

### Data Pengujian Mesin Refrigerasi Hibrida menggunakan Refrigeran Hidrokarbon HCR-22

No.	Menit ke	P1	P2	P3	P4	T1	T2	T3	T4	Thin	Thout	Trata	Tcin
1	0	39.5	263	265	46	7.7	48.19	34.85	8.2	48.67	39.15	43.91	9.24
2	5	40	263	265	47	8.72	47.78	34.67	8.97	47.88	40.76	44.32	3.19
3	10	40.5	263	265	48	9.69	48.29	34.19	8.89	47.3	41.95	44.63	3.13
4	15	41	263	265	48	9.8	48.47	33.9	9.19	47.29	41.3	44.30	3
5	20	41	265	267	48.5	9.99	48.6	33.8	9.49	47.32	40.89	44.11	2.84
6	25	41	265	267	48.5	10.14	48.6	33.75	9.69	47.37	40.57	43.97	2.7
7	30	41.5	265	267	49	10.23	48.52	33.68	9.88	47.47	40.38	43.93	2.6
8	35	41.5	265	267	49	10.56	48.66	33.69	9.79	47.54	40.29	43.92	2.54
9	40	41.5	266	267	49	10.63	48.95	33.76	9.93	47.69	40.49	44.09	2.61
10	45	41.5	267	267	49	10.69	48.98	33.84	9.88	47.74	40.95	44.35	2.63
11	50	42	268	270	49	10.92	48.83	33.81	10.04	47.83	40.67	44.25	2.62
12	55	42	268	270	49	10.96	49	33.87	10.04	47.91	40.91	44.41	2.7
13	60	42	268	270	49	10.78	48.61	33.79	10.15	47.9	40.66	44.28	2.6
14	65	42	268	270	49	9.56	48.34	33.66	10.12	47.89	40.6	44.25	2.57
15	70	42	268	270	49	10.41	48.83	33.86	10.09	48.05	41.11	44.58	2.76
16	75	42	268	270	49	10.72	48.93	33.84	10.05	48.01	41	44.51	2.74
17	80	42	268	270	49	9.67	48.49	33.62	10.07	47.89	40.64	44.27	2.63
18	85	42	268	270	49	11.34	48.61	33.63	10.03	47.99	40.88	44.44	2.76
19	90	42	268	270	49	10.89	48.32	33.47	10.13	47.93	40.77	44.35	2.67
20	95	42	268	270	49	8.98	48.91	33.72	9.96	47.95	41.03	44.49	2.8
21	100	42	267	269	49	8.93	48.12	33.54	9.93	47.96	41.25	44.61	2.87
22	105	42	267	269	49	8.94	48.11	33.61	9.74	47.95	41.26	44.61	2.89
23	110	42	267	269	49	9.92	48.03	33.58	9.87	48.01	41.7	44.86	2.97
24	115	42	267	269	49	9.97	48	33.68	9.79	48.01	42.08	43.00	3.04
Nilai Rata-rata		41.54	266.38	268.25	48.67	10.01	48.51	33.83	9.75	47.81	40.89	44.27	2.78



