Lightstream Scroll

AIR-COOLED CHILLERS WITH SCROLL COMPRESSORS

- CLASS A ENERGY EFFICIENCY
- MICROCHANNEL CONDENSING COILS
- HEAT RECOVERY OPTIONS

190-880kW

AVAILABLE IN 7 FRAME SIZES, TOTAL 22 MODELS WITH A WIDE SELECTION OF OPTIONS AND ACCESSORIES

SCROLL R410a EC-FANS MICROCHANNEL HEAT RECOVERY

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High-efficient chilled water production

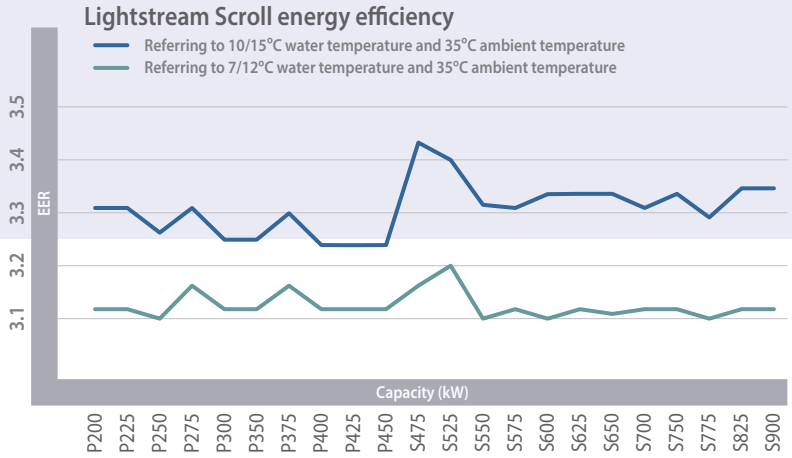
AN EXCEPTIONALLY EFFICIENT AIR-COOLED CHILLER RANGE OFFERING DIVERSE COOLING CAPACITIES AND FEATURING A WIDE SELECTION OF OPTIONS, INCLUDING PARTIAL AND TOTAL HEAT RECOVERY. WITH ITS COMPACT AND RELIABLE SCROLL COMPRESSORS, MICROCHANNEL CONDENSERS, AND QUIET AXIAL FANS, IT'S THE PERFECT SOLUTION FOR AIR CONDITIONING AND PROCESS COOLING APPLICATIONS.

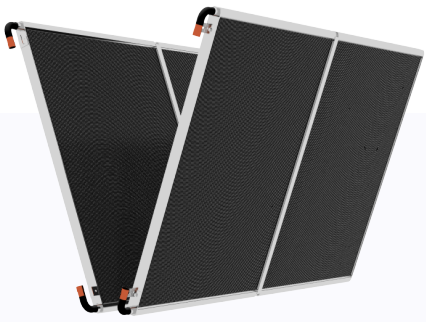
The benefits at a glance:

- ENERGY EFFICIENCY RATIO UP TO 3.20
- ESEER UP TO 4.70
- INTELLIGENT HEAD PRESSURE CONTROL
- WATER TEMPERATURES OF UP TO -12°C
- LOW CONDENSING TEMPERATURES
- HEAT RECOVERY OPTIONS

ESEER OF UP TO

4.70





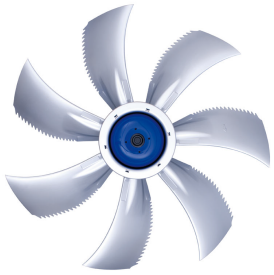
Microchannel condensers

Enhanced heat transfer and low condensing temperature

Microchannel condensers used in Lightstream Scroll design give a number of advantages, including higher heat transfer rate, low airside pressure drops, and closer approach temperatures. The end result is up to 40% higher energy efficiency in comparison to traditional fin/tube heat exchanger design.

Smaller coil face, thin design, up to 50% less weight, and less refrigerant charge translate to lower system cost. Microchannel condensers used in Lightstream Scroll chillers are true HVAC coils developed and optimized especially for refrigeration applications and enable remarkable low condensing temperatures.

Leading fan technology



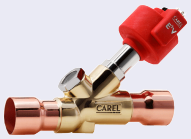
Optimum air flow for partial load efficiency

Lightstream Scroll's new generation fan system not only reduces power consumption by up to 30% while easily managing the extraordinary high volume flows – it also works at much reduced operating noise.

The smart fan system includes the unique fans with bionic wing concept, the most advanced EC motor technology, and multifunctional air diffusers, resulting in an extra economic efficiency for the customers.

