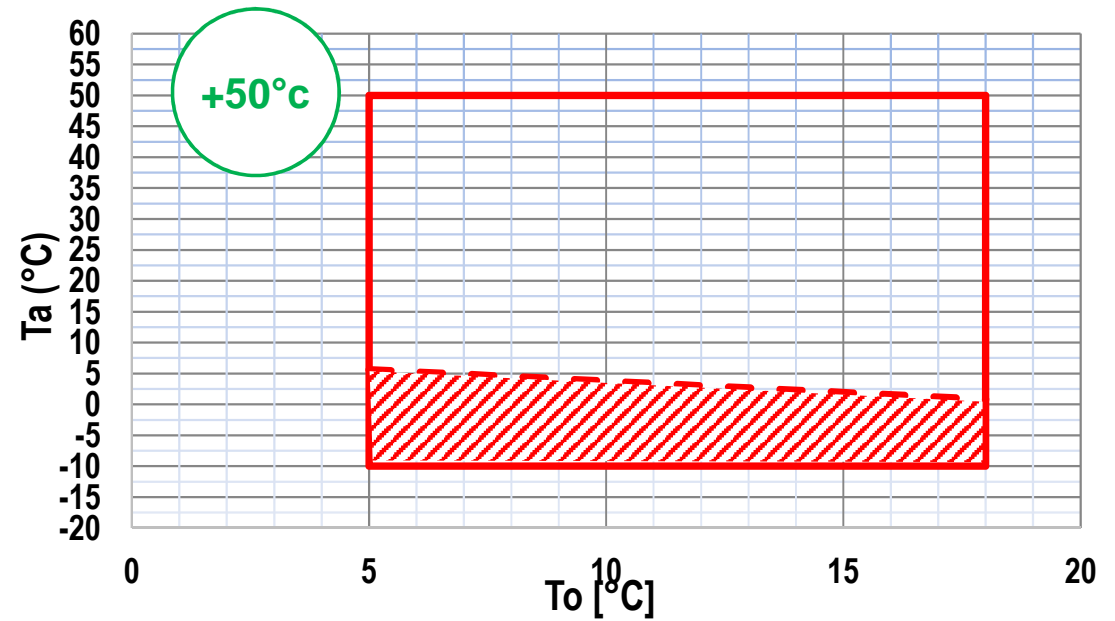
Casing for compressors



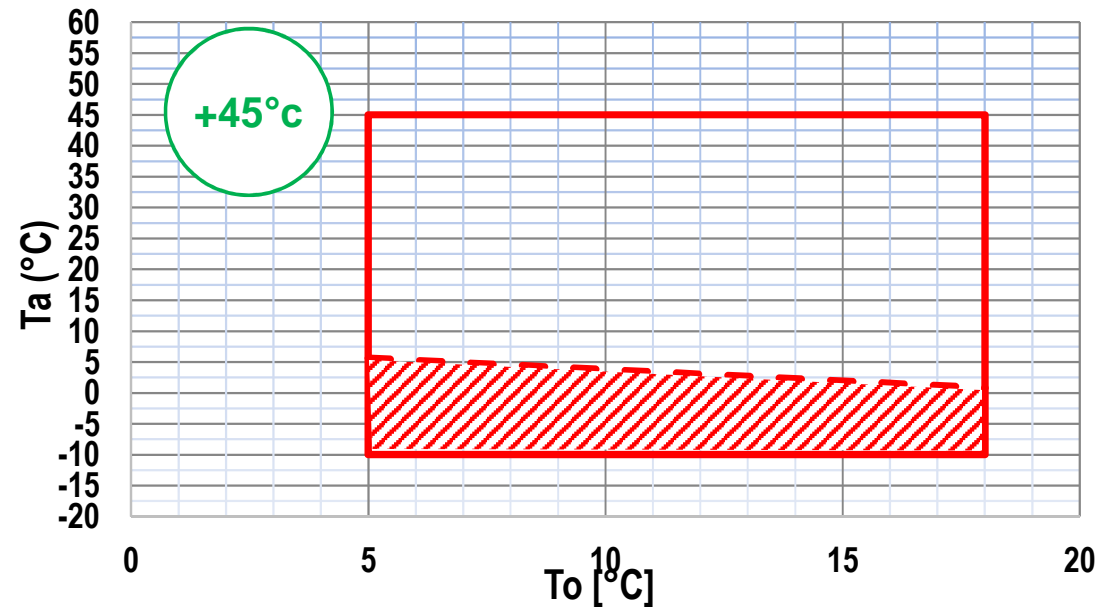
**-3  
dB(A)**

# SCREWLine<sup>4</sup>-i, Air source – Operative range

**ST** = Standard acoustic version



**SC** = Compressor soundproofing version



# SCREWLine<sup>4</sup>-i, Air source – Perfect for LEED

Thanks to specifications and performances as per AHRI is **perfect for LEED\***

## General technical data

### performance - Standard acoustic configuration (ST) Compressor soundproofing (SC)

SIZE			<b>120.1</b>	<b>160.1</b>	<b>200.1</b>	<b>240.1</b>	<b>290.1</b>	<b>250.2</b>	<b>280.2</b>	<b>320.2</b>	<b>360.2</b>	<b>400.2</b>	<b>440.2</b>	<b>480.2</b>	<b>540.2</b>	<b>580.2</b>
▶ Cooling capacity (AHRI 550/590)	(5)	kW	204	256	360	420	511	423	483	540	631	711	790	881	966	1056
Total power input (AHRI 550/590)	(5)	kW	64	85	114	141	165	133	154	178	210	239	260	298	319	344
COP <sub>R</sub>	(5)		3,19	3,03	3,16	2,98	3,10	3,18	3,14	3,03	3,00	2,97	3,04	2,96	3,03	3,07
IPLV	(5)	-	5,90	5,93	5,55	5,56	5,85	5,73	5,80	5,69	5,75	5,60	5,78	5,49	5,70	5,69



\* Satisfies prerequisites related to “Minimum Energy Performance” and “Fundamental Refrigerant Management”. Also matches “Enhanced Refrigerant Management” parameters.

