
Type977 fitting for heat pump HP12L-WEB

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	1.6965e+01
P_{Q_2}	2 st condenser polynomial coefficient	9.0148e+01
P_{Q_3}	3 st condenser polynomial coefficient	-2.9435e+01
P_{Q_4}	4 st condenser polynomial coefficient	1.0789e+02
P_{Q_5}	5 st condenser polynomial coefficient	2.3202e+02
P_{Q_6}	6 st condenser polynomial coefficient	-8.9040e+00
P_{COP_1}	1 st COP polynomial coefficient	9.0452e+00
P_{COP_2}	2 st COP polynomial coefficient	5.5749e+01
P_{COP_3}	3 st COP polynomial coefficient	-4.4298e+01
P_{COP_4}	4 st COP polynomial coefficient	-1.7962e+02
P_{COP_5}	5 st COP polynomial coefficient	9.1592e+01
P_{COP_6}	6 st COP polynomial coefficient	5.0893e+01
\dot{m}_{cond}	2600.00 [kg/h]	
\dot{m}_{evap}	6500.00 [kg/h]	
COP_{nom} (A0W35)	4.19	
$Q_{cond,nom}$ (A0W35)	12.41 [kW]	
$Q_{evap,nom}$ (A0W35)	9.45 [kW]	
$W_{comp,nom}$ (A0W35)	2.96 [kW]	
RMS_{COP}	$1.20e - 01$	
$RMS_{Q_{cond}}$	$3.77e - 01$	
$RMS_{W_{comp}}$	$6.14e - 02$	
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	6.95	6.94	0.0	20.24	20.00	1.2	2.91	2.88	1.20
35.00	10.00	5.47	5.53	1.1	16.14	16.47	2.0	2.95	2.98	0.94
35.00	7.00	5.07	5.22	2.8	15.01	15.67	4.2	2.96	3.00	1.41
35.00	2.00	4.39	4.13	6.3	13.15	12.42	5.8	3.00	3.01	0.45
35.00	-7.00	3.41	3.36	1.6	10.19	9.94	2.5	2.99	2.96	0.94
35.00	-15.00	2.69	2.81	4.1	7.90	8.09	2.3	2.93	2.88	1.84
45.00	7.00	3.87	3.89	0.5	14.03	14.35	2.2	3.62	3.69	1.77
45.00	2.00	3.32	3.20	3.9	12.11	11.64	4.1	3.65	3.64	0.17
45.00	-7.00	2.54	2.49	1.9	9.01	8.85	1.8	3.55	3.55	0.03
45.00	-15.00	2.00	2.04	2.1	6.59	6.97	5.4	3.29	3.41	3.43
50.00	20.00	4.78	4.65	2.8	19.07	18.82	1.3	3.99	4.05	1.44
50.00	15.00	4.20	4.46	5.9	16.88	17.40	3.0	4.02	3.90	3.08
50.00	7.00	3.32	3.43	3.0	13.55	13.85	2.1	4.08	4.04	0.92
50.00	2.00	2.84	2.81	1.0	11.60	11.24	3.2	4.09	4.00	2.25
50.00	-7.00	2.15	2.10	2.2	8.42	8.17	3.0	3.92	3.89	0.80
55.00	20.00	4.12	4.00	3.2	18.70	18.42	1.5	4.54	4.61	1.61
55.00	7.00	2.81	2.92	3.8	13.09	13.45	2.7	4.65	4.60	1.13
55.00	-7.00	1.79	1.75	2.5	7.84	7.78	0.8	4.37	4.45	1.72
Sum				48.6			49.4			25.12
RMS_{COP}	1.20e - 01									
$RMS_{Q_{cond}}$	3.77e - 01									
$RMS_{W_{comp}}$	6.14e - 02									

