
Type977 fitting for heat pump HP06L-K-BC

Parametric Heat Pump calculation

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Table 1: Fitted coefficients for the heat pump.

Coefficient	Description	[kW]
P_{Q_1}	1 st condenser polynomial coefficient	5.7318e+00
P_{Q_2}	2 st condenser polynomial coefficient	6.0957e+01
P_{Q_3}	3 st condenser polynomial coefficient	2.8445e+01
P_{Q_4}	4 st condenser polynomial coefficient	9.5982e+00
P_{Q_5}	5 st condenser polynomial coefficient	5.1491e+01
P_{Q_6}	6 st condenser polynomial coefficient	-1.5297e+02
P_{COP_1}	1 st COP polynomial coefficient	8.4084e+00
P_{COP_2}	2 st COP polynomial coefficient	7.1520e+01
P_{COP_3}	3 st COP polynomial coefficient	-3.6218e+01
P_{COP_4}	4 st COP polynomial coefficient	-2.6541e+02
P_{COP_5}	5 st COP polynomial coefficient	6.6681e+01
P_{COP_6}	6 st COP polynomial coefficient	1.9120e+01
\dot{m}_{cond}	1200.00 [kg/h]	
\dot{m}_{evap}	3000.00 [kg/h]	
COP_{nom} (A0W35)	4.01	
$Q_{cond,nom}$ (A0W35)	6.39 [kW]	
$Q_{evap,nom}$ (A0W35)	4.79 [kW]	
$W_{comp,nom}$ (A0W35)	1.59 [kW]	
RMS_{COP}	$1.04e - 01$	
$RMS_{Q_{cond}}$	$1.78e - 01$	
$RMS_{W_{comp}}$	$5.44e - 02$	
Fit model	Average Temperature	

Table 2: Differences between experiments and fitted data for the heat pump. $error = 100 \cdot \left| \frac{Q_{exp} - Q_{num}}{Q_{exp}} \right|$
and $RMS = \sqrt{\sum \frac{(Q_{exp} - Q_{num})^2}{n_p}}$ where n_p is the number of data points.

$T_{cond,out}$ °C	$T_{evap,in}$ °C	COP [-]	COP_{exp} [-]	error [%]	Q_{cond} [kW]	$Q_{cond,exp}$ [kW]	error [%]	W_{comp} [kW]	$W_{comp,exp}$ [kW]	error [%]
35.00	20.00	7.06	7.15	1.3	10.66	10.58	0.7	1.51	1.48	2.04
35.00	10.00	5.45	5.42	0.7	8.49	8.61	1.4	1.56	1.59	2.13
35.00	7.00	5.01	5.05	0.8	7.85	8.09	2.9	1.57	1.60	2.04
35.00	2.00	4.25	4.07	4.5	6.81	6.51	4.6	1.60	1.60	0.07
35.00	-7.00	3.10	3.11	0.1	5.00	4.94	1.3	1.61	1.59	1.42
35.00	-15.00	2.20	2.31	4.8	3.46	3.55	2.5	1.58	1.54	2.39
45.00	7.00	3.76	3.73	0.7	7.46	7.57	1.4	1.99	2.03	2.16
45.00	2.00	3.17	3.04	4.3	6.38	6.11	4.5	2.01	2.01	0.17
45.00	-7.00	2.30	2.27	1.5	4.54	4.45	2.0	1.97	1.96	0.49
45.00	-15.00	1.66	1.65	0.1	2.96	3.11	4.8	1.79	1.88	4.91
50.00	20.00	4.58	4.47	2.5	10.01	9.90	1.1	2.18	2.21	1.37
50.00	15.00	4.03	4.18	3.7	8.90	9.20	3.3	2.21	2.20	0.42
50.00	7.00	3.16	3.36	6.0	7.13	7.36	3.1	2.26	2.19	3.14
50.00	2.00	2.65	2.67	0.8	6.04	5.81	3.8	2.28	2.18	4.64
50.00	-7.00	1.92	1.91	0.4	4.17	4.11	1.3	2.17	2.15	0.92
55.00	20.00	3.77	3.64	3.5	9.61	9.43	1.9	2.55	2.59	1.48
55.00	7.00	2.55	2.68	4.9	6.71	6.90	2.7	2.63	2.57	2.28
55.00	-7.00	1.54	1.44	6.6	3.69	3.65	1.2	2.40	2.53	5.07
Sum				47.2			44.6			37.13
RMS_{COP}	1.04e - 01									
$RMS_{Q_{cond}}$	1.78e - 01									
$RMS_{W_{comp}}$	5.44e - 02									