# SCREWLine<sup>4</sup>-i, Air source – Partial load performances

Performances at partial load for each unit are easy to obtain consulting:

## General technical data

Cooling performance at part load - ST/SC

SIZE	Load	Entering external exchanger air temperature (°C)								
		35°C			30°C			25°C		
		kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	
<b>440.2</b>	100	790	260	3,04	820	240	3,41	846	222	
	75	593	167	3,55	615	153	4,03	635	139	
	50	395	97,4	4,06	410	88,2	4,65	423	80,4	
	25	198	44,4	4,44	205	39,0	5,26	212	34,8	
	Minimum	83	19,2	4,32	88	16,9	5,21	93	15,1	

Documentation

part load

Capacity required (kW)

external exchanger air intake (°C)

Part Load	500	500	500	500	500	500
Cooling capacity (kW)	500	500	500	500	500	500
Compressor power input (kW)	137	132	128	125	124	124
Total power input (kW)	152	148	144	144	143	146
EER	3.28	3.37	3.47	3.47	3.49	3.42
EER compressor	3.65	3.78	3.90	3.99	4.03	4.03
Internal exchanger thermal head (°C)	4.58	4.31	3.96	3.55	3.22	3.00
Water flow-rate (User Side) (l/s)	26.1	27.7	30.2	33.6	37.1	39.8
Internal exchanger pressure drops (kPa)	31.8	35.5	41.3	43.9	52.4	59.2

