



United Technologies

D E S I G N I N G   I N N O V A T I V E   S O L U T I O N S

AIR CONDITIONING & HEATING SOLUTIONS

# AQUAFORCE® PROVEN PERFORMANCE



Fixed-speed screw chiller

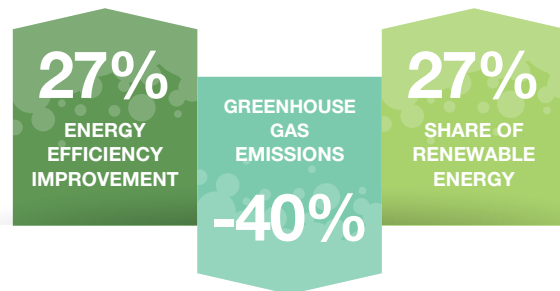
250 kW – 1700 kW

30XB & 30XBP

**AQUAFORCE**

# Carrier committed to environmental responsibility

Carrier is committed to limiting the environmental impact of its products and solutions and reducing energy consumption. This commitment is in line with the targets of the European climate and energy package for 2030:



## Ecodesign

Ecodesign takes into account a product's impact on the environment throughout its lifecycle and plays an essential role in meeting the 2030 targets. In the European Union, the Ecodesign Directive sets mandatory energy efficiency requirements for all energy-related products (ERPs), including air conditioning products. Therefore, this directive pushes the market away from low performance products, requiring manufacturers to develop products that consume less energy.

## New metrics because seasonal efficiency matters

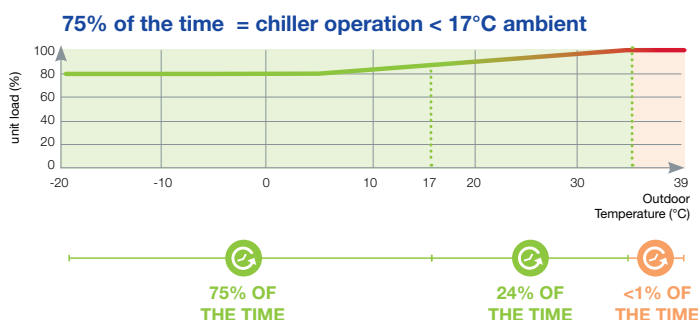
**EER belong to the past.** Now, and in the future, the focus is on seasonal efficiency.

With all new buildings expected to be close to zero energy by January 2021, calculations of the energy efficiency of buildings require accurate indicators of the efficiency of their equipment. These indicators must be representative of actual operations throughout the year, measuring the performance of equipment on a seasonal basis.

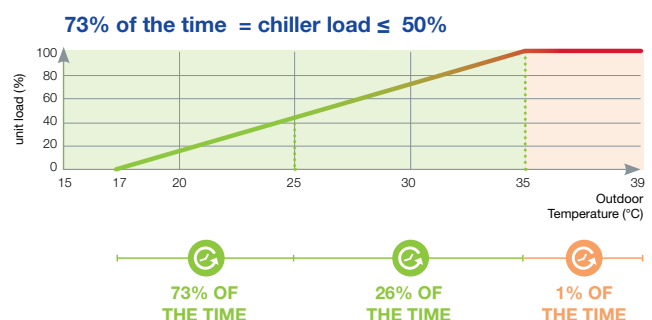
The **Seasonal Energy Performance Ratio (SEPR)** and the **Seasonal Energy Efficiency Ratio (SEER)** measure the seasonal energy efficiency of chillers by calculating the ratio between annual cooling demand and annual energy input. They take into account the energy efficiency achieved at each outdoor temperature of an average climate weighted by the number of hours observed for each of these temperatures.



