
Type977 fitting for heat pump $LA_1 2TU$

Parametric Heat Pump calculation

jschmidl

[jschmidl](#)

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Table 1: Fitted coefficients for the heat pump.

Coefficient	Description	[kW]
P_{Q_1}	1 st condenser polynomial coefficient	1.7610e+01
P_{Q_2}	2 st condenser polynomial coefficient	1.8878e+02
P_{Q_3}	3 st condenser polynomial coefficient	-1.1246e+02
P_{Q_4}	4 st condenser polynomial coefficient	-3.8031e+02
P_{Q_5}	5 st condenser polynomial coefficient	-7.6874e+02
P_{Q_6}	6 st condenser polynomial coefficient	3.4764e+02
P_{COP_1}	1 st COP polynomial coefficient	-2.8874e+00
P_{COP_2}	2 st COP polynomial coefficient	5.0360e+01
P_{COP_3}	3 st COP polynomial coefficient	1.1045e+02
P_{COP_4}	4 st COP polynomial coefficient	-1.0530e+02
P_{COP_5}	5 st COP polynomial coefficient	-1.3776e+02
P_{COP_6}	6 st COP polynomial coefficient	-4.6494e+02
\dot{m}_{cond}	1820.00 [kg/h]	
\dot{m}_{evap}	5300.89 [kg/h]	
COP_{nom} (A0W35)	3.31	
$Q_{cond,nom}$ (A0W35)	7.77 [kW]	
$Q_{evap,nom}$ (A0W35)	5.43 [kW]	
$W_{comp,nom}$ (A0W35)	2.35 [kW]	
RMS_{COP}	$8.22e-02$	
$RMS_{Q_{cond}}$	$4.94e-01$	
$RMS_{W_{comp}}$	$1.62e-01$	
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

$$RMS = \sqrt{\sum \frac{(Q_{exp} - Q_{num})^2}{n_p}} \text{ where } n_p \text{ is the number of data points.}$$

$T_{cond,out}$ °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 [%]
47.90	1.00	2.51	2.48	1.2	8.34	8.60	3.1	3.32	3.49	4.70
49.50	6.00	2.79	2.84	1.8	10.25	10.20	0.5	3.67	3.59	2.37
49.90	10.00	3.09	3.07	0.7	11.45	11.10	3.1	3.70	3.61	2.66
51.00	20.00	3.67	3.67	0.1	13.23	13.40	1.2	3.60	3.64	1.11
33.30	-8.00	2.34	2.36	0.7	3.83	2.80	36.9	1.63	1.19	36.89
34.50	-2.00	3.18	3.26	2.5	7.27	8.40	13.5	2.29	2.59	11.61
34.20	0.00	3.43	3.44	0.1	8.30	8.80	5.7	2.42	2.57	5.97
34.60	2.00	3.69	3.54	4.1	9.21	9.20	0.2	2.50	2.60	3.73
34.80	4.00	3.93	3.73	5.2	10.09	9.70	4.0	2.57	2.60	1.29
35.50	5.00	4.04	4.13	2.2	10.48	10.80	2.9	2.60	2.62	0.84
35.10	6.00	4.15	4.28	2.9	10.94	11.10	1.4	2.63	2.61	1.06
35.80	10.00	4.57	4.55	0.5	12.35	12.00	2.9	2.70	2.64	2.13
35.50	15.00	5.05	5.13	1.5	13.93	13.30	4.7	2.76	2.60	6.06
37.70	19.80	5.39	5.38	0.2	14.69	14.80	0.7	2.73	2.74	0.67
35.60	30.10	6.06	6.05	0.2	16.03	16.20	1.0	2.64	2.68	1.27
Sum				24.0			81.9			82.37
RMS_{COP}	$8.22e-02$									
$RMS_{Q_{cond}}$	$4.94e-01$									
$RMS_{W_{comp}}$	$1.62e-01$									