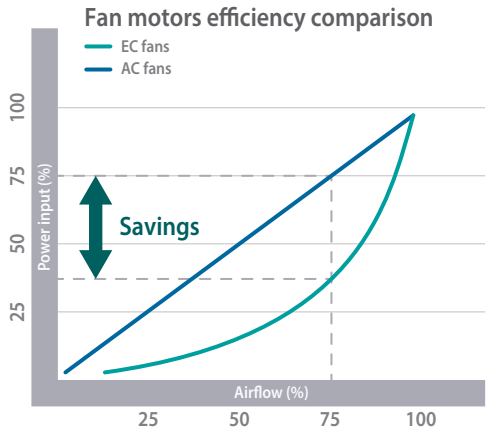
EC motor technology does not provide savings only during full-load operation - it is exactly when operating under partial load that EC motors lose much less of their efficiency.

25% energy savings through the use of EEV



The electronic expansion valve (EEV) reduces the need for high head pressure when running at part load and lower ambient conditions.

EEV is controlled by a driver which regulates its opening according to the performance levels required by the system and guarantees the minimal overheating under all operating conditions.



The control hub of Lightstream Scroll chillers is a sophisticated controller and advanced software developed for efficient operation of the chillers based on scroll compressors. It manages and optimizes the chiller's performance, giving the complete control over the system for plant operator.

Scroll compressors

Proven performance and reliability

Lightstream Scroll chillers are based on scroll compressors in tandem configuration, which offer part-load efficiency and increased load-matching capabilities, as well as quiet operation and diagnostic capabilities, and enable two-stage capacity by running compressors individually or simultaneously.

Lightstream's refrigerant side consists of one to four gas circuits - depending on unit capacity, each equipped with electronic expansion valve (EEV) to ensure optimum system efficiency.

Depending on their demands, customers can choose from partial or total heat recovery features installed on each gas circuit.

Evaporators

Lightstream Scroll chillers feature two different types of evaporators: brazed plate for models with 2 refrigerant circuits and shell and tube for 3- and 4-circuits models.

Brazed plate heat exchangers

Brazing the stainless steel plates together eliminate the need for gaskets and thick frame plates, which makes the heat exchanger compact. The brazing material seals and holds the plates together at the contact points ensuring optimal heat transfer efficiency and pressure resistance. Using advanced design technologies and extensive verification guarantees the highest performance and longest possible service lifetime.

Shell and tube heat exchangers

With innovative refrigerant distributor and optimized plastic baffles designed to improve the brine side heat transfer performances, Lightstream's shell and tube evaporator guarantee maximum efficiency and compactness. The tubes have a specific inner grooved pattern to maximize the heat transfer coefficient and to limit the pressure drop negative effects.

Package, options and accessories

Description					
General					
Anti-vibration mounts	□	MCHE electrocoat	□	High ambient kit	□
Anti-vibration springs	□	MCHE thermoguard	□	Low noise design (grades 1-4)	□
Soundproof compressor enclosures	□	MCHE mesh guard	□	Partial heat recovery system	□
High-sided paneling	□	-6°C brine kit	□	Total heat recovery system	□
Magnitothermic switches for compressors	□	-12°C brine kit	□	Buffer tank	□
Waterside					
Pumping group (single/twin inline pumps)	□	Pump(s) antifreeze heater	□	Flowmeter	□
Refrigerant side					
Electronic expansion valves	■	Service valve (compressor suction)	□	Safety valves on high/low pressure sides	□
Service valve (compressor discharge)	□	Pressure indication on high/low pressure sides	□	Thermal insulation	■
Airside					
AC fans	■	EC fans	□	High-efficient fan diffusers	□
Electric and controls					
Touch screen HMI	□	Phase monitoring relay	□	Sequence management	□
Electric panel heater	□	BMS connectivity	■	Compressor operation indication	□
Compressor power factor capacitor	□	SNMP connectivity	□	Remote monitoring software	□
Soft-start system	□	Energy monitoring	□	Pumping group control system	□

■ Standard feature
□ Optional feature

Frame sizes and model identification

Lightstream Scroll			S	600	V	6	/	3
Evaporator type	P	Brazed plate						
	S	Shell and tube						
Nominal capacity		kW						
Condenser	W	W-bank microchannel						
Condenser size		No. of condenser banks						
Refrigerant circuits		No. of refrigerant circuits						

Frame size		F1	F2	F3	F4	F5	F6	F7
Length	mm	2475	3595	4715	5835	6955	8075	9195
Width	mm	2250	2250	2250	2250	2250	2250	2250
Height	mm	2315	2315	2315	2315	2315	2315	2315