**SEPR** is the new metric for chillers in **industrial process cooling applications**.



**SEER** is the new metric for chillers in **comfort cooling applications**.

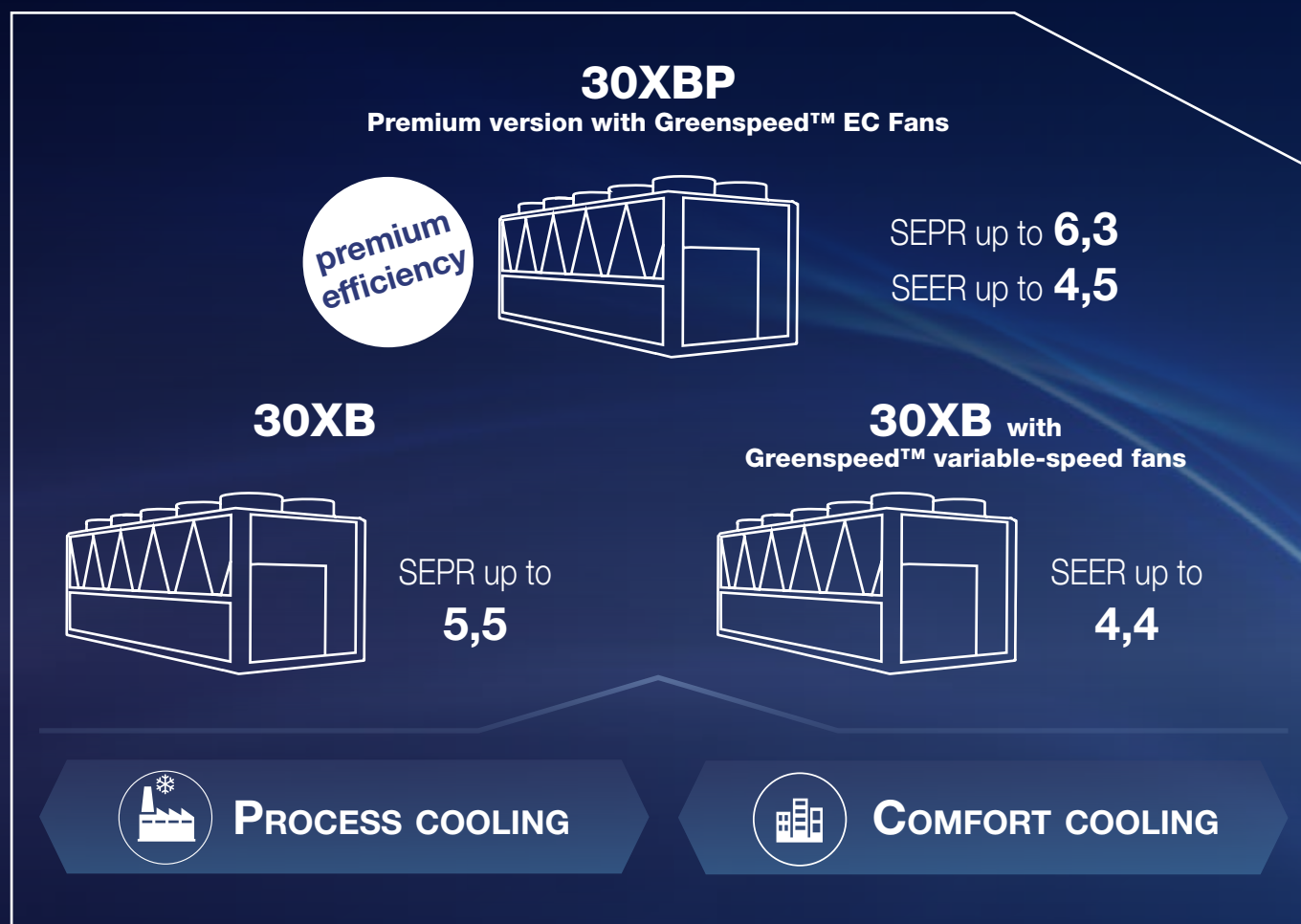


SEER and SEPR are a new way of measuring the true energy efficiency of chillers over an entire year. They give a more realistic indication of the real energy efficiency and environmental impact of a cooling system.

These new seasonal performance metrics are now the key indicator used for all product ranges, in all applications. They are calculated according to technical standard EN 14825 and compliance is mandatory for a product to obtain CE marking.

