raise RESTORE 1030

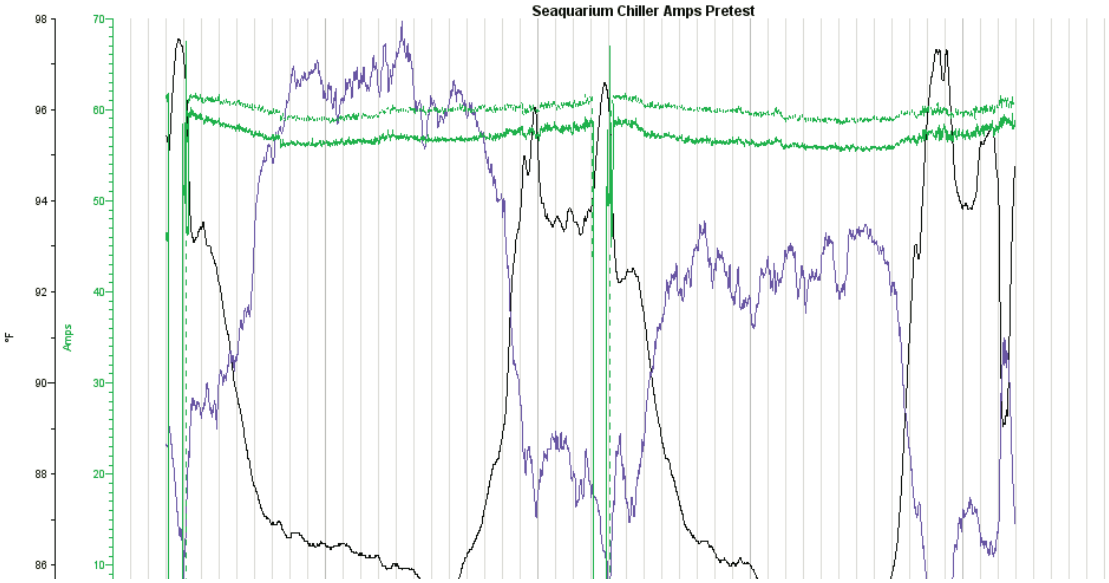
Seaquarium Chiller
Test Results

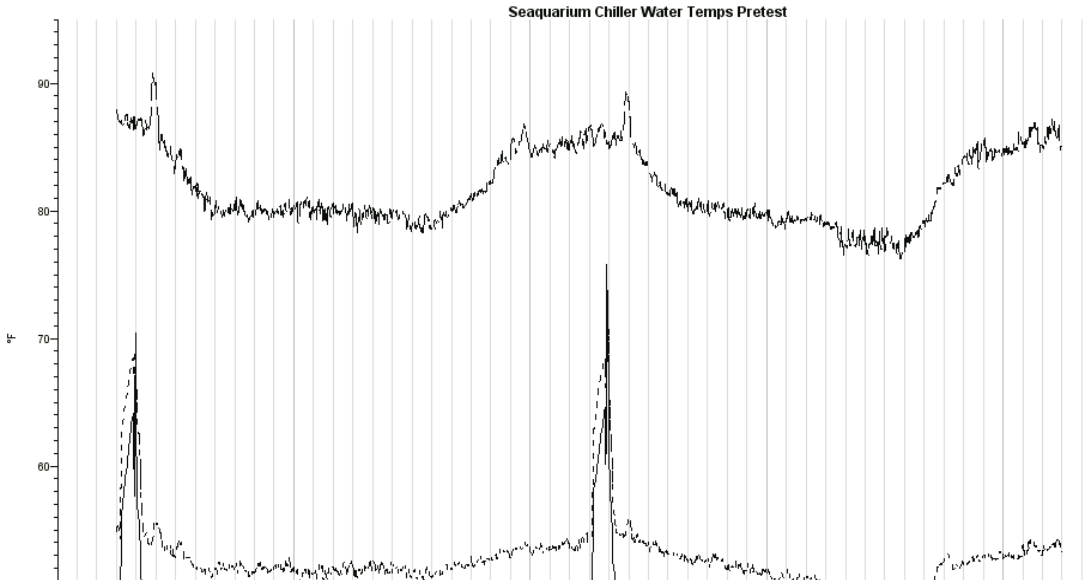
Tom VanZeeland | Chief Technology Officer
Raise Energy Solutions, LLC, 1059 Triad Court, Suite 1, Marietta, GA 30062 USA
678-331-5548 ext 104 | 919-349-8199 cell | tom@raiseenergysolutions.com