Selection software

## Functionalities and options available





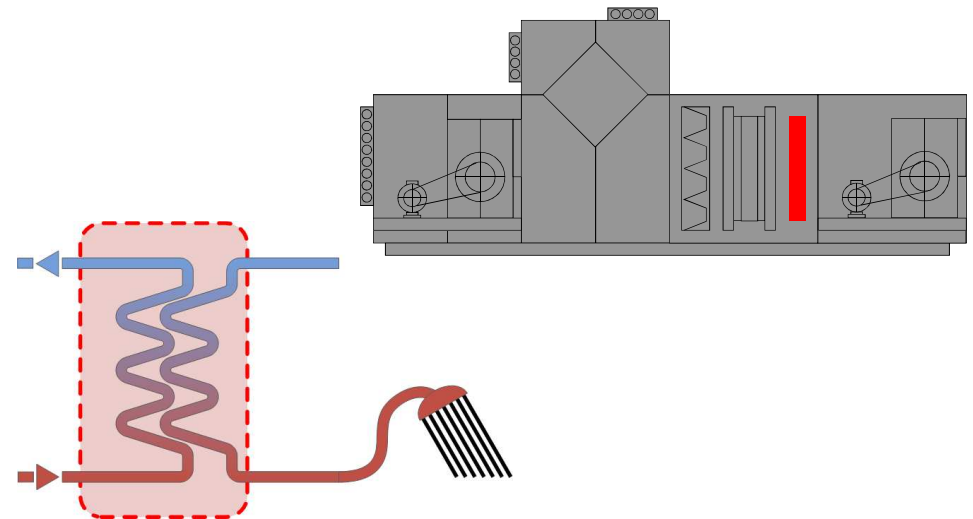
# High efficiency of the heat recovery

## Recovery of the condensing heat, in cooling mode

- **Partial recovery** = around 12% of the available heat rejection

