

# neCS / neCS-n

Air cooled liquid chillers and reverse cycle heat pumps with scroll compressors  
Range: 34 – 341 kW

HFC  
R-410A



High energy efficiency  
at part load



Integrated  
hydraulic kit



Heat pump  
down to -10°C



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## The new NECS units

Climaveneta introduces its new NECS range of chillers and heat pumps with scroll compressors and R-410A. The range includes sizes with both one-circuit two compressors and two-circuit four compressors, focused on maximum efficiency and minimum noise emission.

## Why R-410A?

Although R-410A is a blend, it behaves just like a pure gas and features a negligible temperature glide. Thanks to its outstanding heat conductivity, R-410A contributes towards achieving elevated system efficiency.

R-410A is also an ecological gas because its elevated efficiency reduces electricity consumption and consequently CO<sub>2</sub> emissions and because it does not damage the ozone layer (ODP = 0). The scroll compressor has been expressly redesigned for use with the new gas and is now even more compact and silent than before.



## Complete versatility

NECS and NECS-N units are designed to fully satisfy any application need thanks to a complete range of models, versions and configurations.

In fact, NECS is available in partial (D) and total (R) recovery configurations and in B (base), LN (silent), HT (high temperature), HL (silent high temperature) and SL (super silent) versions.



## High energy efficiency at part loads

Climaveneta has designed NECS units with the goal of guaranteeing high efficiency at part load. The result achieved in the single-circuit dual-compressor version is an ESEER > 4.3, equivalent to a 35% saving in seasonal energy consumption compared to the previous R-407C model.



## Advantages

The technological choices aimed to provide the maximum overall quality and the use of the most innovative technologies make NECS a unit able to ensure maximum energy efficiency. Easy to install also thanks to its compact size, versatility and settings for integration in the Idrorelax centralized hydronic system ([www.idrorelax.it](http://www.idrorelax.it)).



### Heat pumps with SMART DEFROST

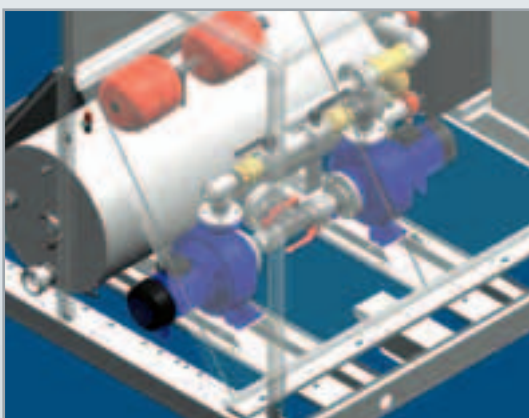
All NECS units are available as NECS-N heat pump models. Innovating the control of traditional heat pump units, Climaveneta has developed SMART DEFROST: a defrost control logic that reduces both unit downtime and energy consumption to a minimum.



### Heat pumps at -10° C external air temperature

Heat pumps can be equipped with the LT low temperature kit. This kit includes software regulation which, activates adequate refrigerant injection.

This keeps the compressor's working range within its safety limits while still guaranteeing unit operations at -10° C external air temperature.



### Integrated hydronic unit

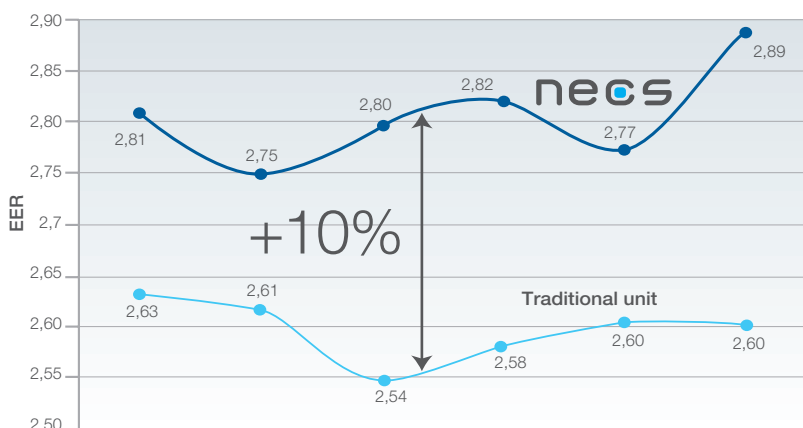
NECS has been designed to reduce installation work to a minimum. The integrated hydronic unit is an option that incorporates all the hydraulic components, thus optimizing installation space, time and costs.

