
Type977 fitting for heat pump SINK-8TES

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	-7.2355e+01
P_{Q_2}	2 st condenser polynomial coefficient	1.9817e+02
P_{Q_3}	3 st condenser polynomial coefficient	1.1390e+03
P_{Q_4}	4 st condenser polynomial coefficient	-8.8478e+02
P_{Q_5}	5 st condenser polynomial coefficient	4.4131e+01
P_{Q_6}	6 st condenser polynomial coefficient	-3.7861e+03
P_{COP_1}	1 st COP polynomial coefficient	1.2951e+02
P_{COP_2}	2 st COP polynomial coefficient	-9.2195e+01
P_{COP_3}	3 st COP polynomial coefficient	-1.7201e+03
P_{COP_4}	4 st COP polynomial coefficient	7.9259e+02
P_{COP_5}	5 st COP polynomial coefficient	2.0555e+02
P_{COP_6}	6 st COP polynomial coefficient	5.5566e+03
\dot{m}_{cond}	1000.00 [kg/h]	
\dot{m}_{evap}	1000.00 [kg/h]	
COP_{nom} (A0W35)	3.51	
$Q_{cond,nom}$ (A0W35)	8.73 [kW]	
$Q_{evap,nom}$ (A0W35)	6.24 [kW]	
$W_{comp,nom}$ (A0W35)	2.49 [kW]	
RMS_{COP}	$2.55e - 02$	
$RMS_{Q_{cond}}$	$2.66e - 02$	
$RMS_{W_{comp}}$	$9.87e - 03$	
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	4.18	4.19	0.2	6.72	6.70	0.3	1.61	1.60	0.55
35.00	0.00	4.85	4.81	0.8	7.77	7.80	0.4	1.60	1.62	1.24
35.00	5.00	5.58	5.63	0.9	8.88	8.90	0.3	1.59	1.58	0.70
55.00	0.00	2.90	2.91	0.5	7.09	7.10	0.1	2.45	2.44	0.38
55.00	5.00	3.33	3.31	0.7	8.01	8.00	0.2	2.41	2.42	0.53
35.00	10.00	6.36	6.33	0.4	10.06	10.00	0.6	1.58	1.58	0.16
35.00	15.00	7.41	7.42	0.0	11.18	11.20	0.2	1.51	1.51	0.17
55.00	10.00	3.71	3.71	0.2	9.09	9.10	0.1	2.45	2.45	0.08
55.00	15.00	4.19	4.20	0.1	10.20	10.20	0.0	2.43	2.43	0.10
Sum				3.8			2.2			3.91
RMS_{COP}		$2.55e - 02$								
$RMS_{Q_{cond}}$		$2.66e - 02$								
$RMS_{W_{comp}}$		$9.87e - 03$								