It allows **free hot water production** for

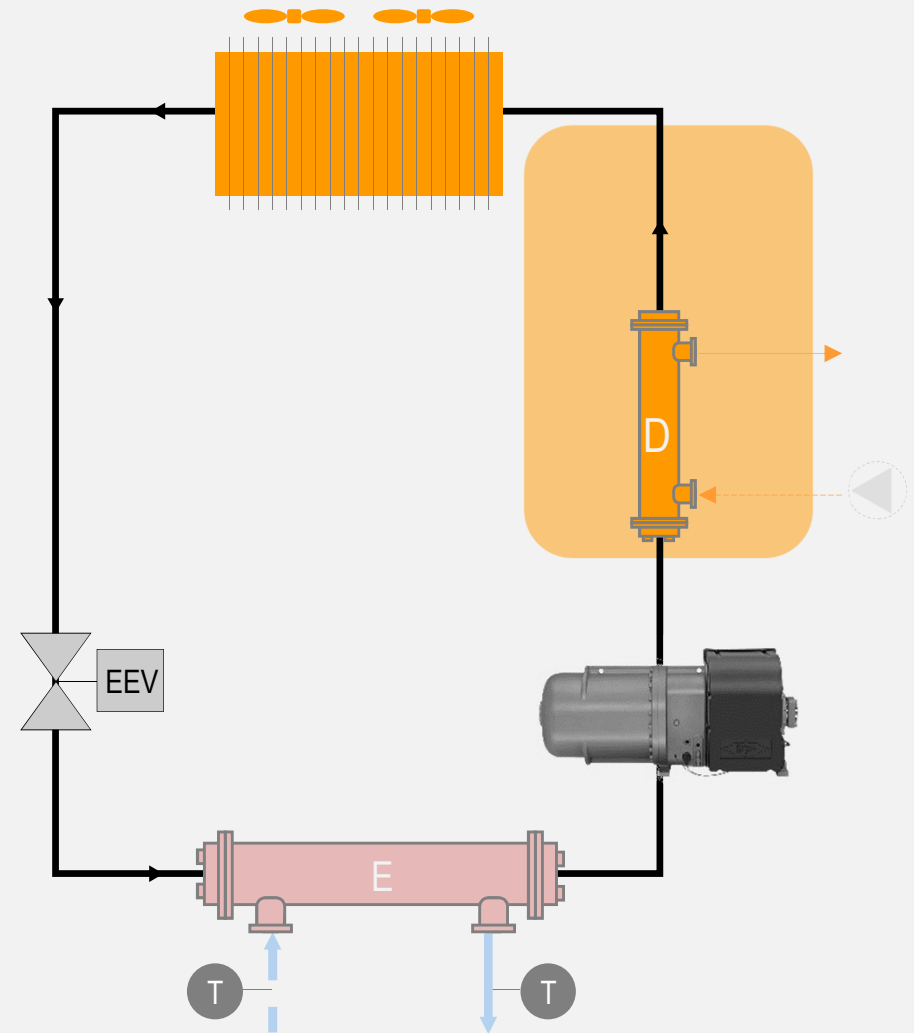
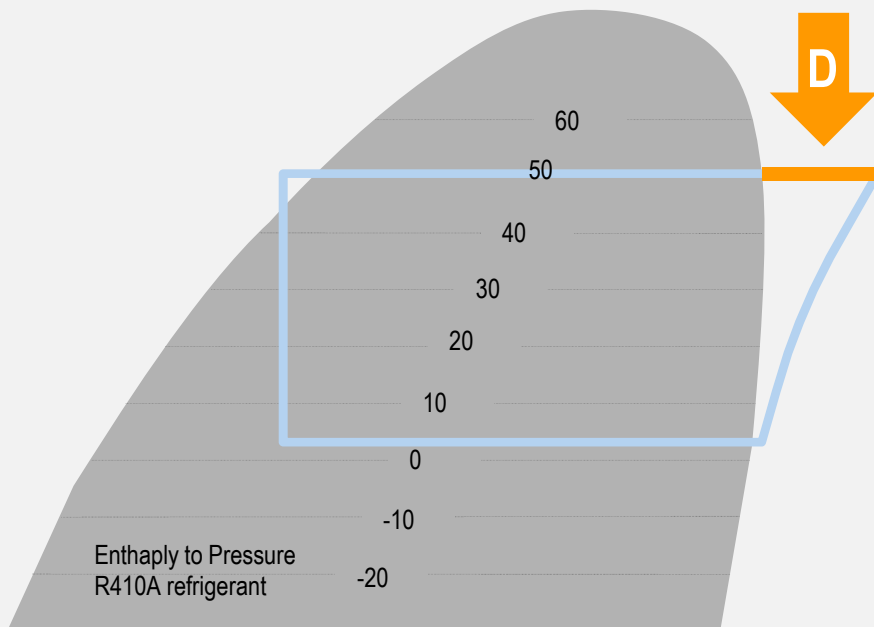
- **Re-heat** hot water coil
- **Domestic** hot water
- Other **processes** or **operation**