The filter, standard on all units including those without the hydronic unit, makes NECS units plug & play.



## Maximum energy efficiency

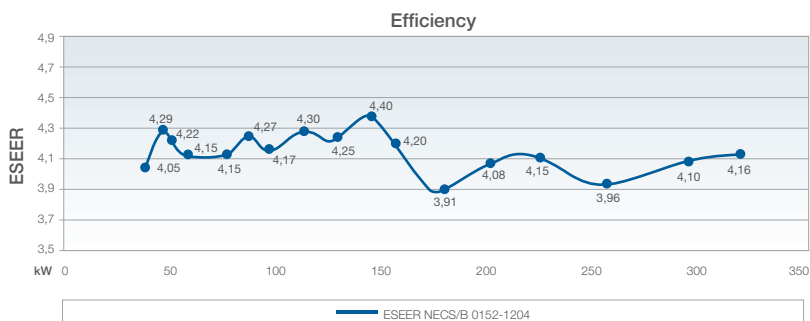
Consistent with corporate culture, the NECS series was designed to offer extremely high quality products with cutting-edge technology focusing on maximum energy efficiency at both full (EER) and part load (ESEER).



### Energy efficiency at full load

NECS units stand out for their particularly high energy efficiency index. This result was achieved by focusing on the design of both the finned coils and the plate exchangers.

These construction choices have both increased efficiency and provided extremely high levels of reliability while significantly increasing compressor working life.



### Energy efficiency at part load

The ESEER parameter, proposed by Eurovent, takes part load operating conditions into account when assessing unit efficiency. It should be pointed out that units are only required to deliver 100% of their rated cooling power for just 3% of their total running time, according to ESEER.

#### ESEER

Load	Temp. air	Weight
100%	35°C	3 %
75%	30°C	33 %
50%	25°C	41 %
25%	20°C	23 %

Weight= Time fraction with operation at respective load conditions.

	SINGLE-CIRCUIT NECS 302LN R410A unit	traditional two-circuit R407C unit with two scroll compressors	Δ% Energy efficiency 302 LN unit vs. Traditional unit
EER 100%	2,59	2,44	+ 1%
EER 75%	3,59	2,71	+ 32%
EER 50%	4,45	3,21	+ 38%
EER 25%	4,39	3,27	+ 30%
ESEER	4,10	3,04	<b>+ 35%</b>

### ESEER Comparison: NECS single-circuit vs. traditional dual-circuit unit

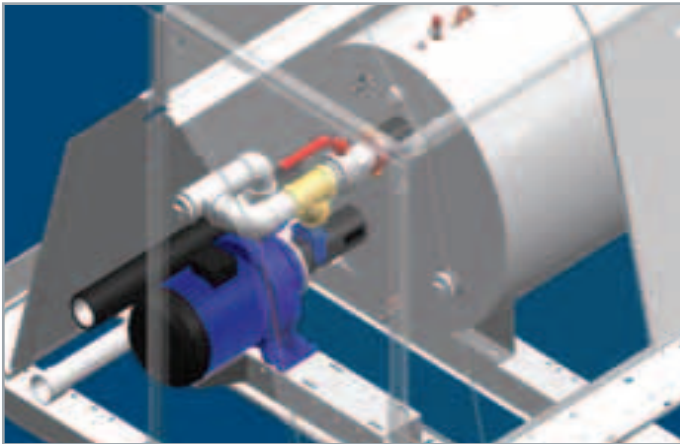
The comparison proves that the new single-circuit NECS units with R-410A feature significantly greater energy efficiency (ESEER + 35%) over traditional dual-circuit units with R-407C.



## Integrated hydronic kit

The new NECS units can be equipped with the hydronic kit that incorporates the main hydraulic components thus optimizing hydraulic and electrical installation space, time and costs.

The innovative QuickMind regulation featured on NECS units was designed to operate in low water content systems thus providing highly professional alternatives to the installation of units with buffer tanks. Where applicable, a tank can be installed in the unit as an accessory upon request.



Configuration: pump plus tank (NECS 2 compressors)

### Available Configurations

#### NECS 2 compressors

- 1 pump hydronic kit
- 2 pumps hydronic kit
- 1 pump with tank hydronic kit
- 2 pumps with tank hydronic kit

#### **2-pole low static head pump**

Monobloc centrifugal horizontal electrical pump.

