LENNOX

Think far*

NEOSYS

AIR TO WATER LIQUID CHILLER

200 - 1000 kW

AIR TO WATER HEAT PUMP

200 - 500 kW

NEOSYS, winning ENERGY PERFORMANCE

The NEOSYS delivers energy efficiency at full and partial load by the use of R410A multi scroll compressors and special algorithms designed to reduce energy costs.

R410A, unequalled performance while protecting the environment

The **NEOSYS** is equipped with high performance cooling systems that protect the environment by the use of R410A multi scroll compressors and optimised heat exchange area.

- ¬ Reduced loss of charge for improved COP.
- ¬ Increased isentropic efficiency of the compressors.
- ¬ Greater power efficiency than other HFC fluids.
- ¬ Zero potential for destruction of the Ozone layer.
- ¬ Very low refrigerant charge to limit environmental impact.
- ¬ Refrigerant charge possible for servicing.

Multi scroll high performance compressors for optimum, long lasting efficiency

- ¬ Multi-stage power regulation giving high performance at partial load.
- ¬ Solid reliability owing to disengagement of the spiral in the event of ingesting liquid or foreign particles (Compliant patented system).
- ¬ Safe operation. The machine retains at least 50% of its power.

Intelligent control that continuously optimises power consumption

With the 7 day time programming periods, control manages power consumption according to the use of the premises : automatic switching to occupation mode, unoccupied or frost-free. Regulation permits automatic winter/summer offsetting of water set point according to the outside air temperature.

regulation reduces the heat pump consumption by restricting the number of defrost cycles owing to the patented Dynamic Defrost. Depending on the size of the 'installation, regulation can control from one to eight units in master/slave or cascade operation and provides communication with the building management system (BMS) or Lennox Adalink monitoring.

¬ ModBUS®. ¬ LonWorks®¬ BacNET®. ¬ Adalink.

Designed to encourage eco-efficiency

eComfort™
efficiency • environment

NEOSYS, variable water flow
FOR ENERGY SAVINGS

The cost of pumping power represents more than 20% of the total energy cost

In a water system, the pump is one of the main energy consumption items. The energy cost of pumping can represent more than 20% of the total energy cost of a chiller. **eDrive** variable speed pump technology is part of the responses made by Lennox to save energy while exploring the possibilities of reducing installation costs.

eDrive automatically controls energy costs

- At full load owing to electronic adjustment of the pump curve. Elimination of power losses caused by the manual water flow control valve.
- At partial load by automatically reducing the pump speed when operating at reduced chiller load.
- During shutdown periods of the cooler owing to operation of the pump at minimum speed.
- On starting owing to the speed controller which reduces the starting current pump.

The power consumption of the pump varies with the cube of the pump speed.

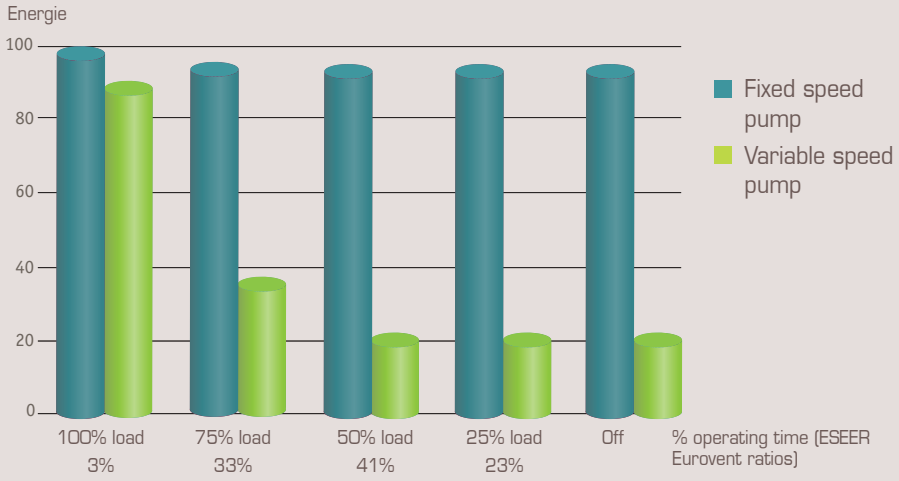
- 20% flow reduction = Power consumption reduced by 50%
- 40% flow reduction = Power consumption reduced by 80%

A 10 kW fixed speed pump operating 24h/24 consumes about 87,600 kWh a year or a power bill of 8,000 GBP (1 kWh = 0.09 GBP).