### Data Pengujian Mesin Refrigerasi Hibrida menggunakan Refrigeran Hidrokarbon HCR-22

Tcout	Trata	T Rhot	Tw Hot	TRCold	Tout Coil	Tw Cold	V	I	M air Eva	M air Kon	Cp Hot	Cp Cold	Wk
20.37	14.81	47.2	48.7	27.7	27.5	0.6	222	3.29	0.06	0.04	4.178	4.184	0.620
12.36	7.78	47.3	48.6	21.4	14.3	2.4	222	3.28	0.06	0.04	4.178	4.184	0.618
9.83	6.48	47.2	48.5	20.3	13.5	3.2	222	3.28	0.06	0.04	4.178	4.184	0.618
8.99	6.00	47.3	48.8	19.8	12.2	3	222	3.26	0.06	0.04	4.178	4.184	0.614
8.52	5.68	47.4	48.4	18.3	12.1	2.4	221	3.26	0.06	0.04	4.178	4.184	0.611
8.2	5.45	47.5	48.5	18.2	12	2.4	222	3.26	0.06	0.04	4.178	4.184	0.614
8	5.30	47.7	48.8	18	11.3	2.3	222	3.26	0.06	0.04	4.178	4.184	0.614
7.86	5.20	47	48.3	18.1	11.3	2.4	222	3.28	0.06	0.04	4.178	4.184	0.618
7.83	5.22	47.2	48.6	18	11.2	2.4	222	3.28	0.06	0.04	4.178	4.184	0.618
7.8	5.22	47.4	48.8	18.4	11.3	2.4	222	3.28	0.06	0.04	4.178	4.184	0.618
7.8	5.21	47.4	48.8	17.8	11.3	2.4	222	3.27	0.06	0.04	4.178	4.184	0.616
7.82	5.26	47.5	48.6	17.8	11.6	2.4	222	3.27	0.06	0.04	4.178	4.184	0.616
7.71	5.16	47.7	48.4	17.7	11.4	2.3	222	3.26	0.06	0.04	4.178	4.184	0.614
7.63	5.10	47.6	48.5	17.5	11.3	2.4	222	3.29	0.06	0.04	4.178	4.184	0.620
7.81	5.29	47.5	48.3	17.3	11.3	2.4	221	3.29	0.06	0.04	4.178	4.184	0.617
7.73	5.24	47.5	48.5	17.2	11.2	2.4	224	3.28	0.06	0.04	4.178	4.184	0.624
7.6	5.12	47.4	48.7	17.4	11.3	2.4	222	3.29	0.06	0.04	4.178	4.184	0.620
7.72	5.24	47.2	48.5	17.2	11.5	2.3	222	3.28	0.06	0.04	4.178	4.184	0.618
7.63	5.15	47.2	48.7	17.5	11.4	2.4	223	3.28	0.06	0.04	4.178	4.184	0.621
7.74	5.27	47	48.5	17.3	11.5	2.4	222	3.28	0.06	0.04	4.178	4.184	0.618
7.79	5.33	47	48.7	17.4	11.2	2.3	222	3.28	0.06	0.04	4.178	4.184	0.618
7.79	5.34	47.9	48.5	17.3	11.3	2.4	222	3.28	0.06	0.04	4.178	4.185	0.618
7.9	5.44	47.7	48.5	17.3	11.2	2.4	221	3.29	0.06	0.04	4.178	4.185	0.617
7.97	5.51	47.5	48.5	17.2	11.2	2.5	220	3.3	0.06	0.04	4.178	4.185	0.616
7.84	5.28	47.39	48.57	17.75	12.31	2.37	221.92	3.28	0.06	0.04	4.18	4.18	0.62



### Data Pengujian Mesin Refrigerasi Hibrida menggunakan Refrigeran Hidrokarbon HCR-22

Q R Panas	Q Dummy	Q R Dingin	COP	PF	TP
1.611	1.772	2.763	4.457	2.599	7.056
1.205	1.690	2.277	3.684	1.949	5.633
0.905	1.376	1.663	2.691	1.465	4.156
1.014	1.088	1.487	2.421	1.650	4.071
1.088	0.934	1.410	2.306	1.779	4.086
1.151	0.829	1.365	2.223	1.873	4.096
1.200	0.755	1.341	2.183	1.953	4.136
1.227	0.712	1.321	2.137	1.985	4.122
1.218	0.696	1.296	2.097	1.971	4.068
1.149	0.753	1.284	2.077	1.859	3.936
1.212	0.691	1.286	2.087	1.966	4.054
1.184	0.703	1.271	2.063	1.922	3.986
1.225	0.658	1.269	2.065	1.994	4.060
1.234	0.643	1.256	2.027	1.990	4.016
1.174	0.697	1.254	2.032	1.903	3.935
1.186	0.676	1.239	1.987	1.902	3.889
1.227	0.627	1.234	1.990	1.979	3.969
1.203	0.646	1.231	1.993	1.947	3.939
1.212	0.641	1.231	1.984	1.952	3.935
1.171	0.673	1.226	1.984	1.895	3.879
1.135	0.704	1.221	1.976	1.837	3.814
1.132	0.703	1.217	1.969	1.832	3.801
1.068	0.774	1.224	1.984	1.730	3.714
1.003	0.837	1.224	1.987	1.629	3.615
1.17	0.84	1.40	2.27	1.90	4.17