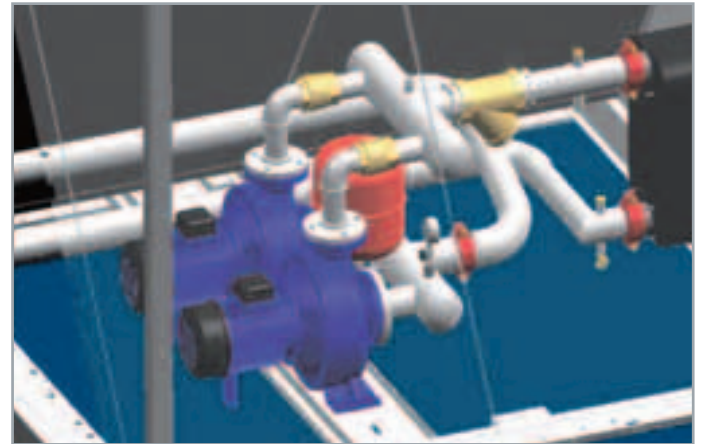
#### **Second pump**

Stand-by pump with time-based rotation; automatic start in the event of first pump fault.

#### **Buffer tank**

Installed in the unit, it is available with capacity from 85 to 250 liters according to size. An antifreeze heater accessory can be supplied upon request.

#### **Water side mechanical filter (standard)**



Configuration: 2 pumps (NECS 4 compressors)

### Available configurations

#### NECS 4 compressors

- 2-pole single low static head pump hydronic kit
- 4-pole single low static head pump hydronic kit
- 2-pole single high static head pump hydronic kit
- 2-pole two low static head pumps hydronic kit
- 4-pole two low static head pumps hydronic kit
- 2-pole two high static head pumps hydronic kit

All kits are available with tank.

#### **2-pole low static head pump**

Monobloc centrifugal horizontal electrical pump.

#### **4-pole low static head pump**

Low noise emission pump recommended for use with silent units.

#### **2-pole high static head pump**

Available for all versions.

#### **Second pump**

Stand-by pump with time-based rotation; automatic start in the event of first pump fault.

#### **Buffer tank**

Installed in the unit, it is available with capacity from 500 to 700 liters according to size. An antifreeze heater accessory can be supplied upon request.

#### **Water side mechanical filter (standard)**



## Maximum versatility

The NECS series includes a wide range of models and versions to fully meet any application requirement always ensuring the highest reliability, flexibility and design freedom.



### Models

#### **NECS, NECS-N**

Cooling only or heat pump standard unit.

#### **NECS-D, NECS-ND (D)**

Cooling only or heat pump unit complete with partial heat recovery section.

#### **NECS-R**

Cooling only unit complete with full heat recovery section (model available for 4-compressor units only)

### Versions

#### **NECS/B, NECS-N/B (Base)**

Standard unit version.

#### **NECS/HT, NECS-N/HT (High Temperature or High Efficiency)**

Version suited for operation in high air temperature climates. The version has high EER values at nominal working conditions.

#### **NECS/LN, NECS-N/LN (Silent)**

Version with fan side reduced noise emission.

#### **NECS/HL, NECS-N/HL (Silent High Temperature or High Efficiency)**

Full load high efficiency version (EER) suited for operations in high air temperature climates with reduced noise emission.

#### **NECS/SL, NECS-N/SL (Super silent)**

Version with fan side reduced noise emission and increased compressor enclosure insulation.



### Silent versions

Two noise reduction levels are available for all sizes: silent and super silent versions. The low noise emission is achieved by reducing fan rotation speed. Correct unit operations are guaranteed by circuit optimization and generous coil.

NECS 0704 silent configuration noise emission example:

