



**TYPICAL REFRIGERANT TEWI COMPARISON**

DIRECT EFFECT	R744 HT	R744 LT	R134a HT	R774 LT	R134a HT	R404a LT	R404a HT	R404a LT	NH3-Gly HT	R774 LT
System Charge kgs	120	15	120	15	120	15	120	15	25.5	15
Loss % Per Year	5	5	5	5	5	8	8	8	0	5
Loss in kg per 10 years	60	7.5	60	7.5	60	12	96	96	0	7.5
GWP	1	1	1300	1	1300	3260	3260	3260	0	1
CO2 Tonnes Lifetime	0.06	0.0075	78	0.0075	78	39.12	312.96	312.96	0	0.0075
<b>INDIRECT EFFECT</b>										
Summer kW Peak - 35°CCT	89	5	89	5	82	5	82	5	89	5
Load factor ( Based on measured monthly consumption of R404a system )	0.7	0.85	0.7	0.85	0.7	0.85	0.7	0.85	0.7	0.85
Summer average load kW	62.3	4.25	62.3	4.25	57.4	4.25	57.4	4.25	62.3	4.25
Summer COP with precoolers on CO2 MT Transcritical mode ( 21 to 27C air on to gas cooler after precooler pads )	2.36	3.85	3.07	3.85	3.07	1.78	2.76	1.78	3.62	3.85
Number of hours summer 22%	1634	1634	1634	1634	1634	1634	1634	1634	1634	1634
Summer kw hrs	43135	1804	33159	1804	30551	3901	33982	3901	28121	1804
Spring & Autumn kW Peak - 30°CCT	89	5	89	5	82	5	82	5	82	5
Load factor ( Based on measured monthly consumption of R404a system )	0.6	0.7	0.6	0.7	0.6	0.7	0.6	0.7	0.6	0.7
Spring & Autumn average Load kW	53.4	3.5	53.4	3.5	49.2	3.5	49.2	3.5	49.2	3.5
Mid season COP with precooler on CO2 MT ( Sub critical mode 15 to 20C air onto gas cooler after precooler pads )	3.68	3.85	3.58	3.85	3.58	2.08	3.32	2.08	4.11	3.85
Number of hours Mid season 24%	2108	2108	2108	2108	2108	2108	2108	2108	2108	2108
Mid season kWhrs	30589	1916	31443	1916	28970	3547	31239	3547	25234	1916
Winter kW Peak - 25°CCT	89	5	89	5	82	5	82	5	82	5
Load factor ( Based on measured monthly consumption of R404a system )	0.55	0.67	0.55	0.67	0.55	0.67	0.55	0.67	0.55	0.67
Winter average load kW	48.95	3.35	48.95	3.35	45.1	3.35	45.1	3.35	45.1	3.35
Winter COP (Subcritical mode below 15C air onto gas cooler no precooler pad operation)	4.3	3.85	3.58	3.85	3.58	2.08	3.32	2.08	4.67	3.85
Number of Hours	5018	5018	5018	5018	5018	5018	5018	5018	5018	5018
Winter kW Hrs	57124	4366	68612	4366	63216	8082	68166	8082	48461	4366
TOTAL kW hrs per year	130847	8086	133214	8086	122737	15530	133388	15530	101816	8086
TOTAL kW hrs per year both systems	138934		141301		138267		148918		109903	
Kg OF CO2 PER kWhr	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
Tonnes of CO2 in 10 years	1596	99	1625	99	1497	189	1627	189	1242	99
<b>TOTAL TEWI</b>	<b>1695</b>		<b>1802</b>		<b>1804</b>		<b>2130</b>		<b>1341</b>	
Cost at A\$0.14 /kWhr per year	\$19,450.72		\$19,782.12		\$19,357.42		\$20,848.53		\$15,386.38	