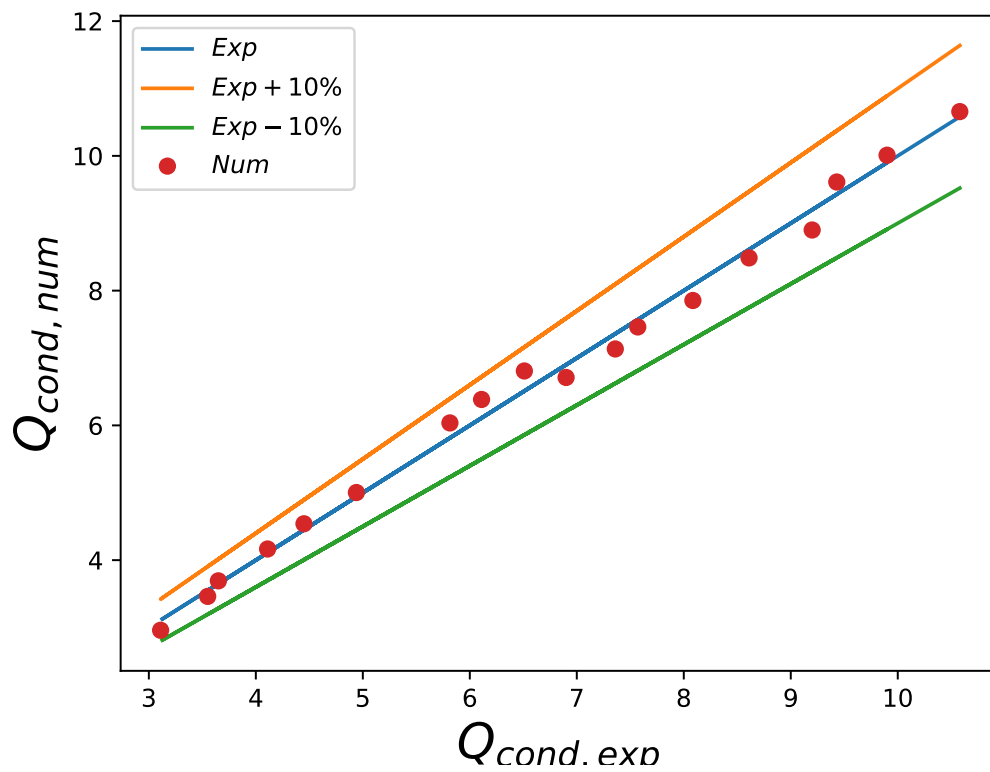


Figure 1: Q_{cond} differences between experiments and fitted data

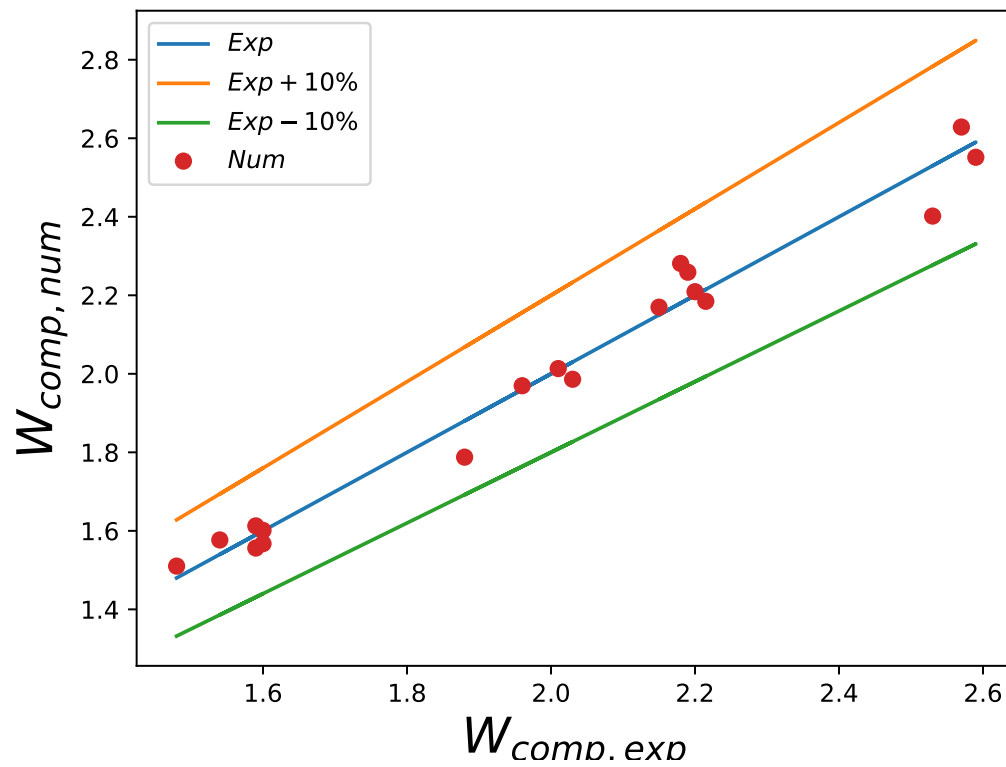


