Cyclone 500-watt motor with internal controller

CW rotation
Full Throttle

Power (Drain Brain)	Power (PowerTap)	Efficiency
90	0	0.0%
160	72	45.0%
200	115	57.5%
250	150	60.0%
320	220	68.8%
380	266	70.0%
420	310	73.8%
480	350	72.9%
530	375	70.8%
600	430	71.7%
650	460	70.8%
700	500	71.4%
780	535	68.6%
820	544	66.3%
860	560	65.1%
890	535	60.1%

CW rotation
Half Throttle

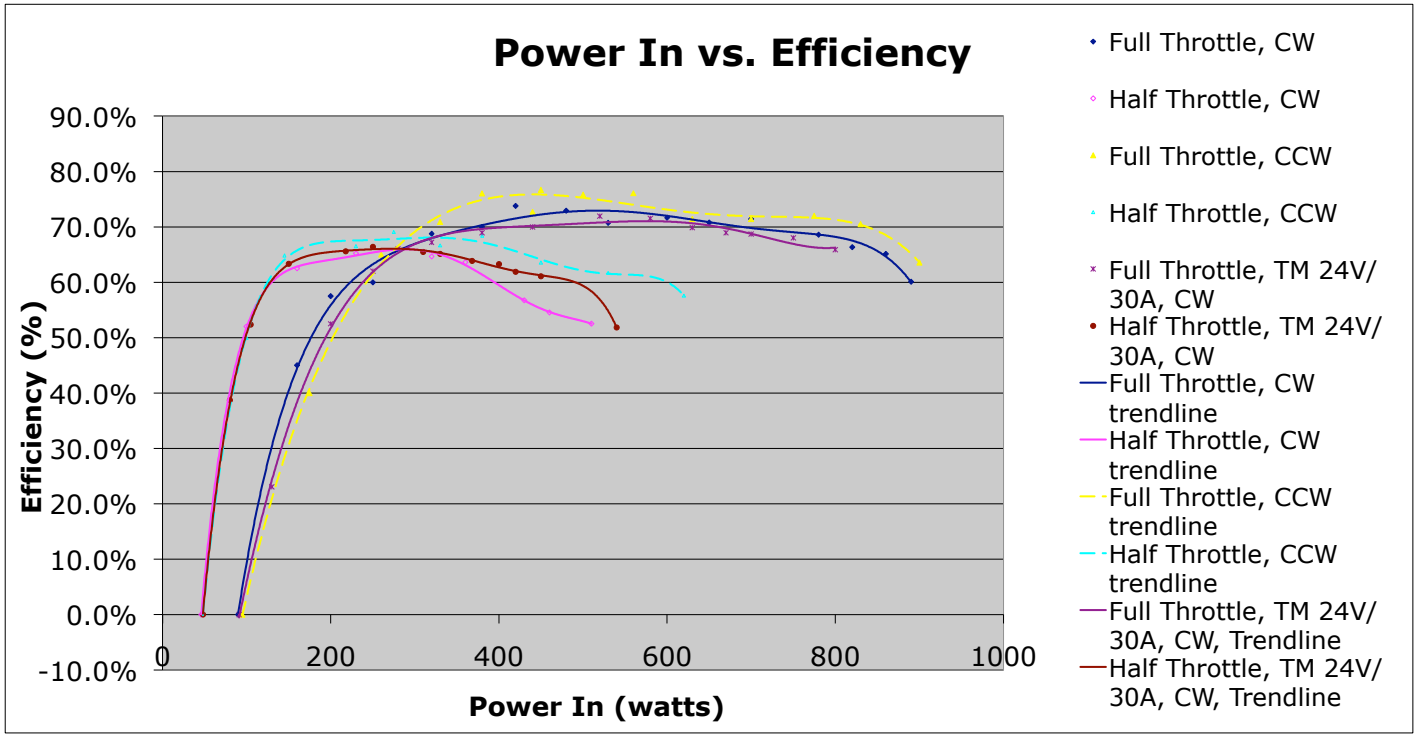
Power (Drain Brain)	Power (PowerTap)	Efficiency
46	0	0.0%
100	52	52.0%
160	100	62.5%
230	150	65.2%
280	185	66.1%
320	207	64.7%
360	229	63.6%
430	244	56.7%
460	251	54.6%
510	268	52.5%

CCW rotation
Full Throttle

Power (Drain Brain)	Power (PowerTap)	Efficiency
95	0	0.0%
175	70	40.0%
260	169	65.0%
330	234	70.9%
380	289	76.1%
440	320	72.7%
450	345	76.7%
500	379	75.8%
560	426	76.1%
630	450	71.4%
700	500	71.4%
775	558	72.0%
830	585	70.5%
900	572	63.6%

CCW rotation
Half Throttle

Power (Drain Brain)	Power (PowerTap)	Efficiency
48	0	0.0%
100	50	50.0%
145	94	64.8%
230	153	66.5%
275	190	69.1%
330	220	66.7%
380	260	68.4%
450	286	63.6%
530	327	61.7%
620	357	57.6%



Notes: The curves should generally be concave downward. Variation from this is no doubt due to errors in my measurement equipment.
Efficiency was measured by comparing energy drawn from the battery according to a Cycle Analyst and comparing that to energy sent to the rear wheel of the bicycle as read from a PowerTap hub.
Motor power passes through a 9.33:1 planetary gearbox and a standard bicycle chain and 14t - 52t sprocket on a left crank.
Torque then passes through the bottom bracket to a 51t chainring and then directly to a 34t sprocket on the rear wheel.
Efficiency of the two-stage chain and sprocket drive is probably around 88%, so actual motor/controller efficiency is about 13% greater.