# AquaForce<sup>®</sup>, the right solution for every application

Carrier's AquaForce<sup>®</sup> 30XB range is available in three levels of efficiency to perfectly match each customer application and meet the European Ecodesign directive requirements.



**30XBP**

The AquaForce<sup>®</sup> 30XBP with Greenspeed™ intelligence is the premium version with EC fans and additional heat exchange surface to improve both the full load and part load energy efficiency. The 30XBP provides very cost effective operation in both process and comfort applications through the use of state of the art EC fan technology.



**30XB**  
with  
Greenspeed™  
intelligence

The AquaForce<sup>®</sup> 30XB with Greenspeed™ intelligence is equipped with variable-speed AC fan motors. It offers an economical solution to enhance seasonal energy efficiency levels for **comfort applications**. The 30XB with Greenspeed™ intelligence meets the 2018 EU Ecodesign SEER 12/7°C requirements (load variation from 0% to 100%).



**30XB**

The AquaForce<sup>®</sup> 30XB is equipped with fixed-speed screw compressor and fixed-speed fans with AC motor. The 30XB offers an economical solution whilst providing high full load energy efficiency level for **process applications and 12/7°C operation in hot climates**. 30XB is compliant with the 2018 EU Ecodesign SEPR -2/-8°C and 12/7°C requirements for medium and high temperature process chillers (load variation from 80% to 100%).

# AquaForce®

## Proven performance

### Absolute reliability

Carrier's AquaForce® 30XB is the evolution of the 30XA range that counts thousands of installations worldwide. The reliability of the AquaForce® system is the result of intensive research, field experience combined with the highest quality standards. The AquaForce® range is equipped with the Carrier 06T twin screw compressors, well-known for its robustness, 99,7% of units without a compressor failure\*, and the fully aluminium Novation® microchannel heat exchangers with Super Enviro-shield™ coatings to deliver guaranteed long-term optimized performance.

\*Quality rate measured over a period of 15 years operation.

### Environmental responsibility

Carrier's AquaForce® 30XB is a boost for green cities and contributes to a sustainable future. Combining a reduced load refrigerant (-40% vs traditional cu/al coils) thanks to the use of Novation® microchannel heat exchangers and high energy efficiency it significantly lowers energy consumption while reducing carbon dioxide emissions throughout its life cycle. The AquaForce® PUREtec™ version, designed exclusively for ultra low GWP HFO R1234ze, will be available in 2018.

### Compact footprint

Designed with one "V shape" Novation® microchannel heat exchanger less, Carrier's AquaForce® 30XB is 25% smaller than the previous 30XA generation. As an example, the 30XB-500 model is 1.2 meters shorter than the previous 30XA-502 model while offering same energy efficiency ratio. This 30XB model is having the same dimensions as the previous Carrier's 30GX while offering at least 15% energy efficiency improvement.

### Extensive scope of application

Carrier's AquaForce® 30XB and 30XBP adapt effortlessly to a wide range of applications.

Extended operating temperatures from -20°C to 55°C outdoor air temperatures and negative water temperatures make it ideal for various sectors of activity. From high-end office buildings and hotels to healthcare facilities, data centers and industrial projects, AquaForce® 30XB and 30XBP are the perfect solutions to combine competitive price associated with high energy efficiency whatever the climate and wherever the location.

### Low operating sound levels

The AquaForce® 30XB and 30XBP range offers 4 sound levels to meet the most demanding technical requirements in noise sensitive environments. 30XB is up to 6 dB(A) quieter than the AquaForce® 30XAV generation.

The range is equipped in standard with the 6th generation of Carrier Flying Bird fans. The new fan blade inspired by nature is the result of advanced research in our laboratory, benefiting from the latest innovations of UTC aerospace division. The unit can be equipped in option with AC or EC motor to guarantee smooth fan speed variation and thus eliminate start-stop noise during part load operation.

For further acoustic comfort, the units can be equipped with an acoustic compressor and oil separator enclosure reducing radiated noise (option 15), with low speed fans (option 15LS) and with sound attenuation material on the refrigerating circuit to guarantee ultra-low noise operation for highly noise sensitive environment (option 15LS+).

