



Circuit Rider Field Test

This reports documents the field test of a Circuit Rider Max “Patriot” on the load center of the fishing boat “Gulf Stream III” at Old Point Packing Co. docks in Newport News, VA.



The test consisted of measurement of the voltages and amperages on each leg of a 230V 3 Phase Auxiliary Load center through five different operating scenarios to cover a range of loading typical of the boats operation. Power is fed to this load center from an onboard Diesel Generator and distributed to various loads. The following briefly summarizes the test conditions and results.

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Test Instruments:	AEMC Current Probe Model MR 561	2
	Tektronix Current Probe Model A6303	1
	Voltage Isolation Transformers	3
	HP 3566A Analyzer w/ 8 channel module	1
	HP 35670A Analyzer, 4 channel	1
	Compaq Model NC 8230 Laptop	1

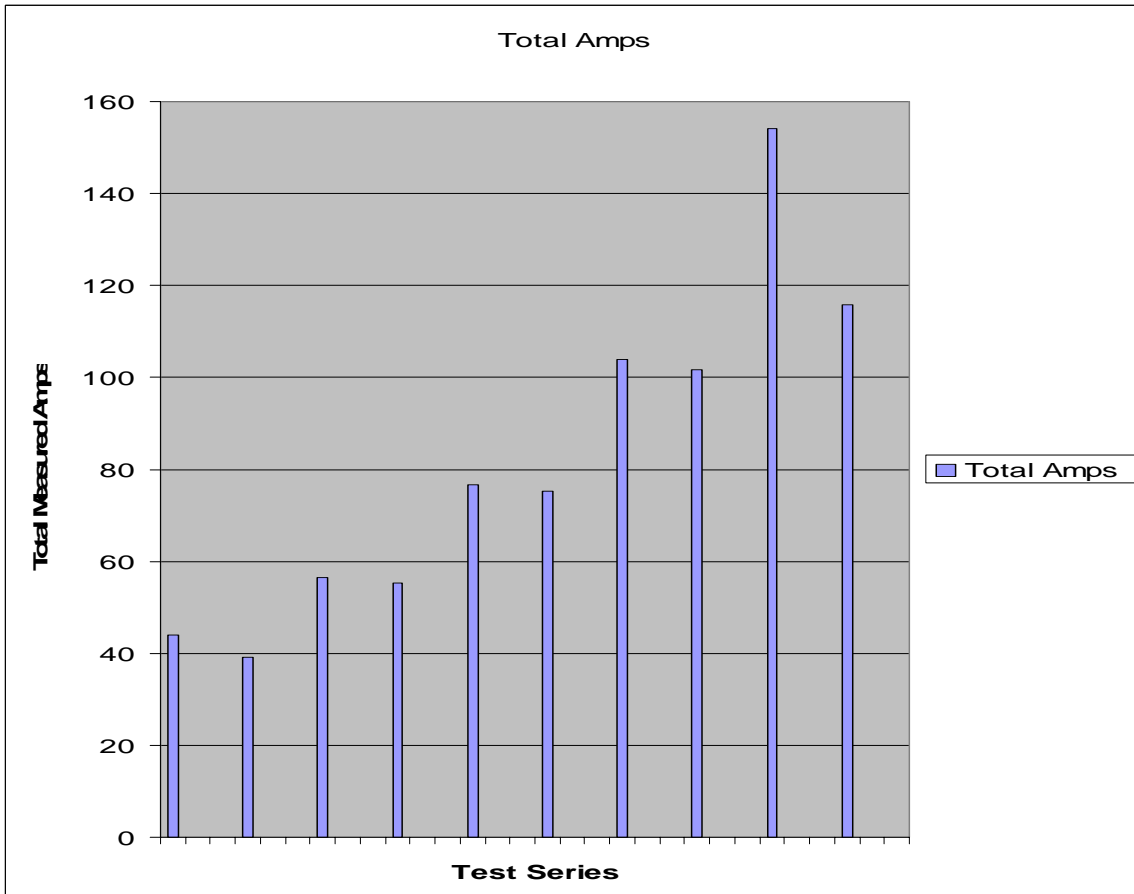
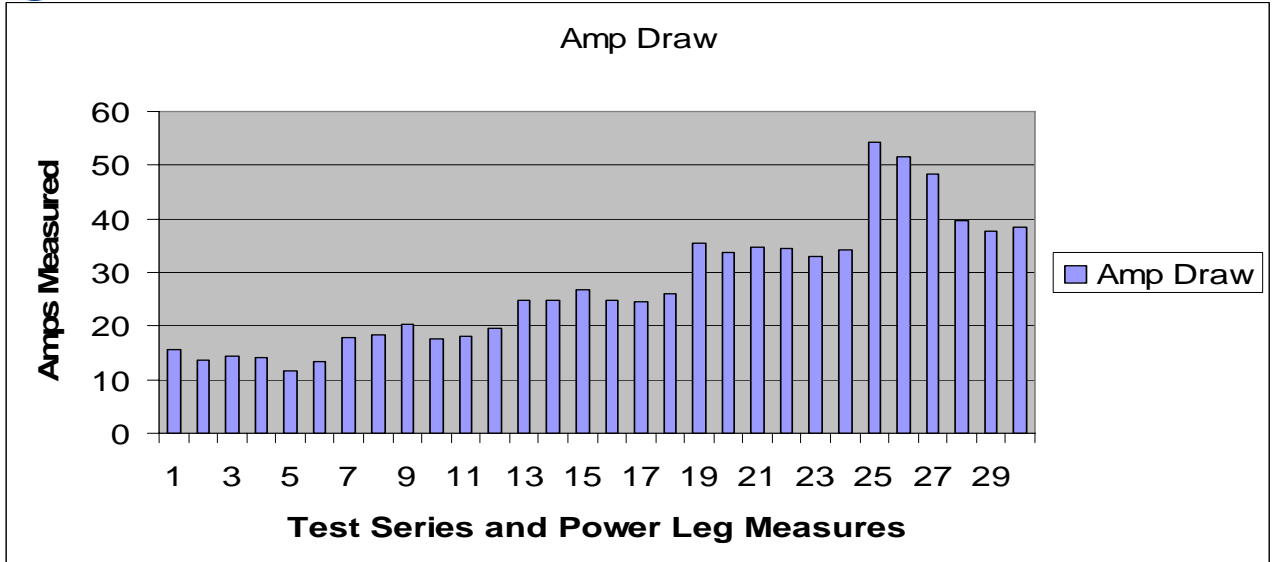