**Pengujian Massa Refrigeran Optimum (HCR22)**

M Ref (kg)	$\dot{m}$ air Eva (kg/s)	$\dot{m}$ air Kon (kg/s)	V	I	Air Tangki Evaporator		Air Tangki Kondensor		Wk (C)	Qk (C)	Qe (C)	COP (C)	PF (C)
					Tin (C)	Tout (C)	Tin (C)	Tout (C)					
280	0.123	0.088	225	2.6	22.5	20.5	34.3	37	0.673	0.996	1.033	1.535	1.481
320	0.123	0.088	226	2.8	19.1	16.6	35.5	39.7	0.728	1.550	1.291	1.774	2.129
360	0.123	0.088	227	3.1	17.7	13.7	37.4	42.4	0.809	1.844	2.066	2.553	2.279
400	0.123	0.088	226	3.2	14.3	10.2	39.6	45.5	0.832	2.176	2.118	2.546	2.617
440	0.123	0.088	233	3.4	13.8	9.5	39.2	45.6	0.911	2.250	2.2.221	2.438	2.470
480	0.123	0.088	241	3.6	11.5	7.5	40.4	47.5	0.998	2.619	2.066	2.071	2.624
520	0.123	0.088	228	3.9	11.4	7.6	39.5	46.2	1.023	2.471	1.963	1.920	2.417





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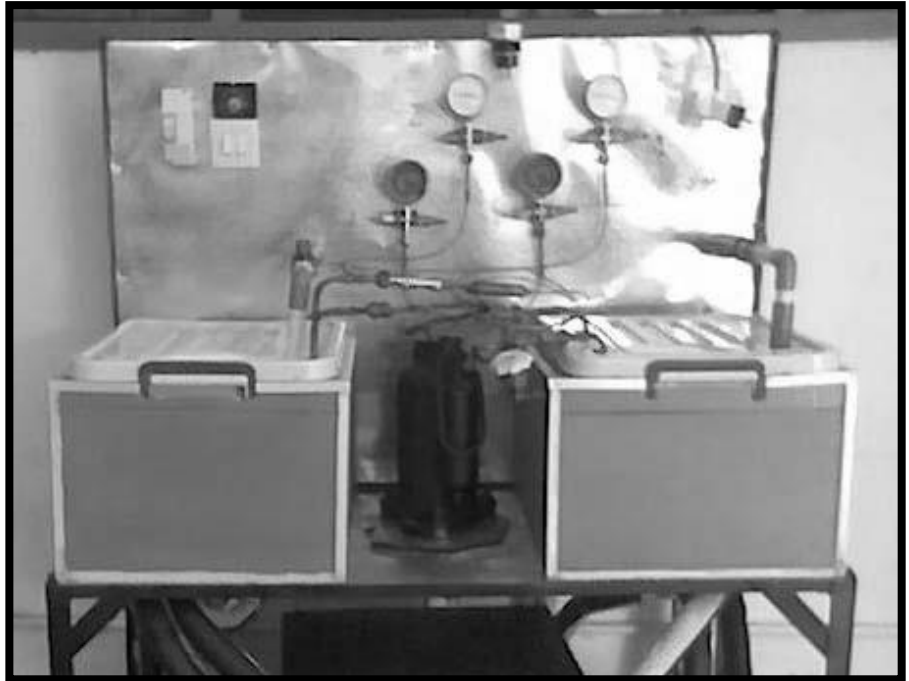
## Mesin Pendingin Kompresi Uap Hibrida



Ruang Pemanas



Kompresor



**Kondensor dan Evaporator (di dalam tangki)**