\*Already available on 30XB. Available in 2018 on 30XBP.



**99,7%**  
of units without a  
compressor failure



UP TO  
**40% LESS**  
refrigerant charge



**25%**  
smaller



FROM  
**-20°C**  
TO **55°C**



**93 dB (A)**

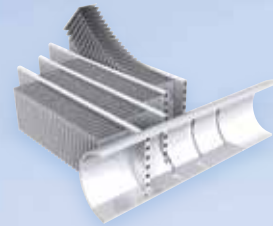


# Industry-leading Carrier technologies



## 6<sup>TH</sup> GENERATION OF FLYING BIRD™ FANS WITH AC OR EC MOTOR

- Exclusive Carrier design
- Fan blade design inspired by nature
- 30XB standard version with fixed-speed fans and AC motor
- Variable-speed fans available as an option on 30XB standard version
- EC fans available as standard on 30XBP premium version



## 2<sup>ND</sup> GENERATION OF "V" SHAPE NOVATION® MICRO CHANNEL HEAT EXCHANGERS

- Exclusive Carrier design
- High reliability with long-life aluminum alloy
- Significantly reduces refrigerant load (~40% vs cu/al coils)
- Enviro-shield™ coating for mildly corrosive environments
- Super Enviro-shield™ coating for highly corrosive environments (industry or marine applications)



## FIXED-SPEED SINGLE OR DUAL PUMPS WITH AC MOTOR (OPTION)

- Low static pressure (~100 kPa) or high static pressure (~180 kPa) available
- Available on all sizes up to 500 kW



## CARRIER FIXED-SPEED 06T TWIN SCREW COMPRESSOR WITH AC MOTOR

- Exclusive Carrier design
- Twin screw compressor designed for fixed-speed operation
- Sliding valve control (30%-100%)
- Bearing life exceeding 100,000 hours
- 99,7% of units without compressor default

## FLOODED SHELL AND TUBE EVAPORATOR

- Exclusive Carrier design
- Flooded technology for high energy efficiency
- New generation of copper tubes with specific profile to reduce pressure drops when operating with glycol

## ADVANCED TOUCH PILOT™ WITH 5 INCH COLOR TOUCH SCREEN INTERFACE

- Exclusive Carrier design
- 10 languages available: DE, EN, ES, FR, IT, NL, PT, TR, TU + one additional customer choice
- Touch screen user interface
- BACnet, J-Bus or LON communication interfaces
- Optional wireless connectivity
- Web server capabilities-easy remote access via internet
- Trending capabilities



# Technical characteristics



## PREMIUM EFFICIENCY UNITS

30XBP		250	300	350	400	450	500	600	700	750
<b>NOMINAL COOLING CAPACITY</b>	<b>kW</b>	<b>274</b>	<b>299</b>	<b>327</b>	<b>394</b>	<b>444</b>	<b>501</b>	<b>615</b>	<b>682</b>	<b>727</b>
SEER 12/7°C (ECODESIGN)	kW/kW	4,3	4,4	4,4	4,3	4,2	4,4	4,1	4,5	4,2
SEPR 12/7°C (ECODESIGN)	kW/kW	6,0	6,2	6,3	5,9	5,8	6,0	5,8	6,3	5,6
EER (EUROVENT)*	kW/kW	3,2	3,1	3,1	3,3	3,1	3,2	3,2	3,3	3,1
ENERGY CLASS (EUROVENT)	Class	A	A	A	A	A	A	A	A	A
<b>SOUND POWER LEVEL**</b>										
STANDARD UNIT		99	99	99	99	101	99	101	99	103
LOW NOISE (OPTION 15)	dB(A)	93	93	94	95	95	95	97	96	97
VERY LOW NOISE (OPTION 15LS)	dB(A)	87	87	87	90	91	91	93	92	94
LENGTH - WIDTH -HEIGHT	mm	3604 2253 2297	3604 2253 2297	3604 2253 2297	4798 2253 2297	4798 2253 2297	5992 2253 2297	7186 2253 2297	7186 2253 2297	7186 2253 2297
REFRIGERANT		<b>R-134a</b>								