Seaquarium Chiller Test Results

This test was conducted at the Miami Seaquarium from May 20th to June 16th, 2011. The chiller tested was a Carrier 30GTN070-E631KA that is used as one of a series of chillers used to chill the water in a salt water pool. Because of the configuration the logging was confined to amp draw and inlet and outlet temperatures as well as the circulating water from the salt water pool.

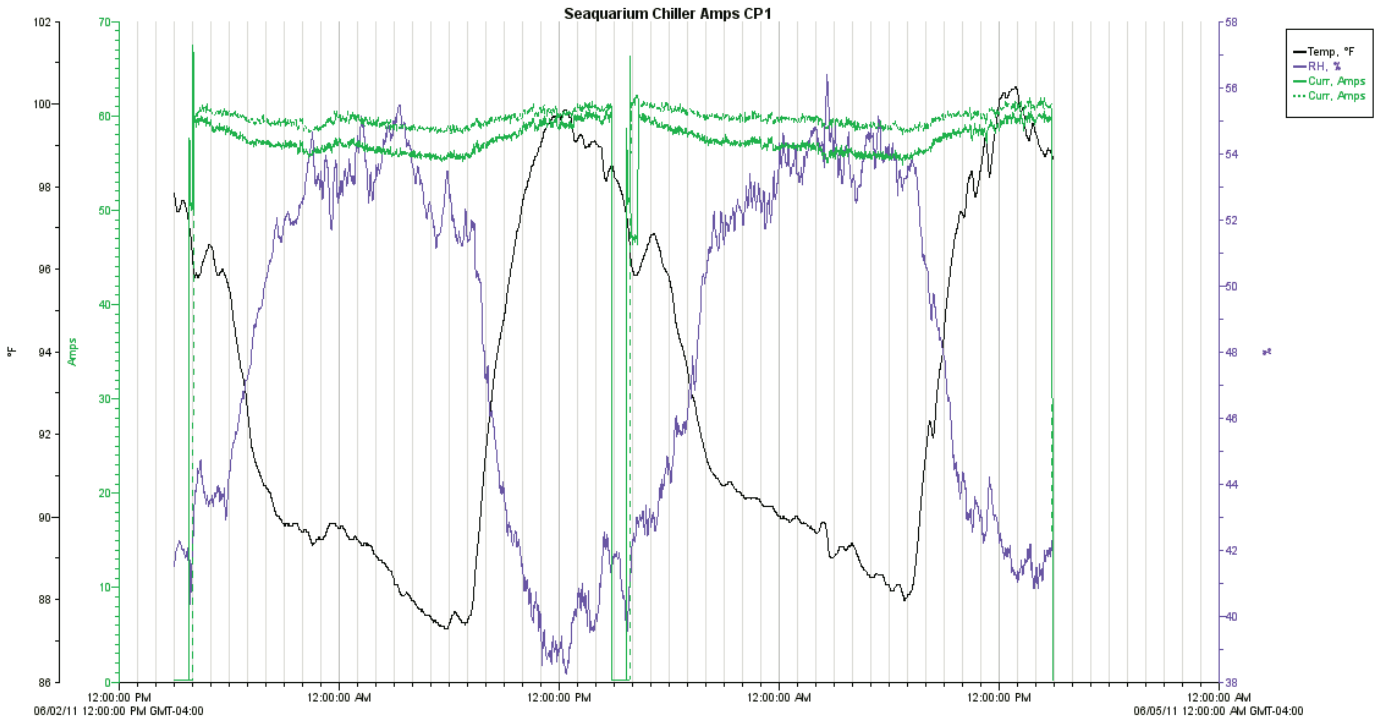
The following chart shows the amps for the pretest period (baseline) followed by the corresponding chart with water temperatures.

