
Type977 fitting for heat pump SIN-26TU

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	2.5644e+01
P_{Q_2}	2 st condenser polynomial coefficient	3.0014e+02
P_{Q_3}	3 st condenser polynomial coefficient	5.9163e+01
P_{Q_4}	4 st condenser polynomial coefficient	-5.9720e+02
P_{Q_5}	5 st condenser polynomial coefficient	5.1391e+02
P_{Q_6}	6 st condenser polynomial coefficient	-2.9866e+02
P_{COP_1}	1 st COP polynomial coefficient	6.7660e+00
P_{COP_2}	2 st COP polynomial coefficient	7.0047e+01
P_{COP_3}	3 st COP polynomial coefficient	-5.1288e+00
P_{COP_4}	4 st COP polynomial coefficient	-2.9395e+02
P_{COP_5}	5 st COP polynomial coefficient	1.0724e+02
P_{COP_6}	6 st COP polynomial coefficient	-7.2713e+01
\dot{m}_{cond}	4500.00 [kg/h]	
\dot{m}_{evap}	4500.00 [kg/h]	
COP_{nom} (A0W35)	4.81	
$Q_{cond,nom}$ (A0W35)	26.40 [kW]	
$Q_{evap,nom}$ (A0W35)	20.92 [kW]	
$W_{comp,nom}$ (A0W35)	5.48 [kW]	
RMS_{COP}	$7.10e - 02$	
$RMS_{Q_{cond}}$	$2.00e - 01$	
$RMS_{W_{comp}}$	$8.30e - 02$	
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	-5.00	4.30	4.40	2.2	23.03	23.40	1.6	5.36	5.32	0.66
35.00	0.00	4.85	4.70	3.0	26.63	26.20	1.6	5.50	5.57	1.34
35.00	5.00	5.48	5.46	0.4	30.52	30.50	0.1	5.57	5.59	0.34
50.00	-5.00	3.25	3.21	1.3	22.40	22.40	0.0	6.90	6.99	1.30
50.00	0.00	3.54	3.43	3.0	25.53	25.27	1.0	7.22	7.36	1.94
50.00	5.00	3.91	3.88	0.7	28.97	29.03	0.2	7.41	7.48	0.93
45.00	-5.00	3.65	3.72	1.9	22.80	22.90	0.4	6.25	6.15	1.51
45.00	0.00	4.02	3.98	1.1	26.08	25.73	1.4	6.48	6.47	0.23
45.00	5.00	4.49	4.56	1.5	29.67	29.77	0.3	6.61	6.54	1.22
55.00	0.00	3.00	3.00	0.2	24.80	24.80	0.0	8.27	8.26	0.18
55.00	5.00	3.28	3.36	2.3	28.10	28.30	0.7	8.56	8.43	1.60
35.00	10.00	6.18	6.20	0.4	34.70	34.80	0.3	5.62	5.61	0.10
35.00	15.00	6.95	6.94	0.0	39.16	39.10	0.1	5.64	5.63	0.14
50.00	10.00	4.35	4.32	0.8	32.70	32.80	0.3	7.51	7.60	1.10
50.00	15.00	4.86	4.74	2.5	36.71	36.57	0.4	7.55	7.71	2.09
45.00	10.00	5.02	5.12	2.0	33.56	33.80	0.7	6.69	6.60	1.28
45.00	15.00	5.62	5.67	0.9	37.72	37.83	0.3	6.72	6.67	0.66
55.00	10.00	3.64	3.70	1.8	31.68	31.80	0.4	8.71	8.59	1.41
55.00	15.00	4.06	4.03	0.6	35.53	35.30	0.7	8.76	8.76	0.08
Sum				26.8			10.6			18.09
RMS_{COP}	7.10e - 02									
$RMS_{Q_{cond}}$	2.00e - 01									
$RMS_{W_{comp}}$	8.30e - 02									