30XBP		800	850	900	1000	1100	1200	1300	1400	1500
<b>NOMINAL COOLING CAPACITY</b>	<b>kW</b>	<b>789</b>	<b>845</b>	<b>890</b>	<b>980</b>	<b>1150</b>	<b>1253</b>	<b>1333</b>	<b>1440</b>	<b>1493</b>
SEER 12/7°C (ECODESIGN)	kW/kW	4,4	4,5	4,2	4,1	4,4	4,5	4,2	4,2	4,1
SEPR 12/7°C (ECODESIGN)	kW/kW	5,7	5,9	5,7	5,6	5,9	5,9	5,7	5,6	5,4
EER (EUROVENT)*	kW/kW	3,1	3,3	3,1	3,2	3,3	3,3	3,2	3,1	3,1
ENERGY CLASS (EUROVENT)	Class	A	A	A	A	A	A	A	A	A
<b>SOUND POWER LEVEL**</b>										
STANDARD UNIT		103	101	104	102	103	102	104	104	104
LOW NOISE (OPTION 15)	dB(A)	98	97	99	98	98	98	100	99	99
VERY LOW NOISE (OPTION 15LS)	dB(A)	94	94	95	94	94	94	99	95	96
LENGTH - WIDTH -HEIGHT	mm	7186 2253 2297	8380 2253 2297	8380 2253 2297	9574 2253 2297	11962 2253 2297	11962 2253 2297	11962 2253 2297	11962 2253 2297	13157 2253 2297
REFRIGERANT		<b>R-134a</b>								

\* In accordance with standard EN14511-3:2013. Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

\*\* In dB ref=10-12 W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A).  
Measured in accordance with ISO 9614-1 and certified by Eurovent

Eurovent certified data

## STANDARD EFFICIENCY UNITS



30XB		250	300	350	400	450	500	600	700	750	800
<b>NOMINAL COOLING CAPACITY</b>	<b>kW</b>	<b>274</b>	<b>299</b>	<b>327</b>	<b>393</b>	<b>444</b>	<b>496</b>	<b>615</b>	<b>682</b>	<b>726</b>	<b>788</b>
SEER 12/7°C (ECODESIGN - OPTION 17)*	kW/kW	4,3	4,4	4,3	4,2	4,1	4,1	4,1	4,4	4,1	4,3
SEPR 12/7°C (ECODESIGN)	kW/kW	4,7	5,1	5,5	4,9	5,3	4,9	5,2	5,5	5,0	5,0
EER (EUROVENT)**	kW/kW	3,1	3,1	3,1	3,2	3,1	3,1	3,1	3,3	3,1	3,1
ENERGY CLASS (EUROVENT)	Class	A	A	A	A	A	A	A	A	A	A
<b>SOUND POWER LEVEL***</b>											
STANDARD UNIT	dB(A)	99	99	99	99	101	99	101	99	103	103
LOW NOISE (OPTION 15)	dB(A)	93	93	94	95	95	95	97	96	97	98
VERY LOW NOISE (OPTION 15LS)	dB(A)	87	87	87	90	91	91	93	92	94	94
ULTRA LOW NOISE (OPTION 15LS+)	dB(A)	-	-	-	-	89	89	91	90	91	92
LENGTH - WIDTH -HEIGHT	mm	3604 2253 2297	3604 2253 2297	3604 2253 2297	4798 2253 2297	4798 2253 2297	4798 2253 2297	7186 2253 2297	7186 2253 2297	7186 2253 2297	7186 2253 2297
REFRIGERANT		<b>R-134a</b>									