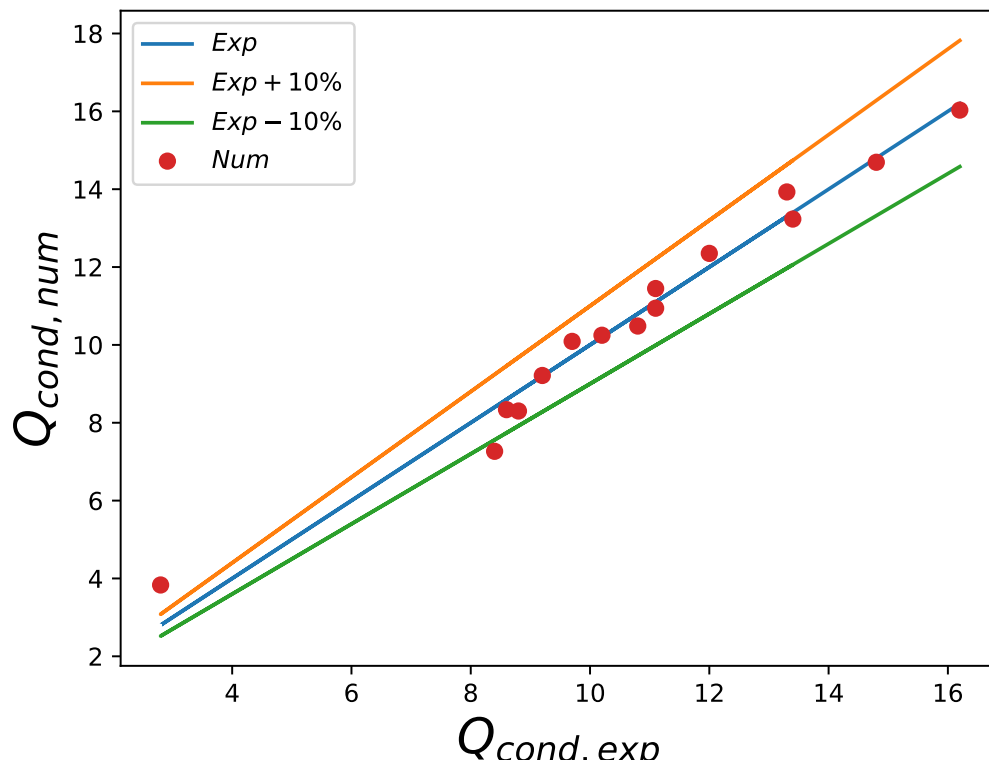


Figure 1: Q_{cond} differences between experiments and fitted data

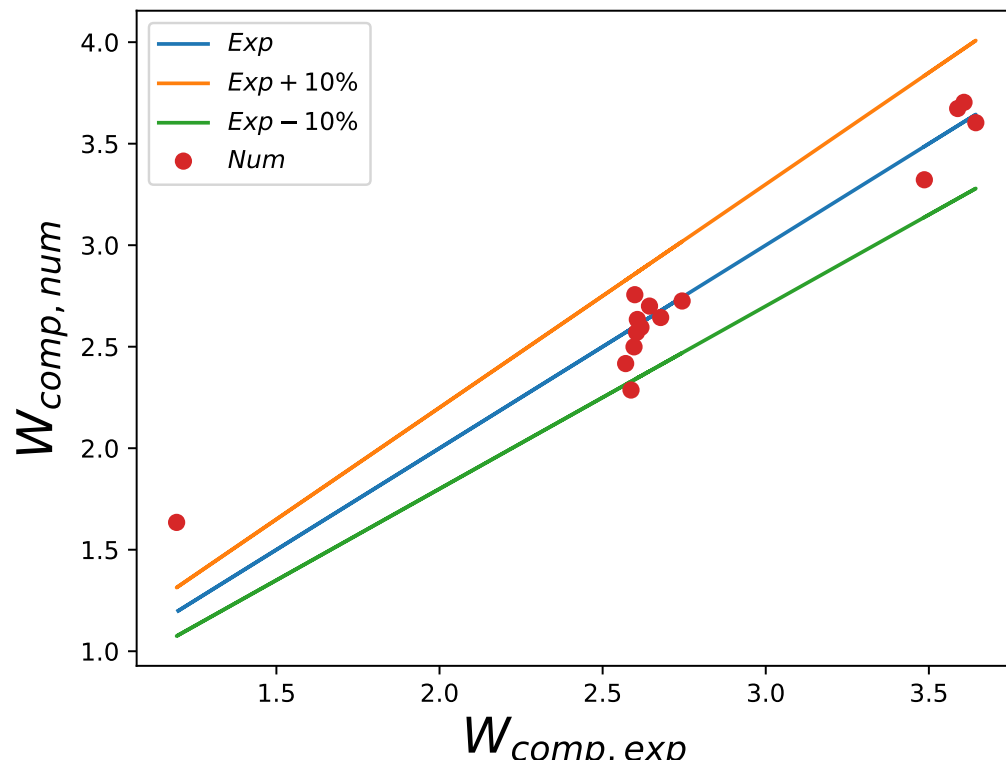


