

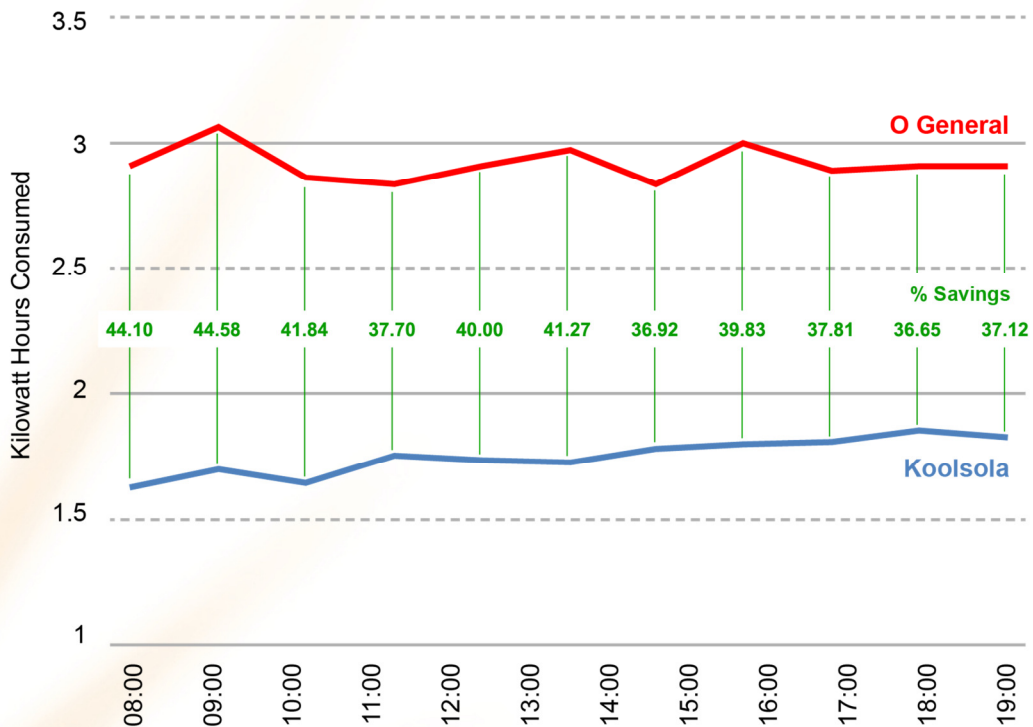
Koolsola Comparison Test Report

The Koolsola Solar Thermal Air Conditioner range employs a new and revolutionary solar thermal collector technology to achieve energy efficiency. As the technology is relatively new and unique there is no standardised way to test the system in a laboratory environment which is the way that air conditioners are traditionally rated for performance. In order to get some real world results, comparison testing against air conditioners with a known performance has been commissioned by Koolsola. This report compares the performance of a Koolsola TKFR-72GW system with the performance of an O General ASGA24AET. The testing was carried out by the Energy Department of Technoflow Trading LLC, Dubai, a market leader in the HVAC industry.

Test Conditions

- The indoor temperature on both units was fixed at 24°C for the duration of the testing.
- The units were operating at this fixed indoor temperature continuously for 24 hours a day, the readings were taken hourly from 8am – 6pm.
- Results were recorded using an electronic continuous metering system.
- Temperatures listed are an average of the previous hour.
- The indoor units of both systems were cooling separate but identical 8m x 6m x 2.4m rooms with single 1.8m x 1.2m single glazed windows.
- The Koolsola TKFR-72GW system tested was using the heat tube style Koolsola solar collector.
- The average humidity over the test period was 41%.

Test Results



Combined Electrical Energy Savings for Duration of test = 39.84%

System Specifications

System Model No.	Cooling Output (watts)	Cooling Output (BTU)	Cooling Output (tons)	Energy Input (watts)	Energy Input (horsepower)	Energy Efficiency Rating (watts/watts)	Energy Efficiency Rating (BTU/watts)
TKFR-72GW*	7200	24566	2.05	2230	2.99	3.23	11.02
O General ASGA24AET**	7117	24282	2.02	2560	3.43	2.78	9.49

*Rated specifications without the influence of the solar collector at T1 Temperature Condition (35oC Outdoor, 27oC Indoor)

**Rated specifications at T1 Temperature Condition (35oC Outdoor, 26.67oC Indoor)

Combined Test Results

Combined results	Time of Day	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
	Av. Temperature (°C)	28.3	30.0	32.1	34.4	36.8	37.4	37.9	37.9	37.4	37.1	36.8	36.2
	Koolsola TKFR-72GW (kw/hrs consumed)	0.00	13.08	13.54	13.26	14.08	13.92	13.92	14.32	14.38	14.49	14.76	14.65
	O General ASGA24AET (kw/hrs consumed)	0.00	23.40	24.43	22.80	22.60	23.20	23.70	22.70	23.90	23.30	23.30	23.30
	Energy Savings (%)	0.00	44.10	44.58	41.84	37.70	40.00	41.27	36.92	39.83	37.81	36.65	37.12
Daily average energy saving: 39.84%													

