

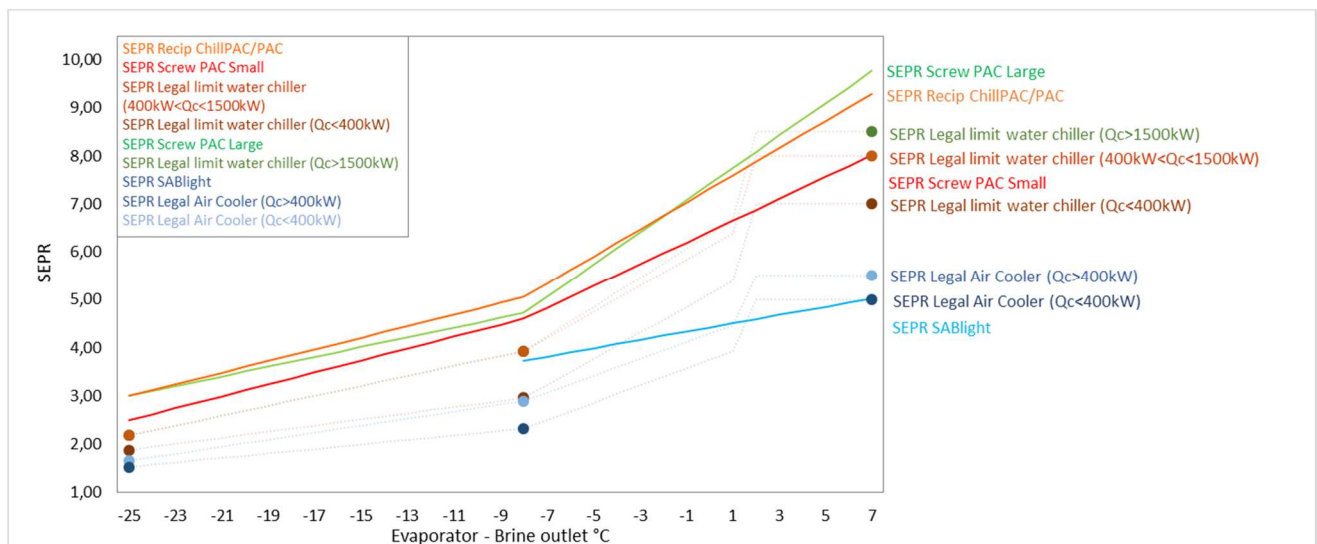
Letter of compliance for ECO-design, Process & Comfort chiller Directive 2009/125/EC

Manufacturer: Johnson Controls Denmark ApS, SABROE Factory
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We hereby declare that our products within the scope of eco-design, implemented according to regulation No 2015/1095 for low (-25°C) and medium (-8°C) temperatures and No 2016/2281 for high temperatures (+7°C), are in compliance. The harmonised standards EN 14511 series and EN 14825 have been used for testing and calculation. Value tolerances for selection tools comply with EN 12900.

Preconditions:

- a EER calculations are defined as COP (Coefficient Of Performance) in our nomenclature for evaporator calculation in COMP1 sales tools. Capacity control is variable.
- b SEPR calculations are made by spreadsheet tool version 1.5.3 date 2013-09-01. Diagram lines drawn as straight lines between legal condition points and product points. See data and calculation on page 2. Degradation coefficient $C_c = 0.9$ for part load. Specific EER, SEPR and η_{sc} values are included in the operating manual.
- c Screw compressors without performance-increasing system (economizer).
- d Secondary refrigerant ethylene glycol -25°C and -8°C. Secondary refrigerant water at +7°C.
- e Superheat 0°K and subcooling approx. 1°K.
- f Suction and discharge pressure drop included.
- g Electric power for liquid pumps included according to EN 14511-3, Annex G.4.
- h GWP<150 allows 10% lower value included for low – and medium temperatures.
- i Chiller includes evaporator (Water/brine) and condenser (Water/brine or air).
- j Examples of calculations are shown with selected models representing the respective model program. All other conditions or types/models must be calculated in COMP1.