Technical Specs

Lightstream Scroll		P200 V2/2	P225 V2/2	P250 V2/2	P275 V3/2	P300 V3/2	P350 V3/2	P375 V4/2	P400 V4/2	P425 V4/2	P450 V4/2	S475 V5/3
Cooling capacity[1]	kW	190	220	235	270	310	345	375	395	415	440	470
Frame size		F1	F1	F1	F2	F2	F2	F3	F3	F3	F3	F4
EER	kW/kW	3.12	3.12	3.10	3.16	3.12	3.12	3.16	3.12	3.12	3.12	3.16
ESEER		4.45	4.49	4.37	4.41	4.53	4.53	4.37	4.40	4.43	4.48	4.55
Net weight	kg	1910	1960	2140	2640	2690	2730	3220	3270	3290	3310	4360
Compressors		Scroll										
Quantity		4	4	4	4	4	4	4	4	4	4	6
Power input	kW	53.4	62.6	68.8	75.0	87.8	99.3	104.2	112.0	118.1	126.1	130.0
Absorbed current	A	99.8	115.1	121.0	134.0	154.1	172.0	180.2	194.0	203.2	215.2	228.0
Capacity steps		4	4	4	4	4	4	4	4	4	4	6
Fans		AC-type axial										
Quantity		4	4	4	6	6	6	8	8	8	8	9
Airflow	m^3/h	85000	85000	85000	127500	127500	127500	170000	170000	170000	170000	212500
Power input	kW	6.4	6.4	6.4	9.5	9.5	9.5	12.7	12.7	12.7	12.7	15.9
Absorbed current	A	15.6	15.6	15.6	23.4	23.4	23.4	31.2	31.2	31.2	31.2	39.0
Evaporator		BPHE	BPHE	BPHE	BPHE	BPHE	BPHE	BPHE	BPHE	BPHE	BPHE	ST
Water flow rate	m^3/h	32.5	37.5	40.2	46.5	53.0	59.0	64.0	67.5	70.8	75.2	89.5
Max flow rate	m^3/h	45.3	52.4	56.4	65.4	74.0	82.6	89.4	94.7	99.3	105.2	121.0
Water volume	l	13.3	15.1	15.1	18.6	26.0	30.0	31.6	133.4	133.4	124.7	113.5
Refrigerant circuits		R410a										
Quantity		2	2	2	2	2	2	2	2	2	2	3
Charge	kg	19.0	19.5	20.2	27.8	27.8	28.3	36.2	36.2	36.2	36.2	41.8

(1) Coolant: Water 100%; Coolant temperatures: 7/12°C; Ambient temperature: 35°C

Lightstream Scroll		S525 V5/3	S550 V5/3	S575 V5/3	S600 V6/3	S625 V6/3	S650 V6/3	S700 V6/4	S750 V7/4	S775 V7/4	S825 V8/4	S900 V8/4
Cooling capacity[1]	kW	525	540	565	590	615	655	690	745	770	830	880
Frame size		F4	F4	F4	F5	F5	F5	F5	F6	F6	F7	F7
EER	kW/kW	3.20	3.10	3.12	3.10	3.12	3.11	3.12	3.12	3.10	3.12	3.12
ESEER		4.70	4.57	4.60	4.48	4.50	4.55	4.66	4.56	4.56	4.58	4.60
Net weight	kg	4560	4580	4600	5150	5170	5200	5570	6470	6510	6590	6620
Compressors		Scroll										
Quantity		6	6	6	6	6	6	8	8	8	8	8
Power input	kW	145.0	156.0	163.0	170.0	175.0	188.0	200.0	214.0	225.0	237.0	252.0
Absorbed current	A	253.0	270.0	280.0	292.0	301.0	320.0	346.0	370.0	385.0	408.0	430.0
Capacity steps		6	6	6	6	6	6	8	8	8	8	8
Fans		AC-type axial										
Quantity		9	10	10	12	12	12	12	14	14	16	16
Airflow	m^3/h	212500	212500	212500	255000	255000	255000	255000	297500	297500	340000	340000
Power input	kW	15.9	15.9	15.9	19.0	19.0	19.0	19.0	22.2	22.2	25.2	25.2
Absorbed current	A	39.0	39.0	39.0	46.8	46.8	46.8	46.8	54.6	54.6	62.4	62.4
Evaporator		ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST
Water flow rate	m^3/h	101.0	101.0	103.0	124.0	124.0	124.0	140.0	140.0	145.0	164.0	168.0
Max flow rate	m^3/h	135.0	135.0	135.0	160.0	160.0	190.0	190.0	190.0	190.0	217.0	217.0
Water volume	l	221.7	221.7	221.7	206.5	206.5	206.5	184.4	184.4	184.4	225.0	225.0
Refrigerant circuits		R410a										
Quantity		3	3	3	3	3	3	4	4	4	4	4
Charge	kg	42.4	46.5	46.5	54.4	54.4	54.4	56.6	64.6	64.6	72.5	72.5

(1) Coolant: Water 100%; Coolant temperatures: 7/12°C; Ambient temperature: 35°C

MODELS
22
AVAILABLE

The development of Kaltra products and services is continuous and the information in this document may not be up to date. Please check the current position with Kaltra.

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