# High efficiency of the heat recovery

## Partial Heat recovery (D)

- Around **12%** of the available heat rejection
- **Control** is activated by the user



# Coil protection

## E-coated protective treatment available for industrial and marine environments

- over 3000 hours of protection against salt spray (ASTM G85 A3 - SWAAT);
- over 2000 hours of protection against UV rays (ASTM G155-05a)

Atmospheric Corrosivity category (ISO 9223)	C1, C2	C3 (inland)	C3 (coastal)	C4	C5	CX
Corrosivity	Very low, Low	Medium	Medium	High	Very high	Extreme
Typical environments - examples	Indoor, Rural areas	Urban areas	Urban areas	Polluted Urban, industrial, coastal areas	Very high pollution & salt deposition areas	Extreme industrial, coastal areas
<b>Microchannel coils (standard)</b>	<b>OK</b>	<b>OK</b>	<b>NR</b>	<b>NR</b>	<b>NR</b>	<b>NR</b>
<b>Microchannel coils with E-coated (option)</b>	<b>OK</b>	<b>OK</b>	<b>OK</b>	<b>OK</b>	<b>AP</b>	<b>AP</b>

OK: Recommended;

AP: Acceptable, life may be shorter;

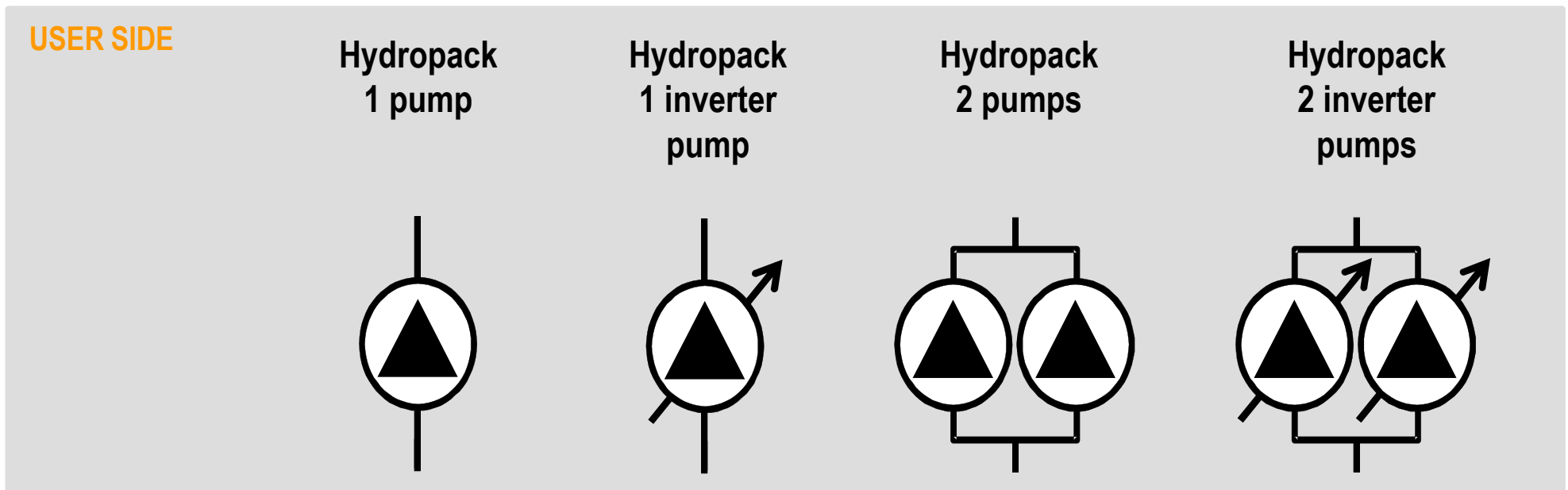
NR: Not possible

# Simplifies and industrializes the plant

Optional integrated **pumping groups** save:

- Time and cost for the **set-up**
- Floor area for pumping equipment and relevant clearance

Options available with **standard and high head**:

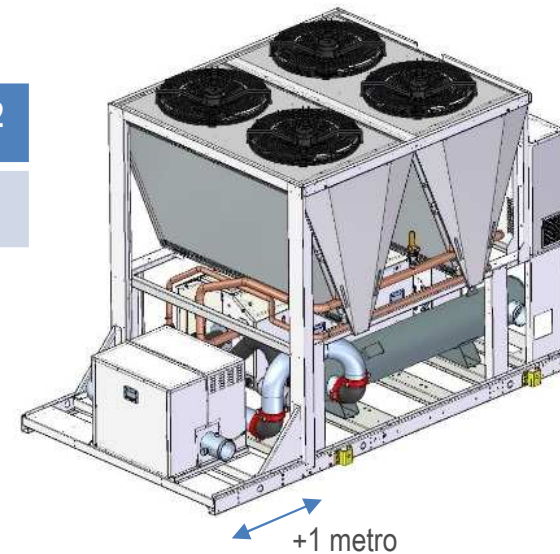


# Simplifies and industrializes the plant

## Hydronic group for sizes: 120.1 – 320.2

SIZES	120.1	160.1	200.1	240.1	290.1	250.2	280.2	320.2
Cooling Capacity [kW]	204	256	360	420	510	422	482	540

