INSTITUT FÜR SOLARTECHNIK

HSR HOCHSCHULE FÜR TECHNIK RAPPERSWIL
FHO Fachhochschule Ostschweiz

Python calculation for heat pump AWHP-LEXETA

Parametric Heat Pump calculation

Dani Carbonell
dani.carbonell@solarenergy.ch

2019/02/26 at: 11:15:16 h

Table 1: Fitted coefficients for the heat pump.

Coefficient	Description	
		$[kW]$
PQ_1	1^{st} *condenser polynomial coefficient*	1.4130e+01
PQ_2	2^{st} *condenser polynomial coefficient*	5.6250e+01
PQ_3	3^{st} *condenser polynomial coefficient*	-3.5630e+01
PQ_4	4^{st} *condenser polynomial coefficient*	2.9500e+02
PQ_5	5^{st} *condenser polynomial coefficient*	-4.2000e+02
PQ_6	6^{st} *condenser polynomial coefficient*	0.0000e+00
$PCOP_1$	1^{st} *COP polynomial coefficient*	7.4000e+00
$PCOP_2$	2^{st} *COP polynomial coefficient*	3.7250e+01
$PCOP_3$	3^{st} *COP polynomial coefficient*	-2.9000e+01
$PCOP_4$	4^{st} *COP polynomial coefficient*	-3.7500e+01
$PCOP_5$	5^{st} *COP polynomial coefficient*	-9.2500e+01
$PCOP_6$	6^{st} *COP polynomial coefficient*	0.0000e+00
$\dot{m}_{cond}$	1800.00 $[kg/h]$	
$\dot{m}_{evap}$	2000.00 $[kg/h]$	
COP_{nom} (B0W35)	3.35	
$Q_{c,nom}$ (B0W35)	8.26 kW	
COP_{nom} (B2W35)	3.57	
$Q_{c,nom}$ (B2W35)	8.87 kW	
COP_{nom} (B10W35)	4.38	
$Q_{c,nom}$ (B10W35)	11.05 kW	

Table 2: Predicting results of the heat pump.

$T_{evap,in}$ ^oC	$T_{evap,out}$ ^oC	$T_{cond,in}$ ^oC	$T_{cond,out}$ ^oC	COP [–]	Q_{cond} $[kW]$	Q_{evap} $[kW]$	W_{comp} $[kW]$	$\dot{m}_{cond}$ kg/h	$\dot{m}_{evap}$ kg/h	ΔT_{evap} K	ΔT_{cond} K
-7.00	-8.38	47.93	50.00	1.27	4.34	0.92	3.42	1800	2000	1.4	2.1
-7.00	-4.69	55.57	57.50	0.72	4.05	-1.54	5.59	1800	2000	-2.3	1.9
-7.00	-11.28	64.53	65.00	-0.53	0.99	2.86	-1.87	1800	2000	4.3	0.5
7.00	-1.31	45.72	50.00	2.63	8.97	5.56	3.41	1800	2000	8.3	4.3
7.00	0.92	53.45	57.50	1.92	8.49	4.07	4.42	1800	2000	6.1	4.1
7.00	4.39	61.03	65.00	1.27	8.32	1.75	6.57	1800	2000	2.6	4.0