Choosing **eDrive** technology will save almost 6,000 GBP a year

eDrive: 70 % reduction of the annual pumping consumption

Pump energy consumption



NEOSYS, sound level
ADJUSTABLE NIGHT AND DAY

One of the main features of the NEOSYS unit is an adjustable sound level for night and day to comply with the surrounding acoustic requirements.

Intelligent adaptation of the sound level

The **NEOSYS** is fitted with the patented **Active Acoustic Attenuation System** which enables the customer to program/set noise level by time slot and then choose the performance or required noise level mode. The **Active Acoustic Attenuation System** takes care of everything.

It automatically adjusts the airflow from the **OWLET** variable speed fans according to the building load while complying with the permitted sound level. It also enables floating condensing pressure management.

- Elimination of start/stop noises.
- Adjustable sound level
- Floating condensing pressure

OWLET fans and acoustic attenuation of compressor noise

The **NEOSYS** is designed to achieve the lowest noise level on the market. The principal technological innovations are the new fan blades, silent compressor operation and the use of ceramic bearings. Usage of **OWLET** fans, together with acoustic insulation of the compressor housings, **NEOSYS** has achieved acoustic performance that is unrivalled on the market.

OWLET fan with profiled blades

NEOSYS, a performance
THAT WITHSTANDS THE TEST OF TIME

Quality of manufacture and reliability

The design of the NEOSYS was focused on performance and long life

- **Extended qualification tests** (vibration,functional, acoustic and field tests) to ensure superior reliability.

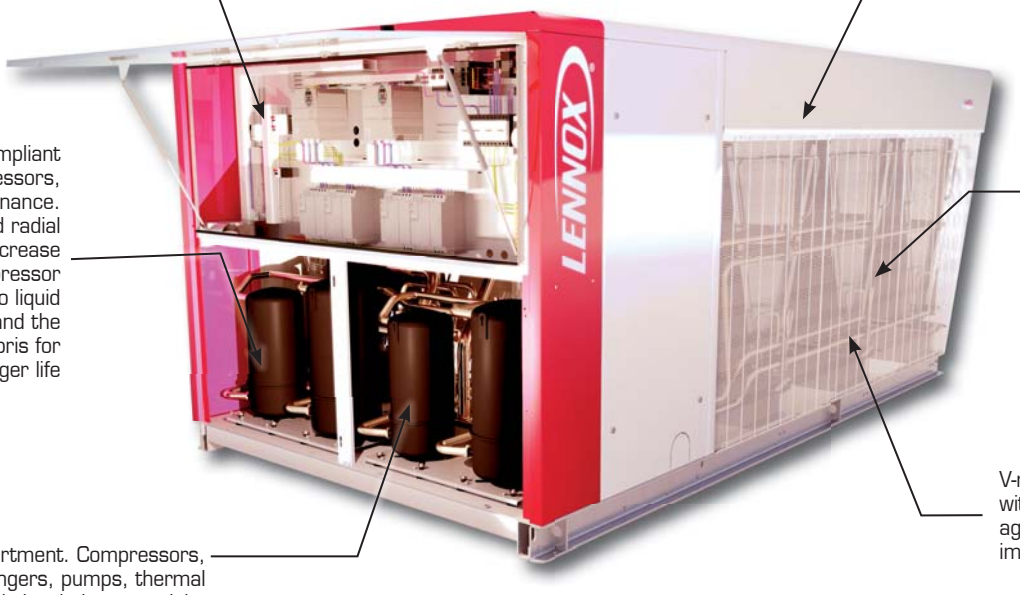
- **Aluminium micro channel** heat exchanger (cooling only) providing 3 times the resistance to corrosion and a mechanical design that protects the fins and reduces clogging. These units are produced by automated production process to guarantee better reliability vs. traditional units.