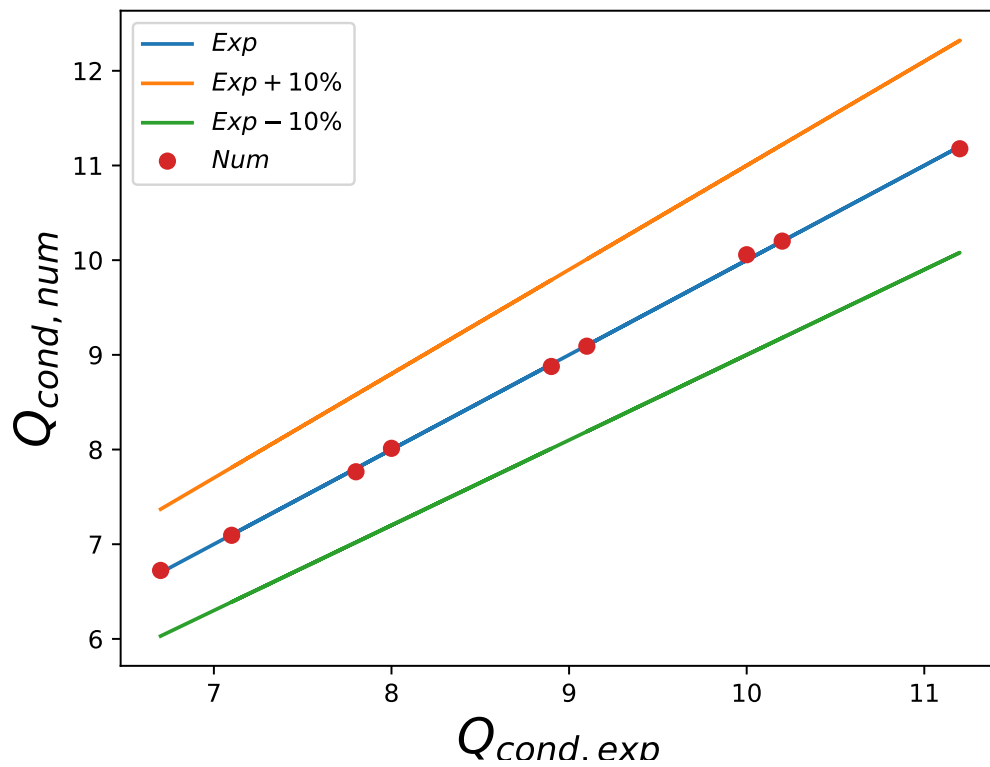


Figure 1: Q_{cond} differences between experiments and fitted data

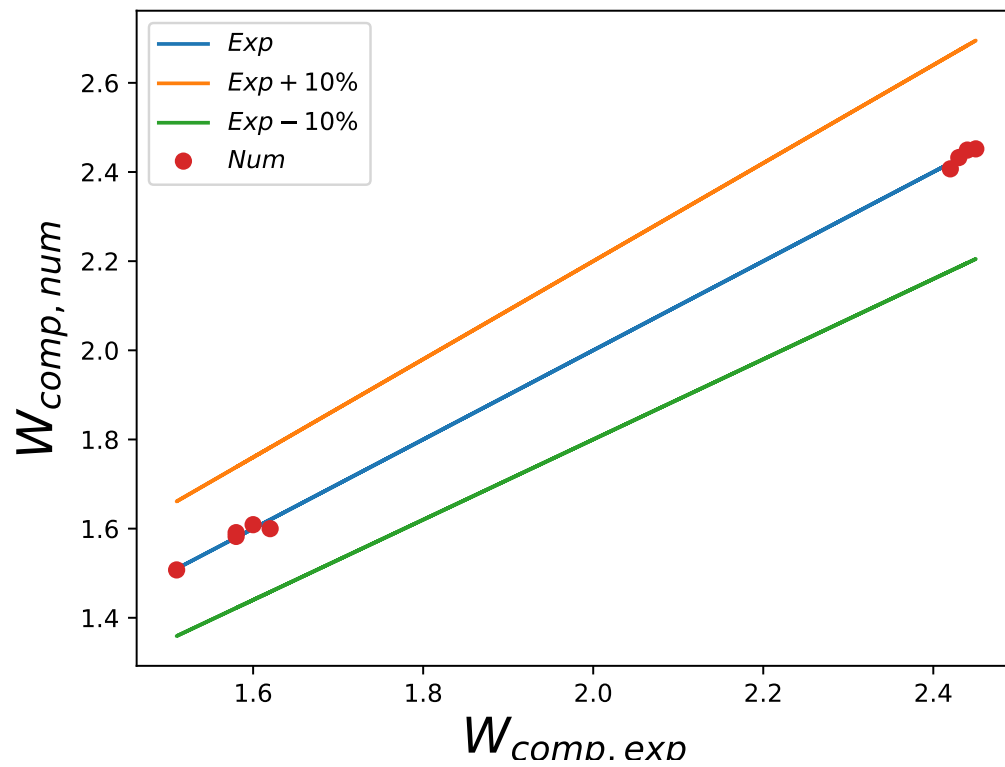


Figure 2: W_{comp} differences between experiments and fitted data

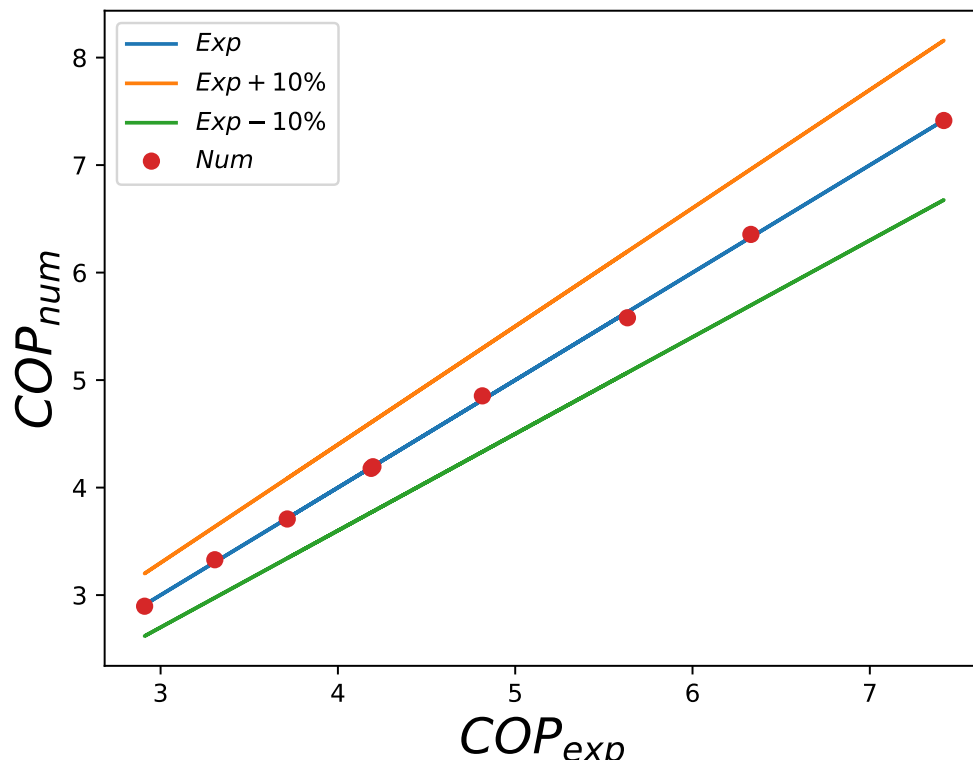


Figure 3: COP differences between experiments and fitted data