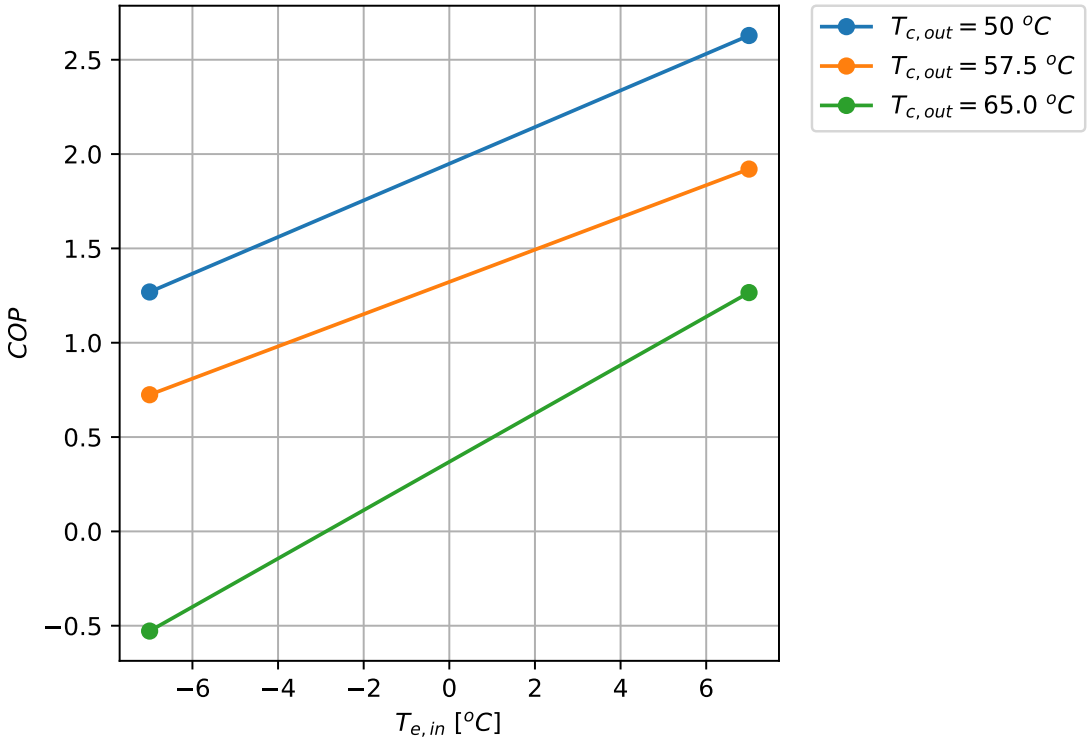

Figure 1: COP Results for the heat pump at the selected points

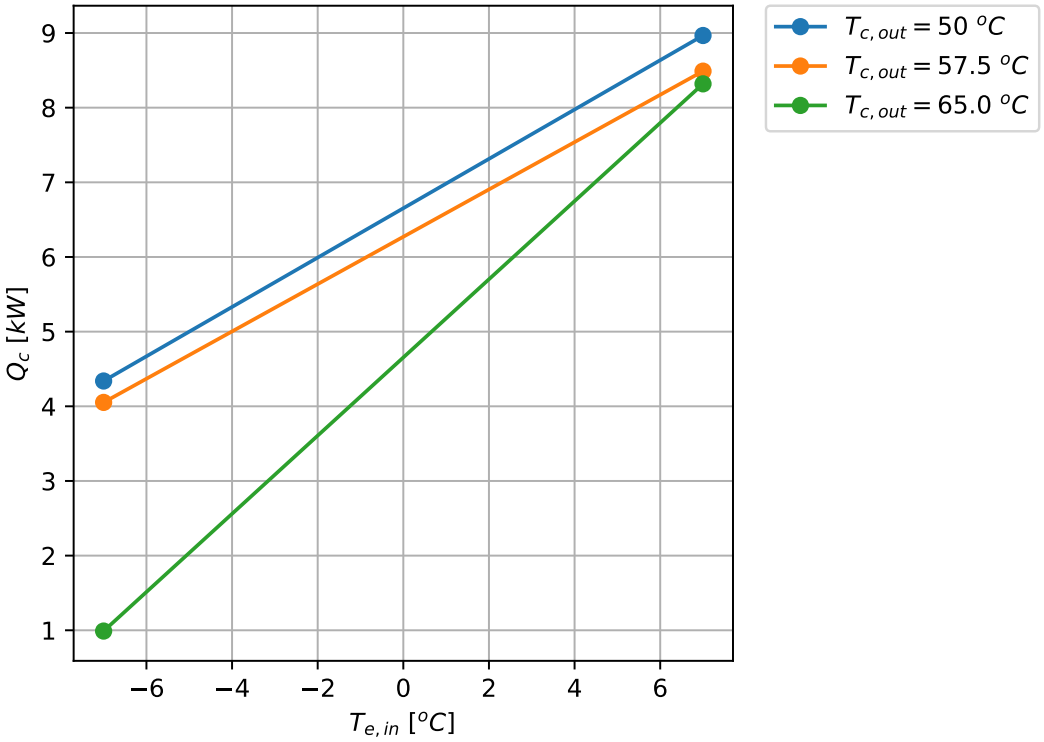

Figure 2: Q_c Results for the heat pump at the selected points