
Type977 fitting for heat pump HP10L-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	9.5852e+00
P_{Q_2}	2 st condenser polynomial coefficient	8.0313e+01
P_{Q_3}	3 st condenser polynomial coefficient	3.1515e+01
P_{Q_4}	4 st condenser polynomial coefficient	1.6005e+01
P_{Q_5}	5 st condenser polynomial coefficient	1.9775e+01
P_{Q_6}	6 st condenser polynomial coefficient	-1.9607e+02
P_{COP_1}	1 st COP polynomial coefficient	7.8029e+00
P_{COP_2}	2 st COP polynomial coefficient	6.0909e+01
P_{COP_3}	3 st COP polynomial coefficient	-2.9497e+01
P_{COP_4}	4 st COP polynomial coefficient	-2.1538e+02
P_{COP_5}	5 st COP polynomial coefficient	6.0643e+01
P_{COP_6}	6 st COP polynomial coefficient	5.2498e+00
\dot{m}_{cond}	2100.00 [kg/h]	
\dot{m}_{evap}	5250.00 [kg/h]	
COP_{nom} (A0W35)	4.05	
$Q_{cond,nom}$ (A0W35)	9.81 [kW]	
$Q_{evap,nom}$ (A0W35)	7.39 [kW]	
$W_{comp,nom}$ (A0W35)	2.42 [kW]	
RMS_{COP}	$9.52e - 02$	
$RMS_{Q_{cond}}$	$3.02e - 01$	
$RMS_{W_{comp}}$	$6.90e - 02$	
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	6.78	6.86	1.2	15.55	15.50	0.3	2.29	2.26	1.50
35.00	10.00	5.34	5.29	0.9	12.71	12.89	1.4	2.38	2.44	2.31
35.00	7.00	4.94	5.00	1.2	11.86	12.16	2.4	2.40	2.43	1.27
35.00	2.00	4.27	4.11	3.9	10.44	9.95	5.0	2.44	2.42	0.98
35.00	-7.00	3.25	3.24	0.3	7.94	7.80	1.8	2.45	2.41	1.51
35.00	-15.00	2.44	2.55	4.1	5.74	5.93	3.1	2.35	2.33	0.99
45.00	7.00	3.81	3.79	0.5	11.15	11.46	2.7	2.92	3.02	3.22
45.00	2.00	3.28	3.16	3.8	9.69	9.25	4.8	2.96	2.93	0.91
45.00	-7.00	2.48	2.44	1.9	7.14	6.95	2.8	2.88	2.85	0.91
45.00	-15.00	1.89	1.90	0.3	4.90	5.20	5.7	2.59	2.74	5.39
50.00	20.00	4.56	4.46	2.1	14.37	14.15	1.5	3.15	3.17	0.54
50.00	15.00	4.04	4.15	2.7	12.93	13.20	2.0	3.20	3.18	0.67
50.00	7.00	3.26	3.45	5.5	10.62	11.10	4.3	3.26	3.22	1.21
50.00	2.00	2.78	2.81	0.9	9.13	8.79	3.9	3.28	3.13	4.88
50.00	-7.00	2.10	2.10	0.0	6.56	6.39	2.6	3.12	3.04	2.54
55.00	20.00	3.82	3.71	3.0	13.73	13.45	2.1	3.60	3.63	0.90
55.00	7.00	2.69	2.82	4.6	9.95	10.40	4.3	3.70	3.69	0.29
55.00	-7.00	1.72	1.62	6.0	5.84	5.69	2.6	3.40	3.51	3.22
Sum				43.0			53.5			33.23
RMS_{COP}	9.52e - 02									
$RMS_{Q_{cond}}$	3.02e - 01									
$RMS_{W_{comp}}$	6.90e - 02									