30XB		850	900	1000	1100	1200	1300	1400	1500	1550	1700
<b>NOMINAL COOLING CAPACITY</b>	<b>kW</b>	<b>828</b>	<b>890</b>	<b>965</b>	<b>1126</b>	<b>1244</b>	<b>1332</b>	<b>1440</b>	<b>1492</b>	<b>1532</b>	<b>1689</b>
SEER 12/7°C (ECODESIGN - OPTION 17)*	kW/kW	4,3	4,3	4,1	4,1	4,3	4,1	4,1	4,1	4,1	4,1
SEPR 12/7°C (ECODESIGN)	kW/kW	5,1	5,0	5,1	5,3	5,4	5,3	5,4	5,1	5,3	5,2
EER (EUROVENT)**	kW/kW	3,1	3,1	2,9	3,0	3,1	3,1	3,0	3,1	3,2	3,2
ENERGY CLASS (EUROVENT)	Class	A	A	B	B	A	A	B	A	-	-
<b>SOUND POWER LEVEL***</b>											
STANDARD UNIT	dB(A)	101	104	102	103	102	104	104	104	104	104
LOW NOISE (OPTION 15)	dB(A)	97	99	98	98	98	100	99	99	100	100
VERY LOW NOISE (OPTION 15LS)	dB(A)	94	95	94	94	94	99	95	96	96	96
ULTRA LOW NOISE (OPTION 15LS+)	dB(A)	91	93	92	93	93	97	94	95	93	93
LENGTH - WIDTH -HEIGHT	mm	7186 2253 2297	7186 2253 2297	8380 2253 2297	9574 2253 2297	10770 2253 2297	11962 2253 2297	11962 2253 2297	13157 2253 2297	9574/4798 2253 2297	8380/ 8380 2253 2297
REFRIGERANT		<b>R-134a</b>									

\* Preliminary data

\*\* In accordance with standard EN14511-3:2013. Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

\*\*\* In dB ref=10-12 W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A).

Measured in accordance with ISO 9614-1 and certified by Eurovent.

Eurovent certified data

## Main Options

Variable-speed fans on 30XB version\*

Low pressure pumps up to size 500

High pressure pumps up to size 500

Low noise, very low noise, ultra-low noise\*\*

Low brine or very low brine operation

DX free-cooling

Total heat recovery

Side enclosure panels and grilles

IP 54 control box

Low inrush current

Compressor enclosure

Evaporator and pumps aluminum jacket

Enviro-shield™ & Super Enviro-shield™ MCHE coatings

Service valves

BACnet, JBus and Lon communication interfaces

Carrier Connect wireless connectivity

PUREtec version\*\*

(\*) Available during 2018

(\*\*) Available during 2018 on 30XBP version

# Carrier Service beyond your expectations

Your daily challenge is a complex balance between maintaining optimal comfort levels, maximising system uptimes and minimising cost of ownership. Carrier teams are committed to ensuring your peace of mind and supporting your business objectives throughout the lifecycle of your equipment.

## Customer needs come first

### ■ Proximity & Responsiveness

Carrier's expert technicians are there to take action, quickly. Comprehensive and highly efficient maintenance processes mean your equipment works at peak performance level.

If necessary, you can rely on Carrier Rental Systems and readily available spare parts to avoid extended downtime.

### ■ Expertise & Consultancy

Carrier has experienced teams, an extensive network of branches, top grade logistics and powerful information systems. These industry-leading resources come together to deliver a best-in-class service.

Your Carrier experts will help you to find the right balance between enhancing energy efficiency and maximising your investments.

### ■ Proactivity

As your preferred partner, Carrier designs tailored maintenance programs to meet your goals and optimize your business performance.

## Worldwide-recognized experts

### ■ Asset Management

- Advise on fast-moving regulatory environment.
- Guidance for energy optimization solution.
- Information on EH&S guidance.
- Providing educational sessions.

### ■ Technical expertise

Carrier technicians benefit from a multifaceted training program based on 115 years of industry experience to bring you top level, up-to-date service.

- Technical training to ensure its teams remain familiar with all equipment types.
- Environmental, Health and Safety (EH&S) training to ensure the highest standards of ongoing safety.

Present  
in more than  
**60**  
countries

**24/7**  
on-site  
availability

More than  
**115**  
years of  
experience



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