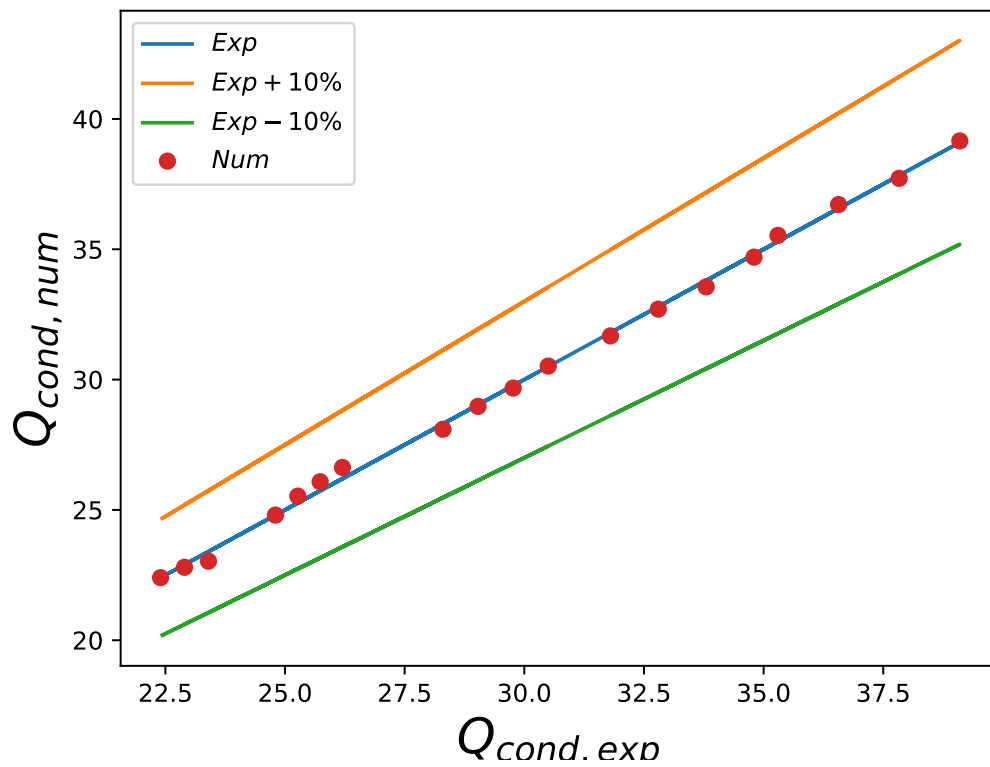


Figure 1: Q_{cond} differences between experiments and fitted data

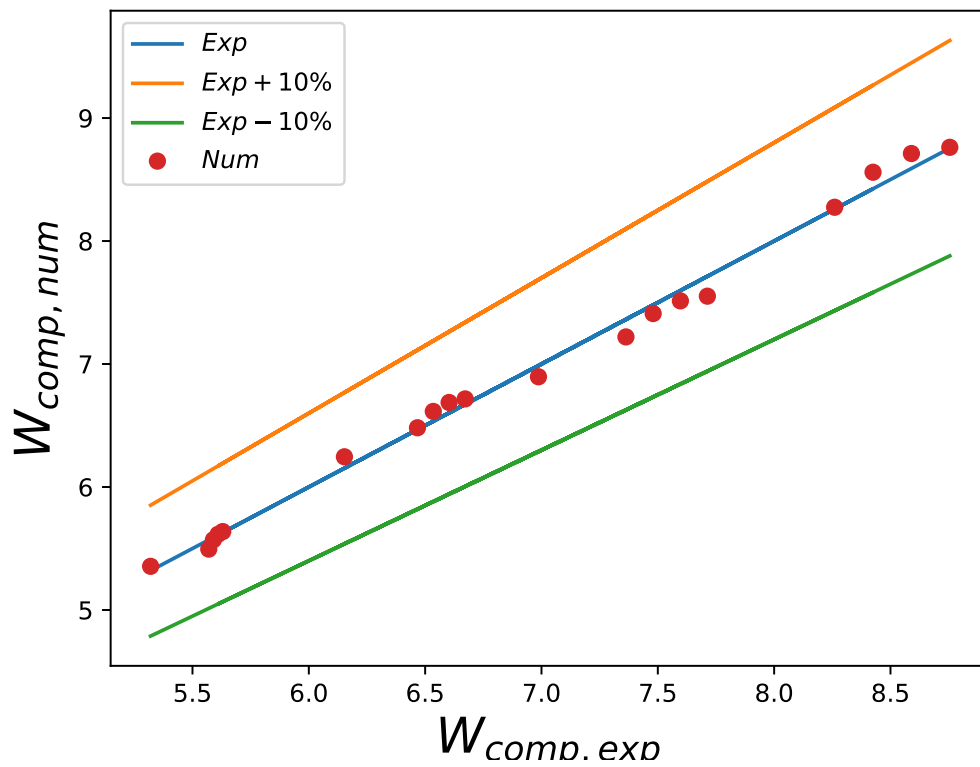


Figure 2: W_{comp} differences between experiments and fitted data

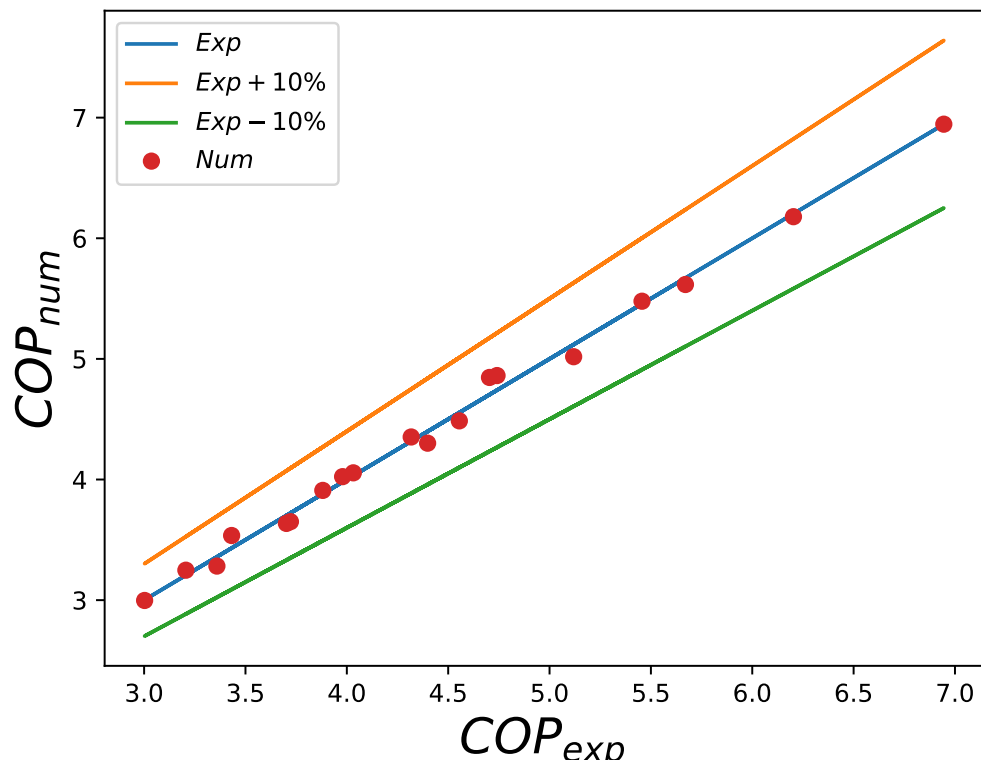


Figure 3: COP differences between experiments and fitted data