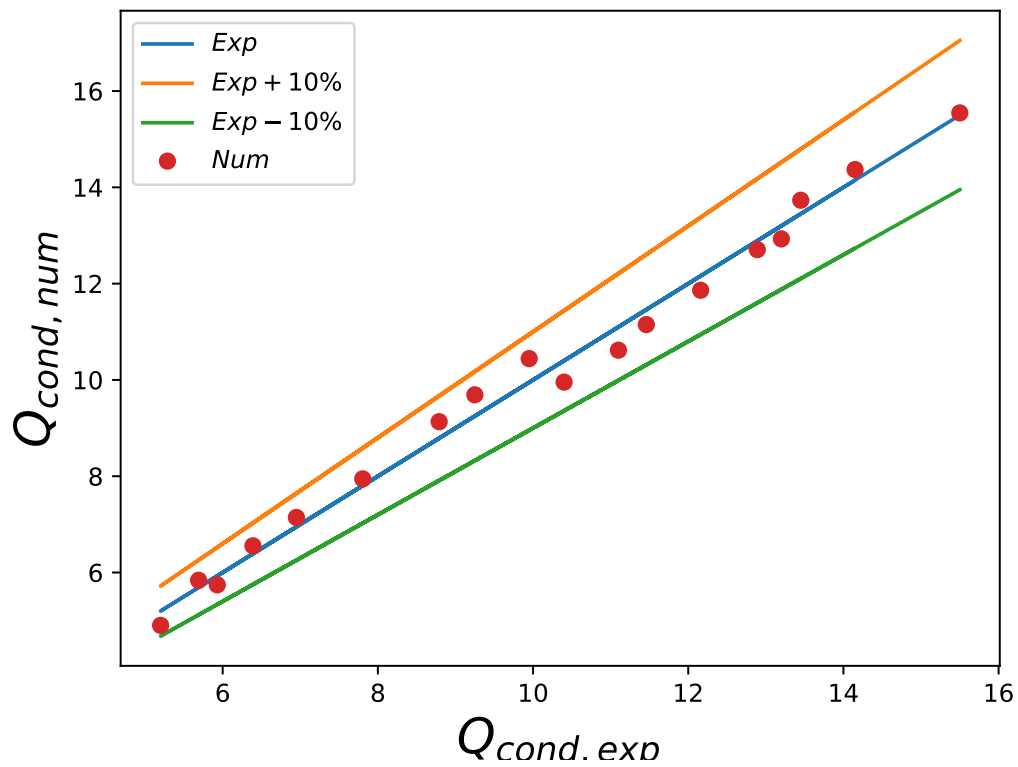


Figure 1: Q_{cond} differences between experiments and fitted data

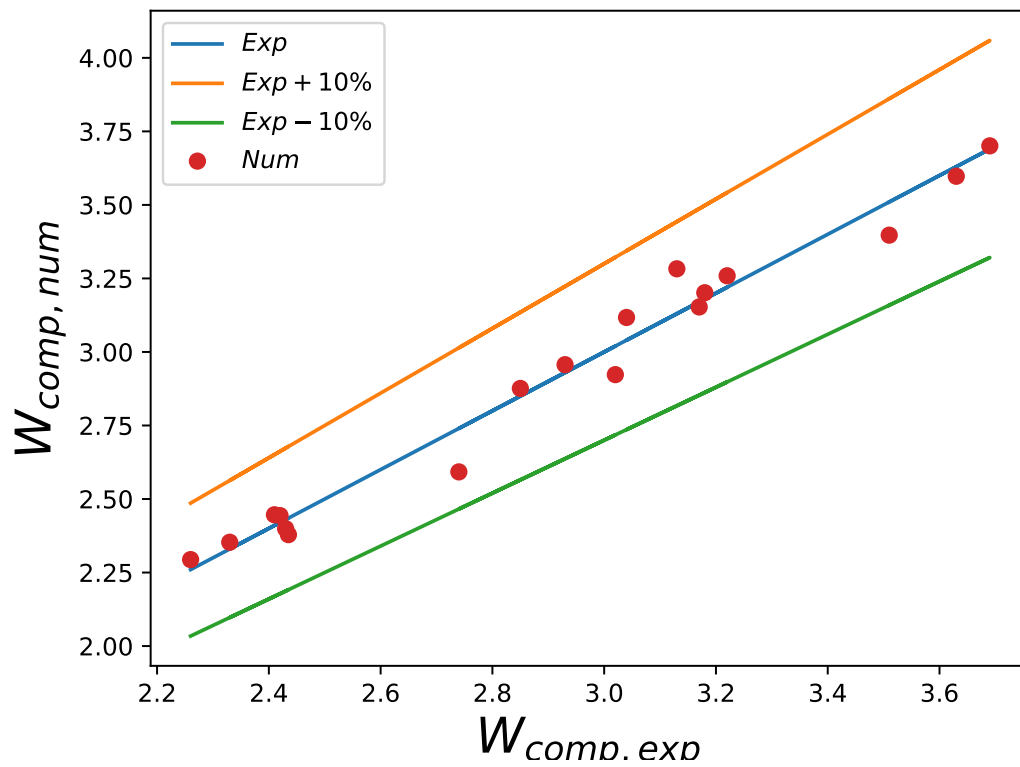