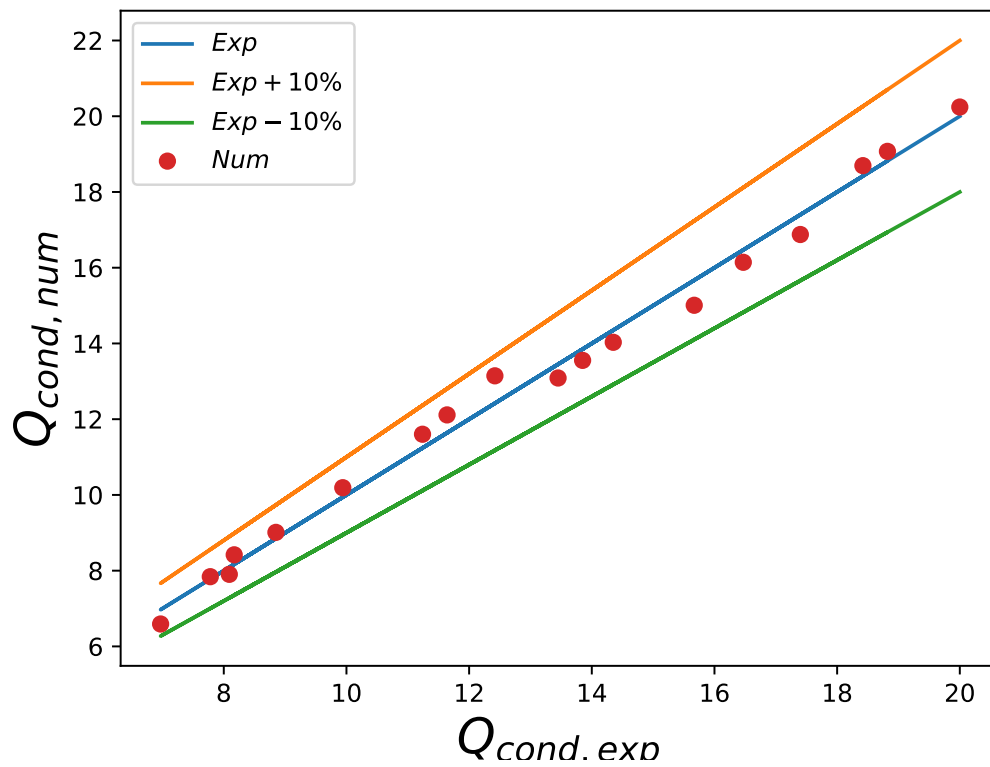


Figure 1: Q_{cond} differences between experiments and fitted data

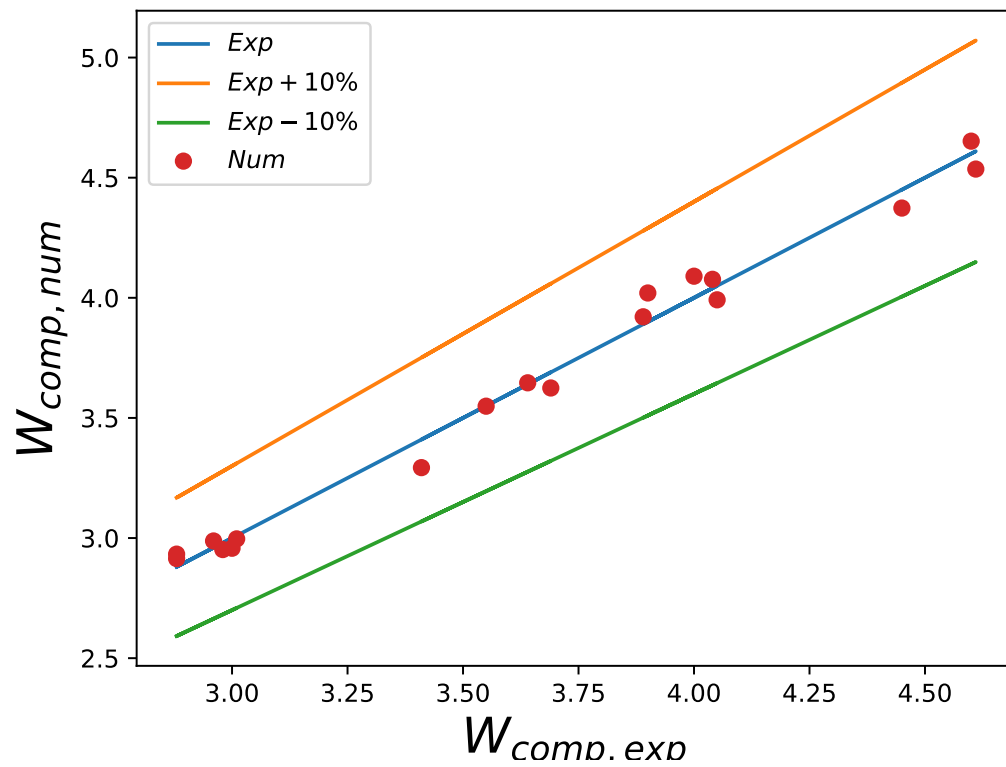


Figure 2: W_{comp} differences between experiments and fitted data

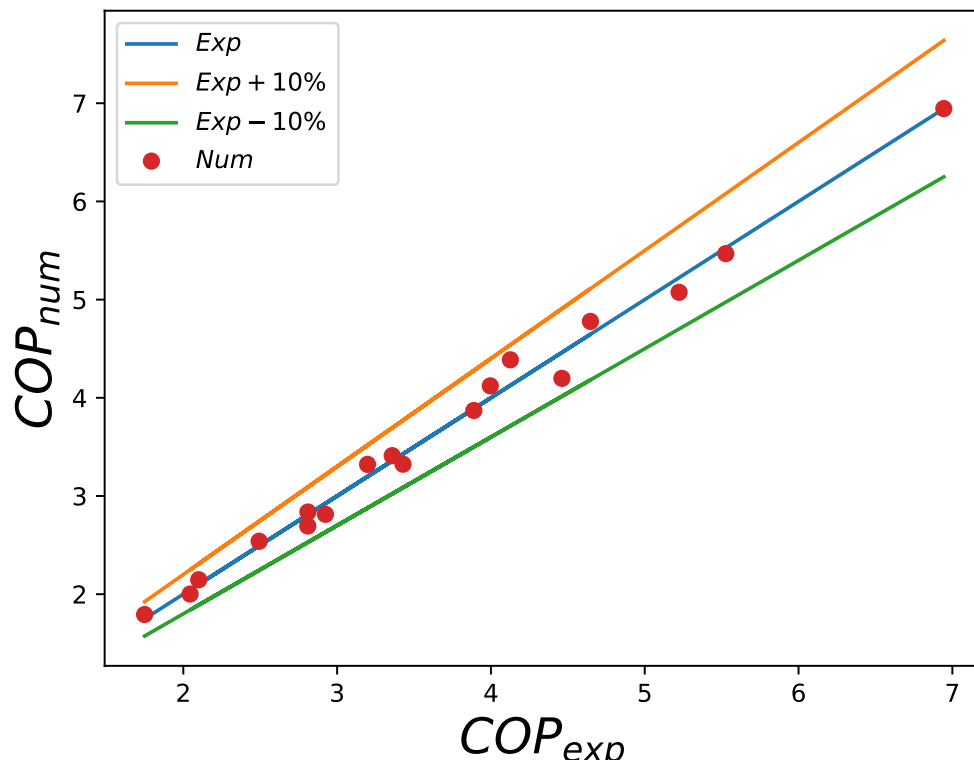


Figure 3: COP differences between experiments and fitted data