Version LN = -6 dB(A) than standard version

Version SL = -10 dB(A) than standard version

Climaveneta certifies and guarantees its noise emission data

# General technical data

NECS 0152-1204		Ver.	0152	0182	0202	0252	0302	0352	0412	0452	0512	0552	0612	0504	0524	0604	0704	0804	0904	1004	1104	1204	
Cooling capacity (1)	kW	B	38,1	45,1	50,5	57,0	76,0	86,8	96,9	112	127	145	159	113	136	154	177	200	223	255	293	325	
		LN	36,1	42,8	50,7	57,0	74,2	84,4	96,4	109	122	139	152	104	129	147	167	187	208	242	275	306	
		SL	33,8	42,3	47,8	55,5	69,9	85,4	96,8	106	118	n.d.	n.d.	n.d.	118	130	147	162	193	211	235	278	313
Total power input (1)	kW	B	14,4	15,6	19,1	21,5	27,8	31,9	36,3	39,6	43,7	50,0	58,1	45,7	53,8	59,8	59,4	74,9	84,4	94,2	106	121	
		LN	15,0	16,5	18,9	21,3	28,6	33,6	37,1	41,4	46,0	52,8	61,5	48,2	53,6	60,1	64,5	77,8	88,1	95,1	109	125	
		SL	16,3	17,0	20,3	22,6	30,9	33,6	37,4	43,2	48,1	n.d.	n.d.	n.d.	45,1	51,8	58,8	67,3	75,3	87,2	96,5	106	121
Compressors / circuits		B	2/1											4/2									
		LN	2/1											4/2									
		SL	2/1											4/2									
Total EER		B	2,65	2,89	2,64	2,65	2,73	2,72	2,67	2,83	2,91	2,90	2,74	2,47	2,47	2,53	2,58	2,98	2,67	2,64	2,71	2,76	2,69
		LN	2,41	2,59	2,68	2,68	2,59	2,51	2,60	2,63	2,65	2,63	2,47	2,16	2,16	2,41	2,45	2,59	2,40	2,36	2,54	2,52	2,45
		SL	2,07	2,49	2,35	2,46	2,26	2,54	2,59	2,45	2,45	n.d.	n.d.	n.d.	2,51	2,51	2,50	2,41	2,56	2,42	2,44	2,62	2,59
ESEER		B	4,03	4,27	4,21	4,14	4,13	4,31	4,16	4,34	4,23	4,4	4,2	4,05	3,60	3,77	3,91	4,04	4,14	3,93	4,10	4,10	4,16
		LN	4,03	4,18	4,23	4,20	4,10	4,03	4,00	4,21	4,04	4,19	3,96	3,92	3,85	3,92	4,02	3,98	4,07	4,01	4,15	4,06	
		SL	3,77	3,92	4,01	3,93	3,85	3,91	3,89	3,98	3,89	n.d.	n.d.	n.d.	4,01	4,14	4,14	4,13	4,07	4,08	4,09	4,39	4,19
Sound power level (3)	dB(A)	B	84	84	84	84	85	86	86	86	87	87	87	87	91	92	92	92	92	93	94	95	95
		LN	79	79	80	80	81	83	83	83	84	84	84	85	86	86	86	86	86	87	88	89	89
		SL	76	77	77	78	78	81	81	81	82	n.d.	n.d.	n.d.	82	82	82	82	82	83	83	85	86
Sound pressure level (4)	dB(A)	B	52	52	52	52	53	54	54	54	55	55	55	62	63	63	63	63	64	65	66	66	
		LN	47	47	48	48	49	51	51	51	52	52	52	56	57	57	57	57	58	59	60	60	
		SL	44	45	45	46	46	49	49	49	50	n.d.	n.d.	n.d.	53	53	53	53	54	54	54	56	57
Dimensions (5) (6)	Ver.	0152	0182	0202	0252	0302	0352	0412	0452	0512	0552	0612	0504	0524	0604	0704	0804	0904	1004	1104	1204		
		B	1695	1695	1695	1695	2195	2195	2745	2745	2745	3245	3245	3245	3110	3110	3110	3110	3110	4110	4110	4110	
		LN	1695	1695	2195	2195	2745	2745	2745	2745	3245	3245	3245	3110	3110	3110	3110	3110	3110	4110	4110	4110	
A	mm	B	1695	2195	2195	2745	2745	2745	3245	3245	3245	n.d.	n.d.	3110	3110	3110	3110	3110	4110	4110	4110	5110	
		LN	1695	2195	2195	2745	2745	2745	3245	3245	3245	n.d.	n.d.	3110	3110	3110	3110	3110	4110	4110	4110	5110	
		SL	1695	2195	2195	2745	2745	2745	3245	3245	3245	n.d.	n.d.	3110	3110	3110	3110	3110	4110	4110	4110	5110	
B	mm	B	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120	2220	2220	2220	2220	2220	2220	2220	2220	2220	
		LN	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120	1120	2220	2220	2220	2220	2220	2220	2220	2220	2220	
		SL	1120	1120	1120	1120	1120	1120	1120	1120	1120	n.d.	n.d.	2220	2220	2220	2220	2220	2220	2220	2220	2220	
H	mm	B	1420	1420	1420	1420	1420	1420	1420	1420	1620	1620	1620	1620	1700	1700	1700	2150	2150	2150	2150	2150	
		LN	1420	1420	1420	1420	1420	1620	1620	1620	1620	1620	1620	1620	1700	1700	1700	2150	2150	2150	2150	2150	
		SL	1420	1420	1420	1420	1420	1620	1620	1620	1620	n.d.	n.d.	1700	1700	1700	2150	2150	2150	2150	2150		
Operating weight	kg	B	370	410	410	420	620	650	730	780	930	950	960	1230	1450	1620	1780	1890	2070	2220	2380	2530	
		LN	370	410	460	490	660	720	790	820	930	950	960	1230	1450	1620	1780	1890	2070	2220	2380	2530	
		SL	390	450	480	540	700	780	860	910	940	n.d.	n.d.	1360	1570	1770	1860	2120	2180	2320	2630	2770	