Figure 2: W_{comp} differences between experiments and fitted data

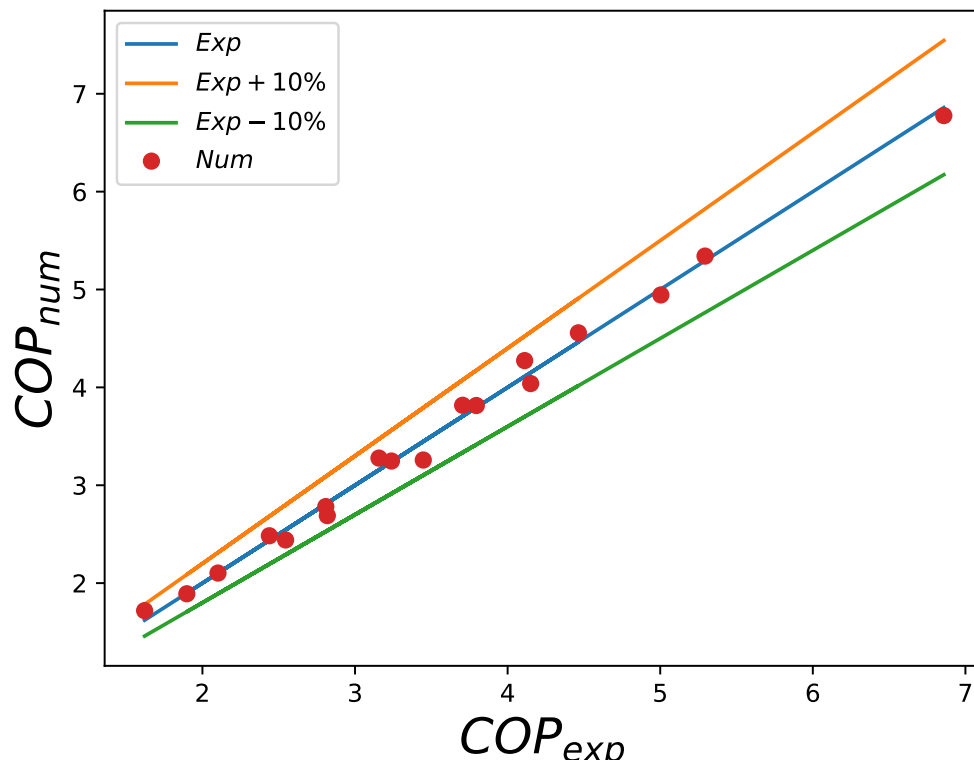


Figure 3: COP differences between experiments and fitted data