Test Set Up: Instrumentation was set up on the load center with pickups on each leg to measure amps and voltages. A Circuit Rider Patriot Model 240 S/N 6173 was wired into the circuit through a switch to allow it to be disconnected from the circuit for “unconditioned” readings. The Generator was started and measurements were taken at five load settings both in the unconditioned power setting (Circuit Rider out of the loop) and conditioned (Circuit Rider in the loop). The following table identifies the load conditions and shows the results of both voltage and amperage measurement for each.





Power Leg	Voltage	Amp Draw	Loads on circuit	Total Amps	Percent Amps Reduction
L1	207.5	15.7	Unloaded	43.9	
L2	207.5	13.7	Unloaded		
L3	207.5	14.5	Unloaded		
L1	212.9	14.1	Unloaded	39.1	10.9
L2	212.9	11.7	Unloaded		
L3	210.2	13.3	Unloaded		
L1	210.2	17.8	AC	56.5	
L2	210.2	18.3	AC		
L3	207.5	20.4	AC		
L1	213	17.5	AC	55.3	2.1
L2	213	18.2	AC		
L3	213	19.6	AC		
L1	207.5	24.9	AC & Bilge Pump	76.6	
L2	207.5	24.9	AC & Bilge Pump		
L3	207.5	26.8	AC & Bilge Pump		
L1	212.9	24.7	AC & Bilge Pump	75.2	1.8
L2	212.9	24.5	AC & Bilge Pump		
L3	212.9	26	AC & Bilge Pump		
L1	207.5	35.4	AC & Bilge Pump&HydPlant	103.9	
L2	207.5	33.7	AC & Bilge Pump&HydPlant		
L3	207.5	34.8	AC & Bilge Pump&HydPlant		
L1	213	34.5	AC & Bilge Pump&HydPlant	101.7	2.1
L2	213	33	AC & Bilge Pump&HydPlant		
L3	213	34.2	AC & Bilge Pump&HydPlant		
L1	207.5	54.2	AC/Bilge Pump/Hydraulic Plant w/ Winch Load	154.1	
L2	207.5	51.5	AC/Bilge Pump/Hydraulic Plant w/ Winch Load		
L3	207.5	48.4	AC/Bilge Pump/Hydraulic Plant w/ Winch Load		
L1	212.9	39.7	AC/Bilge Pump/Hydraulic Plant w/ Winch Load	115.9	24.8
L2	212.9	37.7	AC/Bilge Pump/Hydraulic Plant w/ Winch Load		
L3	212.9	38.5	AC/Bilge Pump/Hydraulic Plant w/ Winch Load		



The results are embodied in the graphs above but can be summarized as follows; Circuit Riders power conditioning allowed a reduction in power required through all the tested load ranges ranging from roughly 2% reduction to 25% reduction. The greatest benefit being shown in the unloaded condition (10.9%) and heavily loaded condition (24.8%).