- **Compressors and hydraulic equipment installed in a special compartment, V-mounting of the heat exchangers** protecting the components from external conditions (rain, hail) and allowing the use of high pressure cleaners.

- **Zero maintenance scroll compressors with axial and radial** Compliance® which permits disengagement of the spiral in the event of abnormal ingestion of liquid or foreign particles. This technology results in improved reliability and extended life.

- **Fans fitted with hybrid ceramic bearings** which double the life cycle of the motors and reduce the noise level. This type of hybrid sealed ceramic bearing requires limited, or even zero maintenance.

Aluminium micro channel heat exchanger



Butterfly Electrical cabinet. Protection of components and service engineers against climatic conditions.

OWLET fan with ceramic bearings for significantly longer life.

Multiple Compliant scroll compressors, zero maintenance. Both axial and radial compliance to increase the compressor tolerance to liquid refrigerant and the ingestion of debris for longer life

Aluminium micro channel heat exchanger with high corrosion resistance. Refrigerant charge reduction (-40%).

V-mounted heat exchanger units with protection grilles. Protection against hail and external impacts.

Technical compartment. Compressors, water heat exchangers, pumps, thermal and acoustic insulation materials, protected from external climatic conditions and water spray when cleaning the heat exchangers.

3 YEAR WARRANTY*

*3 year-warranty for main parts. Subject to LENNOX warranty policy.

NEOSYS, optimisation OF INSTALLATION COSTS

Hydraulic module with low or high pressure pumps

Lennox designed the NEOSYS with a compact hydraulic module. The machine includes all the necessary hydraulic components: single or double pump, expansion vessel, air bleed, filter, electronic flow switch, manual or electronic water flow control valve, etc.

NEOSYS with low or high pressure pump

Depending on the nature of your hydraulic installation, **NEOSYS** can be fitted with the choice of a pump providing 150 or 250 kPa of pressure. To facilitate start-up, you can choose a classical hydraulic module with manual water flow control valve or, as an option, an electronic control, that will adjust the water flow to the actual requirements of the installation (optional **eDrive**).

The eDrive variable water flow reduces installation costs

Up to now, two types of hydraulic systems were possible for liquid chillers: a "direct" constant flow circuit or a "decoupled" primary-secondary circuit with constant primary flow. The **NEOSYS** fitted with optional **eDrive** now offers a 3rd choice: variable primary flow. This is particularly beneficial in comparison with a "decoupled" circuit since only one pump is necessary.

Compared with a constant flow "direct" circuit, variable primary flow circuit may use 2-way valves on the terminal units instead of 3-way valves and thus contributes to reducing the installation cost.

In addition, the flow control valve is eliminated since the pump is electronically adjusted to the actual requirements of the plant.

These factors can considerably reduce the initial cost of the installation.

Lennox **eDrive** variable primary water flow

Lennox variable speed pump

+

Lennox speed controller

+

LENNOX
Innovation never felt so good.™

Lennox control Algorithms
Constant delta P mode: terminal units with 2-way valves.

=

eDrive™
Driving Energy Efficiency

Optional eDrive
Variable Primary Water Flow by Lennox.

NEOSYS,
ECO-EFFICIENCY CONTRIBUTION BY LENNOX

eComfort illustrates Lennox's commitment toward energy efficiency and environmentally friendly solutions

eComfort™
efficiency • environment

The NEOSYS was designed in the spirit of ECO-DESIGN aiming to :

¬ Limit toxic substances, use recyclable materials and reduce components :

The **NEOSYS** uses HFC R410A cooling fluid which is an azeotropic mixture that does not damage the ozone layer. Its very low toxicity and non-flammability classify it in the "danger free" group according to ASHRAE standard. The micro channel and plate heat exchangers reduce the refrigerant charge by 40% thereby limiting the direct impact due to accidental loss of refrigerant (irregular loss associated with mechanical breakage or end of life cycle).