Daily Test Results Data

2nd June 2012	Time of Day	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
	Av. Temperature (°C)	29	31	32	34	37	37.5	38	38	37.5	37	36.5	36
	Koolsola TKFR-72GW (kw/hrs consumed)	0.00	1.90	1.85	1.74	1.74	1.80	1.82	1.77	1.85	1.80	1.90	1.80
	O General ASGA24AET (kw/hrs consumed)	0.00	2.90	3.33	3.00	2.90	2.80	3.00	2.90	2.80	3.00	2.90	2.80
	Energy Savings (%)	0.00	34.48	44.44	42.00	40.00	35.71	39.33	38.97	33.93	40.00	34.48	35.71
Daily average energy saving: 38.23%													

3rd June 2012	Time of Day	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
	Av. Temperature (°C)	29	30.5	31	33	36	37	37	37.5	37	36.5	36.5	36.5
	Koolsola TKFR-72GW (kw/hrs consumed)	0.00	1.70	1.77	1.87	1.80	1.78	1.70	1.70	1.60	1.65	1.75	1.70
	O General ASGA24AET (kw/hrs consumed)	0.00	2.90	3.00	2.90	2.80	3.00	2.90	2.80	3.00	2.90	2.80	3.00
	Energy Savings (%)	0.00	41.38	41.00	35.52	35.71	40.67	41.38	39.29	46.67	43.10	37.50	43.33
Daily average energy saving: 40.56%													

5th June 2012	Time of Day	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
	Av. Temperature (°C)	28	30	32.5	34.5	37	38	38.5	38	37.5	37	36.5	36
	Koolsola TKFR-72GW (kw/hrs consumed)	0.00	1.79	1.79	1.64	1.64	1.64	1.65	1.90	1.90	1.85	1.89	1.90
	O General ASGA24AET (kw/hrs consumed)	0.00	3.00	3.00	2.90	2.80	3.00	2.90	2.80	3.00	2.90	2.80	3.00
	Energy Savings (%)	0.00	40.33	40.33	43.45	41.43	45.33	43.10	32.14	36.67	36.21	32.50	36.67
Daily average energy saving: 38.97%													

Comparison Test Report

6th June 2012	Time of Day	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
	Av. Temperature (°C)	28.5	31	32	35	37.5	38	39	38.5	38	37	37	36
	Koolsola TKFR-72GW (kw/hrs consumed)	0.00	1.60	1.60	1.65	1.70	1.70	1.65	1.80	1.70	1.90	1.90	1.90
	O General ASGA24AET (kw/hrs consumed)	0.00	2.90	3.00	2.90	2.80	3.00	2.90	2.80	3.00	2.90	3.20	3.00
	Energy Savings (%)	0.00	44.83	46.67	43.10	39.29	43.33	43.10	35.71	43.33	34.48	40.63	36.67
Daily average energy saving: 41.05%													

7th June 2012	Time of Day	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
	Av. Temperature (°C)	28	29	32	34	37	38	38	37	37	37	37	36
	Koolsola TKFR-72GW (kw/hrs consumed)	0.00	1.70	1.68	1.51	1.90	1.80	1.70	1.70	1.98	1.79	1.82	1.85
	O General ASGA24AET (kw/hrs consumed)	0.00	2.90	3.00	2.90	2.80	3.00	2.90	2.80	3.00	2.90	2.80	3.00
	Energy Savings (%)	0.00	41.38	44.00	47.93	32.14	40.00	41.38	39.29	34.00	38.28	35.00	38.33
Daily average energy saving: 39.28%													

8th June 2012	Time of Day	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
	Av. Temperature (°C)	27	29	32	35	37	37	38	38	38	37	37	36
	Koolsola TKFR-72GW (kw/hrs consumed)	0.00	1.29	1.60	1.65	1.70	1.70	1.65	1.70	1.75	1.80	1.70	1.70
	O General ASGA24AET (kw/hrs consumed)	0.00	2.90	3.00	2.90	2.80	3.00	2.90	2.80	3.00	2.90	2.80	3.00
	Energy Savings (%)	0.00	55.52	46.67	43.10	39.29	43.33	43.10	39.29	41.67	37.93	39.29	43.33
Daily average energy saving: 43.00%													

9th June 2012	Time of Day	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
	Av. Temperature (°C)	28	29.5	33	35	36.5	37	37.5	38	37.5	38	37	37
	Koolsola TKFR-72GW (kw/hrs consumed)	0.00	1.50	1.60	1.60	1.70	1.80	1.85	1.85	1.70	1.80	1.90	1.90
	O General ASGA24AET (kw/hrs consumed)	0.00	2.90	3.10	2.90	3.00	2.80	3.20	2.90	3.30	2.80	3.10	2.70
	Energy Savings (%)	0.00	48.28	48.39	44.83	43.33	35.71	42.19	36.21	48.48	35.71	38.71	29.63
Daily average energy saving: 41.28%													

10th June 2012	Time of Day	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
	Av. Temperature (°C)	29	30	32.5	34.5	36	37	37.5	38	37	37	36.5	36
	Koolsola TKFR-72GW (kw/hrs consumed)	0.00	1.60	1.65	1.60	1.90	1.70	1.90	1.90	1.90	1.90	1.90	1.90
	O General ASGA24AET (kw/hrs consumed)	0.00	3.00	3.00	2.40	2.70	2.60	3.00	2.90	2.80	3.00	2.90	2.80
	Energy Savings (%)	0.00	46.67	45.00	33.33	29.63	34.62	36.67	34.48	32.14	36.67	34.48	32.14
Daily average energy saving: 36.17%													