Figure 2: W_{comp} differences between experiments and fitted data

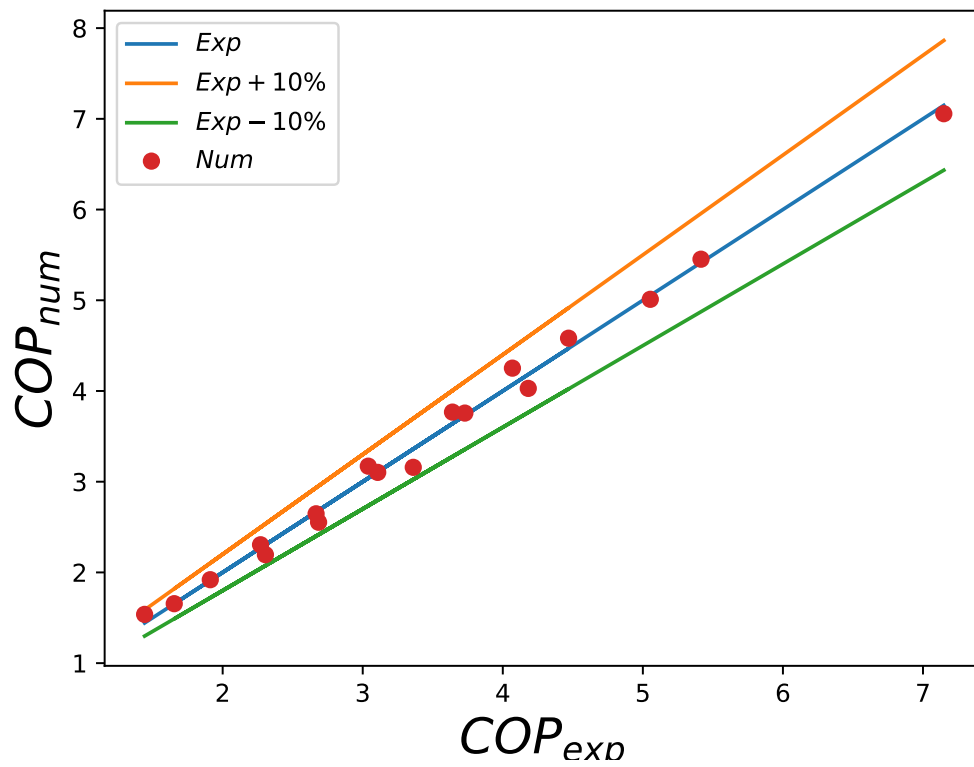


Figure 3: COP differences between experiments and fitted data