Made entirely from aluminium, micro channel heat exchangers can be easily recycled and lead to a reduction in material in the order of 30% compared with traditional heat exchangers.

¬ Reduce energy consumption

The impact of our machines on global warming is mainly due to the primary energy used for their operation. The **NEOSYS** is designed to achieve optimised energy performance throughout the year and limits the indirect release of CO_2 associated with the consumption of electricity. The use of variable speed fans, the **eDrive** variable speed pump, the high performance of our air/water heat pump have earned Certificates of Energy Reduction (BAT-TH-12, BAT-TH-14 – France only).

By reducing energy consumption, the **NEOSYS** also reduces the energy bill and limits emissions of CO_2. Refer to TEWI to measure the global warming impact (Total Equivalent Warming Impact = direct loss of refrigerant and indirect effect of CO_2emissions from power consumption).

¬ Extension of the life cycle, facilitate repair and end of life recycling:

The **NEOSYS** is fitted with multiple scroll of very high reliability, "zero maintenance" compressors. In the event of a failure or the end of the life cycle of a compressor, partial replacement of one of the scroll compressors limits the impact of waste material. The micro- channel heat exchangers with very high corrosion resistance and fan motors fitted with ceramic bearings triple the life cycle of these components vs. traditional components.

TECHNICAL INFORMATION

NEOSYS	NAC NAH	200 200	230 230	270 270	300 300	340 340	380 380	420 420	480 480	540 -	600 -	640 -	680 -	760 -	840 -	960 -	1080 -
Cooling capacity [1]	kW	208	236	273	308	351	387	430	490	531	605	627	702	774	860	980	1062
EER		2,9	2,7	2,6	2,9	2,8	2,6	2,8	2,8	2,6	2,8	2,8	2,8	2,6	2,8	2,8	2,6
ESEER		4.2	4.0	4.0	4.0	4.2	3.9	4.2	4.0	4.0	4.2	4.2	4.2	3.9	4.2	4.0	4.0
Heating capacity [2]	kW	219	252	313	346	370	410	459	509	-	-	-	-	-	-	-	-
COP		3,1	3,0	3,0	3,0	3,0	3,0	3,0	3,0	-	-	-	-	-	-	-	-
Length NAC	mm	3590			4620			5650			6680		9040		11100		
Length NAH	mm	3590			4620			5650			-						
Width/Height	mm	2280 / 1964															

Nominal conditions: (1) water 12/7°C, air 35°C (2) water 40/45°C, air 7°C

Equipment	NAC (Cooling only)	NAH (Heat pump)
Scroll compressors, brazed plate water heat exchanger, micro-channel air heat exchangers (cooling only) or copper/aluminium (heat pump), **OWLET** variable speed fans, R410A refrigerant, Butterfly electrical panel, main switch, CLIMATIC control, Active Acoustic Attenuation System, customer display, water filter and electronic flow switch, Victaulic connections, enclosure panels and side protection grilles, 3 year guarantee on main parts.	Standard	
"Standard" Version without enclosure panel, grille, stepped regulation with fixed speed fans	Option	Option
Hydraulic module with single or twin low pressure pump.	Option	Option
Hydraulic module with single or double low pressure pump.	Option	Option
Hydraulic module, **eDrive** single high pressure variable speed pump	Option	Option
Hydraulic module, double **eDrive** high pressure variable speed pump	Option	Option
Anti-freeze heater	Option	Option
Winter operation down to -20°C ambient temperature (Including electronic expansion valve)	Option	-
Operation for low temperature water down to -10°C (Including electronic pressure reducing valve)	Option	-
Partial heat recovery	Option	Option
"Free cooling" module, 1x V or 2x V	Option	Option
Flange connection /Anti-vibration mounts	Options	Options
Rear protection grilles.	Option	Option
Thermoguard anti-corrosion treatment of air heat exchangers	Option	Option
Energy meter/Electronic starter/Power factor correction	Options	Options
Remote display/Modbus/Bacnet/ Lonworks/Adalink	Options	Options

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