

Ultra-Efficient  
**Thermal~Flow**  
 Water-Cooled Air Conditioning System

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**PERFORMANCE DATA - WESTERN REGION**

The operating performance of any air conditioning system is determined by the operating conditions in which the system operates. Conventional air-cooled equipment is rated by both the old EER (energy efficiency ratio) standard, and the SEER (seasonal energy efficiency ratio) Commercial and water-cooled equipment use the EER standard. There is a two point difference in the two numbers. A 10 EER is the same as a 12 SEER. The SEER rating standard uses 83 deg.f. as the rating temperature for air cooled equipment. If you have a 12 SEER unit it is a 12 SEER only at 83 deg. As the outdoor temperature goes up the unit will loose two points for every 10 degree rise in the outdoor temperature.

For example a 12 SEER (10EER) unit on a 95 deg. day drops to a 10 SEER(8 EER) unit, and on a 105 deg. day the efficiency drops to approx. 8 SEER(6EER) etc.

A water-cooled unit's efficiency is also affected by outdoor conditions, but not temperature. A water-cooled unit's performance is controlled by the humidity in the air. The hotter and dryer it gets, the better it works. You get greater efficiency and capacity increases automatically. In the humid coastal areas of Texas our system will operate at a 14 EER. But! In the dryer Western regions, the efficiency increases to over 18 EER - 60% more efficient than a 12 SEER rated air-cooled unit on a 105 degree day.

The chart below is the performance data of the most efficient two speed air-cooled unit on the market today, rated at 18 SEER. See what the real high speed EER numbers are at outdoor temperatures from 85 to 115 deg. To calculate EER you just divide Total Capacity by the Total KW energy usage. In the Sacramento area the AES Thermal~Flow unit will operate at 17.5 EER regardless of outdoor temperature. In the example below on a 105 deg. day the WES system is 56% more efficient than a top of the line 18 SEER rated air cooled system.

**Actual EER performance of an 18 SEER two speed air-cooled unit**

The 18 SEER rating is developed mostly on low speed at 83 deg. outdoor temp.

A properly sized two-speed unit will run on high speed above 95 deg.

O.D. D.B.	L.D. W.B.	TOT CAP.	SEMS. CAP AT ENTERING D.B. TEMP				TOTAL KW		
			72	75	78	80			
85	59	42.9	35.3	39.7	43.4	44.5	3.75	49,800 btu/hr 3930 watts	12.67 EER
	73	56.2	29.4	33.9	38.2	41.3	3.83		
	67	49.8	23	27.5	31.9	34.9	3.93		
95	59	40.7	34.3	38.8	41.8	42.8	4.04	47,000 btu/hr. 4220 watts	11.10 EER
	73	43.8	28.5	32.9	37.4	40.4	4.13		
	67	47	22	28.5	30.9	33.9	4.22		
105	63	41.1	27.4	31.9	36.3	39.3	4.41	44,100 btu/hr 4,500 watts	9.8 EER
	71	47.2	14.4	18.9	23.3	28.3	4.58		
	67	44.1	21	25.4	28.9	32.9	4.5		
115	63	38.5	38.5	30.8	36.3	38.3	4.71	41,200 btu./hr 4,780 watts	8.61 EER
	71	44.1	44.1	17.8	22.3	25.2	4.84		