Figure 2: W_{comp} differences between experiments and fitted data

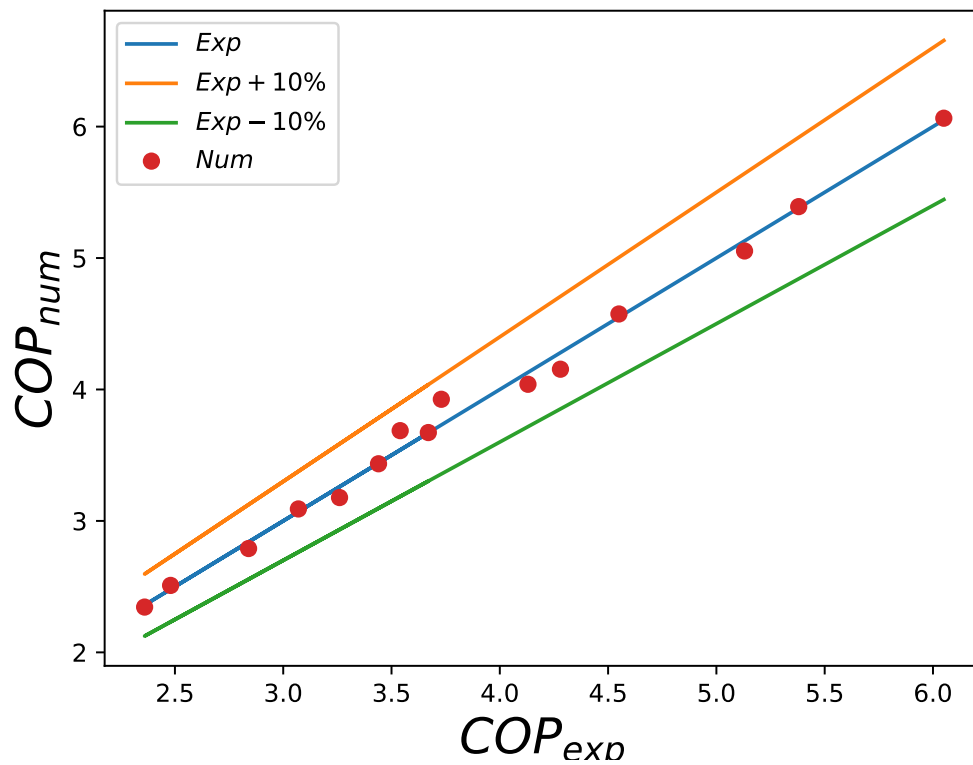


Figure 3: COP differences between experiments and fitted data