



STATE POINTS					
STATE POINT	TEMPERATURE	PRESSURE	ENTHALPY	DENSITY	Additional information
	[°C]	[kPa]	[kJ/kg]	[kg/m <sup>3</sup> ]	
1	-1,6	405,1	476,4	8,7	Pressure ratio ( $p_2 / p_1$ ) : 3,253
2	65,9	1317,9	577,2	24,1	
3	65,9	1302,8	577,6	23,8	T <sub>2,IS</sub> : 45,4 [°C] T <sub>2,IS</sub> is the temperature of the discharge gas assuming reversible and adiabatic compression
4	15,5	1302,8	140,8	506,6	
5	15,5	1302,8	140,8	506,6	T <sub>2,W</sub> : 69,4 [°C] T <sub>2,W</sub> is the temperature of the discharge gas assuming real and adiabatic compression
6	-4,8	411,6	140,8	-----	
7	-1,8	411,6	475,8	8,8	
8	-1,6	405,1	476,4	8,7	

## AUXILIARY

### VOLUMETRIC EFFICIENCY

Volumetric efficiency  $\eta_{VOL}$  [-]   $\eta_{VOL} : 0,900$  [-]  $\dot{V}_S : 11,88$  [m<sup>3</sup>/h]  $\dot{V}_D : 13,2$  [m<sup>3</sup>/h]

$\dot{V}_S$  can be chosen as input in the cycle specification window.

### UTILIZATION OF DISCHARGE GAS SUPERHEAT FOR HEATING OF WATER

Volume flow  $\dot{V}_{WATER}$  [m<sup>3</sup>/h]   $\Delta T_{WATER} : 149$  [K]  $\dot{V}_{WATER} : 0,01$  [m<sup>3</sup>/h]  $\dot{Q}_{DSH} : 1,716$  [kW]  
 $T_{DL,OUT} : 65,9$  [°C]  $T_C : 37,9$  [°C]

Water in the desuperheating heat exchanger can only be heated to discharge temperature  $T_{DL,OUT}$ .  
 $\dot{Q}_C$  in the main diagram window includes both the heat load for both desuperheating and condensing of the refrigerant.

### ENERGY CONSUMPTION

Hours of operation  Energy consumption  $27,156$  [kWh]

### PIPE DIMENSIONS

PIPE SECTION	VELOCITY	PIPE DIAMETER (Internal)	Condition corresponds to
	[m/s]	[mm]	
Suction line	<input type="text" value="10,0"/>	20,5	State Point #1
Discharge line	<input type="text" value="13,0"/>	10,8	State Point #2
Liquid line	<input type="text" value="0,9"/>	8,9	State Point #5

Calculate	Print	Help	Cycle Spec.	State Points	COP 3,092	COP* : 3,098
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CYCLE SPECIFICATION					
TEMPERATURE LEVELS		PRESSURE LOSSES		SUCTION GAS HEAT EXCHANGER	
$T_E$ [°C]:	-4,8	$\Delta T_{SH}$ [K]:	3	$\Delta p_{SL}$ [K]:	0,5
$T_C$ [°C]:	37,9	$\Delta T_{SC}$ [K]:	22,4	$\Delta p_{DL}$ [K]:	0,5
				No SGHX	0,20
				REFRIGERANT	
				R290	
CYCLE CAPACITY					
Heating capacity $\dot{Q}_C$ [kW]	12,5	$\dot{Q}_E$ : 9,587 [kW]	$\dot{Q}_C$ : 12,5 [kW]	$\dot{m}$ : 0,02862 [kg/s]	$\dot{V}_S$ : 11,88 [m <sup>3</sup> /h]
COMPRESSOR PERFORMANCE					
Power consumption $\dot{W}$ [kW]	3,1	$\eta_{is}$ : 0,525 [-]	$\dot{W}$ : 3,1 [kW]		
COMPRESSOR HEAT LOSS					
Discharge temperature $T_2$ [°C]	65,9	$f_Q$ : 7,0 [%]	$T_2$ : 65,9 [°C]	$\dot{Q}_{LOSS}$ : 0,2157 [kW]	
SUCTION LINE					
Unuseful superheat $\Delta T_{SH,SL}$ [K]	0,2	$\dot{Q}_{SL}$ : 18 [W]	$T_8$ : -1,6 [°C]	$\Delta T_{SH,SL}$ : 0,2 [K]	

<div>  Calculate            Print            Help         </div>	<div>           Auxiliary           State Points         </div>	<div>           COP 3,092           COP* : 3,098         </div>
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