NECS-N 0152-1204		Ver.	0152	0182	0202	0252	0302	0352	0412	0452	0512	0552	0612	0504	0524	0604	0704	0804	0904	1004	1104	1204	
Cooling capacity (1)	kW	B	37,7	42,8	47,9	57,5	72,0	82,5	93,9	107	120	138	151	111	129	147	166	189	211	240	277	311	
		LN	35,8	42,0	48,0	54,6	73,2	83,5	93,9	103	119	132	144	103	123	141	156	177	199	227	261	291	
		SL	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	108	124	141	159	183	201	225	261	294
Total power input (1)	kW	B	13,6	15,7	19,2	20,4	28,0	32,0	36,0	39,9	44,0	50,1	58,3	43,7	54,0	60,0	68,9	75,9	85,1	95,6	107	121	
		LN	14,3	16,2	19,1	21,3	27,2	32,0	36,0	41,6	44,5	53,0	61,8	46,2	53,5	60,0	70,3	78,3	87,7	96,2	110	125	
		SL	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	45	52,1	58,3	67,7	75,3	87,4	95,3	108	124
Heating capacity (2)	kW	B	42,6	47,8	53,8	64,8	80,6	92,9	105	121	135	156	172	127	145	167	185	209	234	267	306	344	
		LN	41,6	47,9	53,7	63,2	83,6	95,6	108	120	137	154	169	122	138	158	176	198	225	254	290	324	
		SL	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	125	140	158	178	205	226	253	295	330
Total power input (2)	kW	B	14,2	15,6	18,1	21,2	26,1	29,8	33,9	38,1	42,3	48,2	54,1	43,6	52,7	58,0	64,7	72,1	79,9	92,1	104	116	
		LN	13,8	15,3	18,1	20,7	26,0	30,4	34,2	37,9	42,3	48,1	53,9	41,5	48,9	53,7	60,7	67,8	75,5	86,1	97,9	110	
		SL	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	42,8	47,5	52,1	59,5	68,6	75,8	83,8	96,1	110
Compressors / circuits		B	2/1											4/2									
		LN	2/1											4/2									
		SL	2/1											4/2									
Total COP		B	3,00	3,06	2,97	3,06	3,09	3,12	3,10	3,18	3,19	3,24	3,18	2,91	2,75	2,88	2,86	2,90	2,93	2,90	2,94	2,97	
		LN	3,01	3,13	2,97	3,05	3,22	3,14	3,16	3,17	3,24	3,20	3,14	2,94	2,82	2,94	2,90	2,92	2,98	2,95	2,96	2,95	
		SL	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	2,92	2,95	3,03	2,99	2,99	2,98	3,02	3,07	3,00
Sound power level (3)	dB(A)	B	84	84	84	84	85	86	86	86	87	87	87	87	91	92	92	92	92	93	94	95	
		LN	79	79	80	80	81	83	83	83	84	84	84	85	86	86	86	86	86	87	88	89	
		SL	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	82	82	82	82	83	83	85	86	
Sound pressure level (4)	dB(A)	B	52	52	52	52	53	54	54	54	55	55	55	62	63	63	63	63	63	64	65	66	
		LN	47	47	48	48	49	51	51	51	52	52	52	56	57	57	57	57	58	59	60		
		SL	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	53	53	53	53	54	54	54	56	
Dimensions (5) (6)	Ver.	0152	0182	0202	0252	0302	0352	0412	0452	0512	0552	0612	0504	0524	0604	0704	0804	0904	1004	1104	1204		
		B	1695	1695	1695	2195	2195	2745	2745	2745	3245	3245	3245	3110									

