

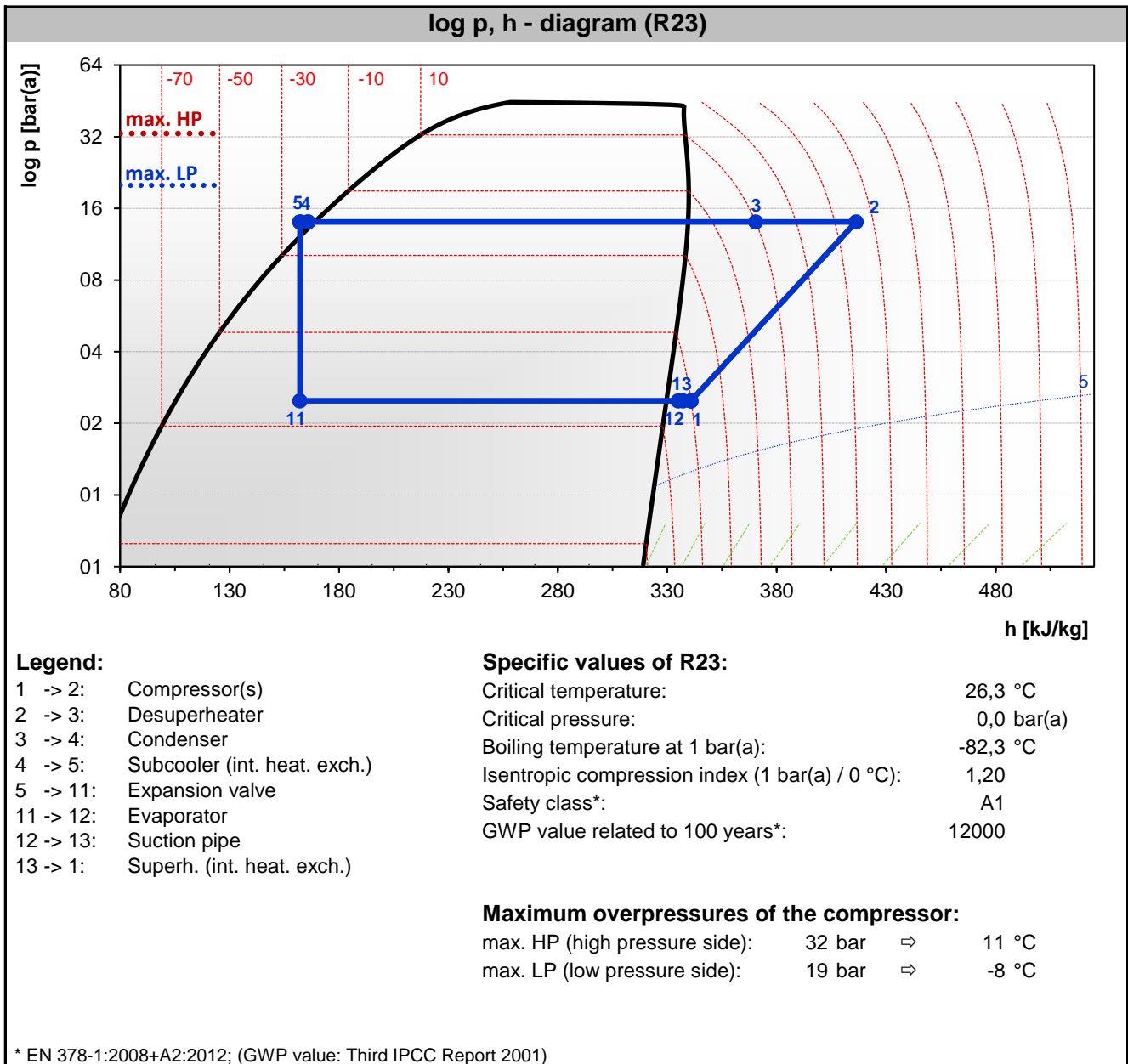
# Compressor Special Calculation



Operating conditions / given values			
Type of system	Single stage		
Refrigerant	R23*		
Evaporating temperature	-65,0 °C	(2,5 bar(a))	
Superheat evaporator	7,0 K		
Superheat suction line	3,0 K		
Superheat int. heat. exch.	5,0 K		
Superheat total	15,0 K	(-50 °C)	
Desuperheater outlet temperature	10,0 °C		
Condensing temperature	-20,0 °C	(14 bar(a))	
Subcooling condenser	2,0 K		
Subcooling int. heat. exch.	2,5 K		
Subcooling external	0,0 K		
Subcooling total	4,5 K	(-24,5 °C)	
Power supply frequency	50 Hz		
Performance data**			
Compressor model	2EES-2		
Cooling capacity, compressor (4 -> 1)	4,3 kW		
<b>Cooling capacity, evaporator</b>	<b>4,2 kW</b>		
Power input	1,8 kW		
Current (400 V)	3,6 A		
COP / EER	2,29		
Condenser capacity	5,0 kW		
Refrigerant mass flow	88 kg/h		
Discharge gas temp. without cooling	61 °C		
Int. heat exch. - Capacity / $\Delta T$ log	0,1 kW	/	29,2 K
Desuperheater capacity	1,1 kW		
* Refrigerant data calculated by Aserep library			
** Listed performance data are based on calculations and measured data. Under worst conditions given values might differ from common tolerances			

In case of a compressor failure, the decision on a potential warranty claim remains reserved to a diagnosis and examination of the compressor at the BITZER factory. Design, operation, and monitoring of the system is in the responsibility of the designer or executing company.

# Compressor Special Calculation



**Application range**

Not defined  
so far



## Application related remarks:

BITZER recommends a suction gas superheat of approximately 20 K to reduce the solubility of R23 in the oil and increase thereby the viscosity of the oil inside the compressor. If necessary, an internal heat exchanger between suction line and liquid line can be installed.

In R23 applications BITZER has achieved good results with the oil type BSE32.

In order to reduce the risk of difficulties associated with the oil return from the evaporator, a highly efficient coalescent oil separator is recommended to limit the amount of oil circulating in the system.

With respect to the cast iron used for the compressor housing, please keep in mind that the minimum suction gas temperature must not fall below -60 °C.

Due to the high temperature difference between discharge gas and condensing temperature, BITZER recommends to install a desuperheater in order to reduce the thermal stress on the cascade heat exchanger. Thereby, the required cooling capacity of the upper stage is reduced and simultaneously, the overall system efficiency is increased.

When heated up to ambient temperature, R23 will generate relatively high pressures levels. This has to be taken into consideration e.g. by using additional pressure vessels or a stillstand cooling unit.