Højbjerg, Denmark

Place

Torben Pilsgaard Hansen

By written authority

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Data:

Process Chiller, Reciprocating water/brine cooled											
High			Medium			High			Medium		
<400kW	ChillPAC 28V-A	229 kW	<300kW	ChillPAC 28V-C	113 kW	>400kW	ChillPAC 112LV-A	1061 kW	>300kW	ChillPAC 12LV-C	529 kW
SEPR	Sabroe unit	Legal limit	SEPR	Sabroe unit	Legal limit	SEPR	Sabroe unit	Legal limit	SEPR	Sabroe unit	Legal limit
	9,30	7,0		5,05	2,96		9,40	8,0		5,00	3,93
Conditions			Conditions			Conditions			Conditions		
	Condenser Inlet/outlet	Evaporator Inlet/outlet		Condenser Inlet/outlet	Evaporator Inlet/outlet		Condenser Inlet/outlet	Evaporator Inlet/outlet		Condenser Inlet/outlet	Evaporator Inlet/outlet
	30/35	+12/+7		30/35	-2/-8		30/35	+12/+7		30/35	-2/-8

Process Chiller, Screw water/brine cooled											
High			Medium			High			Medium		
<1500kW	ComPAC 151LV-A	932 kW	>300kW	ComPAC 151LV-A	514 kW	<1500kW	ComPAC 193LV-A	1455 kW	>300kW	ComPAC 193LV-C	794 kW
SEPR	Sabroe unit	Legal limit	SEPR	Sabroe unit	Legal limit	SEPR	Sabroe unit	Legal limit	SEPR	Sabroe unit	Legal limit
	8,02	8,0		4,60	3,93		9,77	8,0		4,72	3,93
Conditions			Conditions			Conditions			Conditions		
	Condenser Inlet/outlet	Evaporator Inlet/outlet		Condenser Inlet/outlet	Evaporator Inlet/outlet		Condenser Inlet/outlet	Evaporator Inlet/outlet		Condenser Inlet/outlet	Evaporator Inlet/outlet
	30/35	+12/+7		30/35	-2/-8		30/35	+12/+7		30/35	-2/-8

Process Chiller water/brine evaporator, Air Cooled condenser					
High			Medium		
<400kW	SABlight A400-1	392 kW	<300kW	A400-1EG	237
SEPR	Sabroe unit	Legal limit	SEPR	Sabroe unit	Legal limit
	5,02	5,0		3,73	2,32
Conditions			Conditions		
	Condenser Inlet	Evaporator Inlet/outlet		Condenser Inlet	Evaporator Inlet/outlet
	35	+12/+7		35	-2/-8

Comfort Chiller, water cooled											
Reciprocating						Screw					
<400kW	ChillPAC 28V-A	229 kW	<1500kW	ChillPAC 112LV-A	1061 kW	<1500kW	ComPAC 151LV-A	927 kW	<1500kW	ComPAC 193LV-A	1455 kW
Eta s,c	Sabroe unit	Legal limit	Eta s,c	Sabroe unit	Legal limit	Eta s,c	Sabroe unit	Legal limit	Eta s,c	Sabroe unit	Legal limit
	252	200		279	252		254	252		265	252
Conditions			Conditions			Conditions			Conditions		
	Condenser Inlet/outlet	Evaporator Inlet/outlet		Condenser Inlet/outlet	Evaporator Inlet/outlet		Condenser Inlet/outlet	Evaporator Inlet/outlet		Condenser Inlet/outlet	Evaporator Inlet/outlet
	30/35	+12/+7		30/35	+12/+7		30/35	+12/+7		30/35	+12/+7

Comfort Chiller, water evaporator, Air cooled condenser			
Screw, Air Cooled			
<400kW	SABlight A340-1	324 kW	
Eta s,c	Sabroe unit	Legal limit	
	161	161	
Conditions			
	Condenser Inlet	Evaporator	
	35	+12/+7	

See COMP1 calculations in the document named 'SEPR-SEER calculations' on www.sabroe.com
Calculation flow chart (COMP1→SEPR/SEER-tool→Validation)