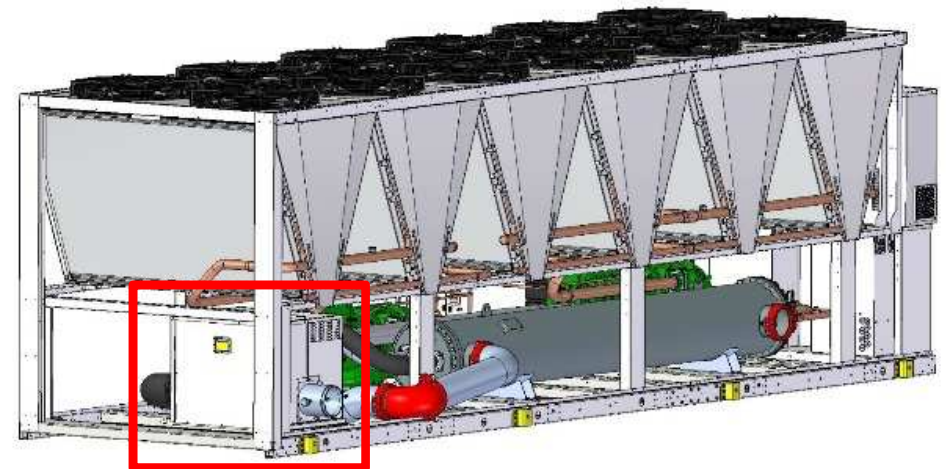
**Lenght** = Unit + 1 meter



## Hydronic group for sizes: 360.2 – 580.2

SIZES	360.2	400.2	440.2	480.2	540.2	580.2
Cooling Capacity [kW]	630	710	790	880	965	1055

**Lenght** = As Standard Unit





Simplifies and industrializes the plant

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Microchannel coils protection panels (optional):



**Standard** layout



Layout with **Microchannel coils protection panels**

=

Greater protection for transport and Users

# Ecoshare: Automatic management of a group of units

Modular system with **ECOSHARE** up to 7 units in local network

In comparison with a single unit of equivalent overall capacity it offers **many advantages** such as:

- **Increased energy efficiency**



- **Higher resilience**



**ECOSHARE NETWORK**

# Ecoshare: Automatic management of a group of units

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**ECOSHARE functionality:** automatic management of a group of units that operates on the same circuit, by means of the creation of a **CLIVET local network**.

The group control is assigned to a unit identified as **MASTER**.

The local network can be extended **up to 7 units (1 Master and 6 Slaves)**.

- **Maximum reliability** → Unexpected breakdown does not compromise the whole system
- **Distribution Principles:**
  - **Vertical saturation:** The unit is activated if the previous one is at full load
  - **Horizontal saturation:** Units are activated following the group maximum efficiency

**Pumping group:** for both distribution technologies it is possible to have either the pumping group **always activated** or activated **only when at least one compressor of the unit** (chiller, heat pump, multifunction, ecc.) **is in operation**.

# Simplifies and industrializes the plant

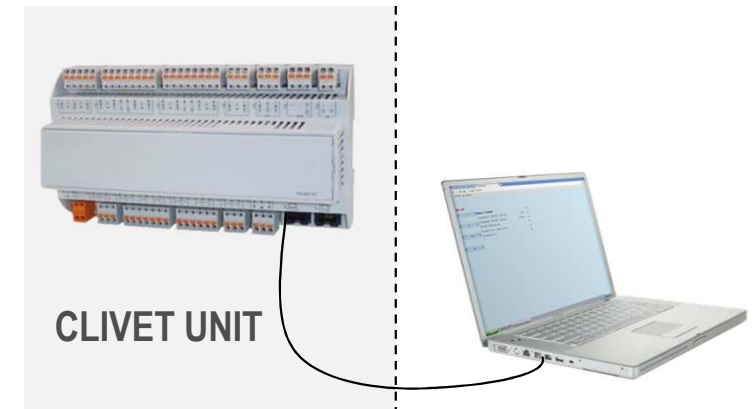
## On board display

- Enables to interact easily and immediate with the unit



## Connection to the PC through Ethernet port:

- Simplifies after-sales service thanks to the performing diagnostic, updating and for remote assistance tools



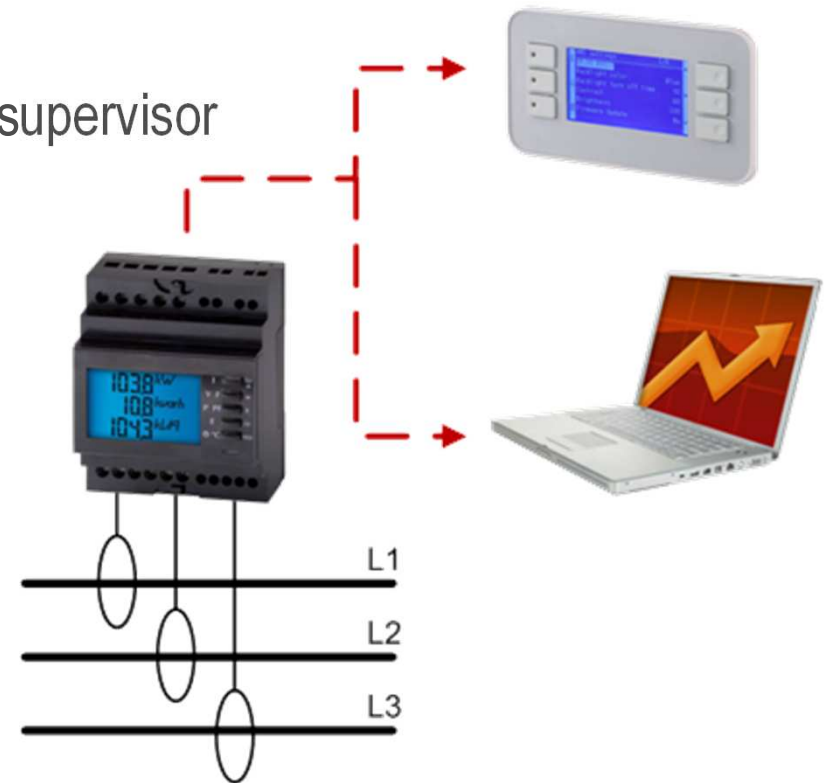
# Simplifies and industrializes the plant

## Energy measuring

- It **displays** the main unit's electrical parameters
- It **displays** them on the unit display
- It **transmits** them via the serial connection to the supervisor

The monitored **electrical parameters** are:

- Voltage/ Current/ Frequency
- Cosfe/ Harmonic components
- Power input/ Energy

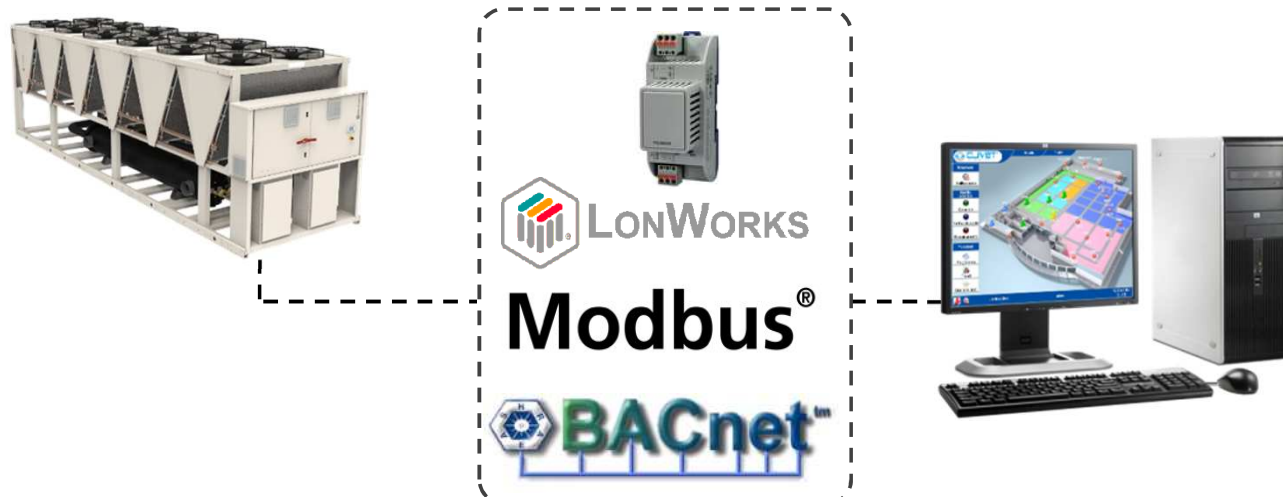




# Simplifies and industrializes the plant

The unit can be remotely managed by:

- optional **remote control**
  - replicates the on board user interface
- the **potential free contacts** as standard
- the **supervision system**
  - through different communication protocols



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A Group Company of  
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