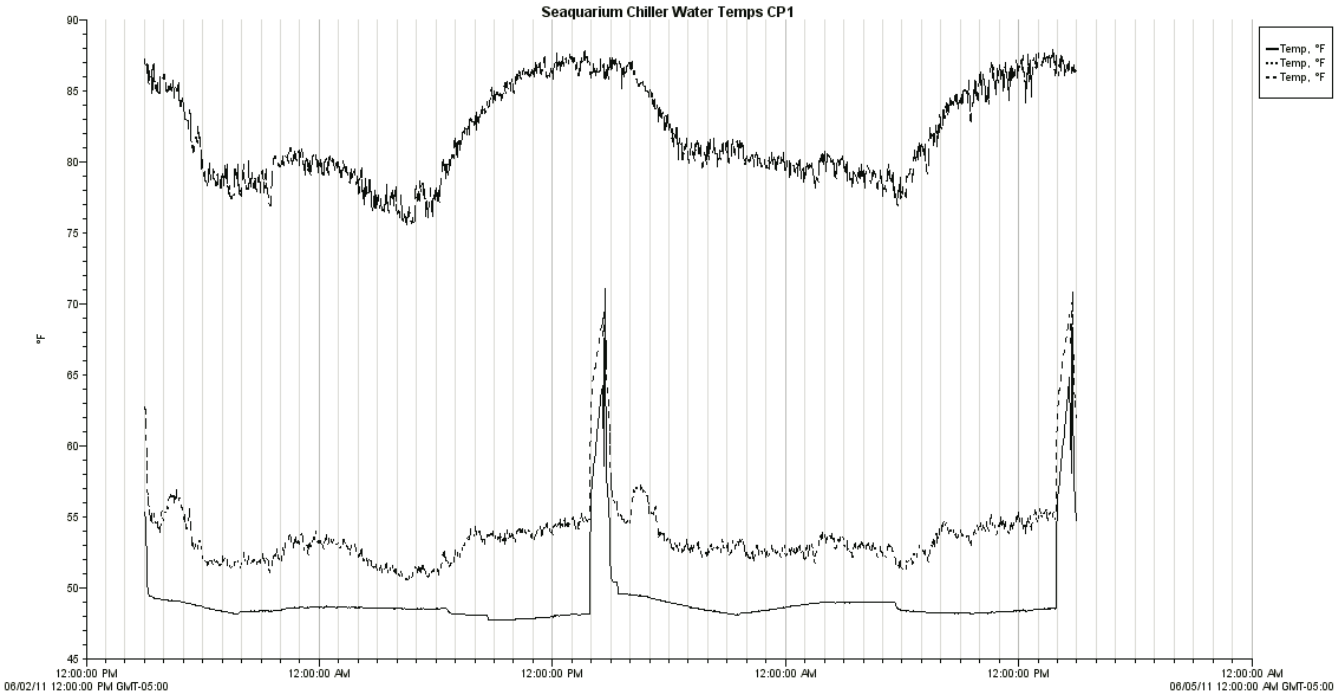




The charts begin with a shutdown period to facilitate the replacement of salt water in the pool with fresh salt water in order to keep the water chemistry correct. This is done on a daily basis. If you follow the chart you will see the beginning shutdown followed by continuous run time until the next shutdown and then continuous run until the last shutdown. All of the comparison charts cover the same operational conditions. The bottom chart corresponds with the one above and shows water temperatures. The bottom two lines show the inlet and outlet temperatures of the chiller. The difference in F° is the ΔT and is the measure of the output of the chiller. The higher the ΔT the higher the output of the chiller.

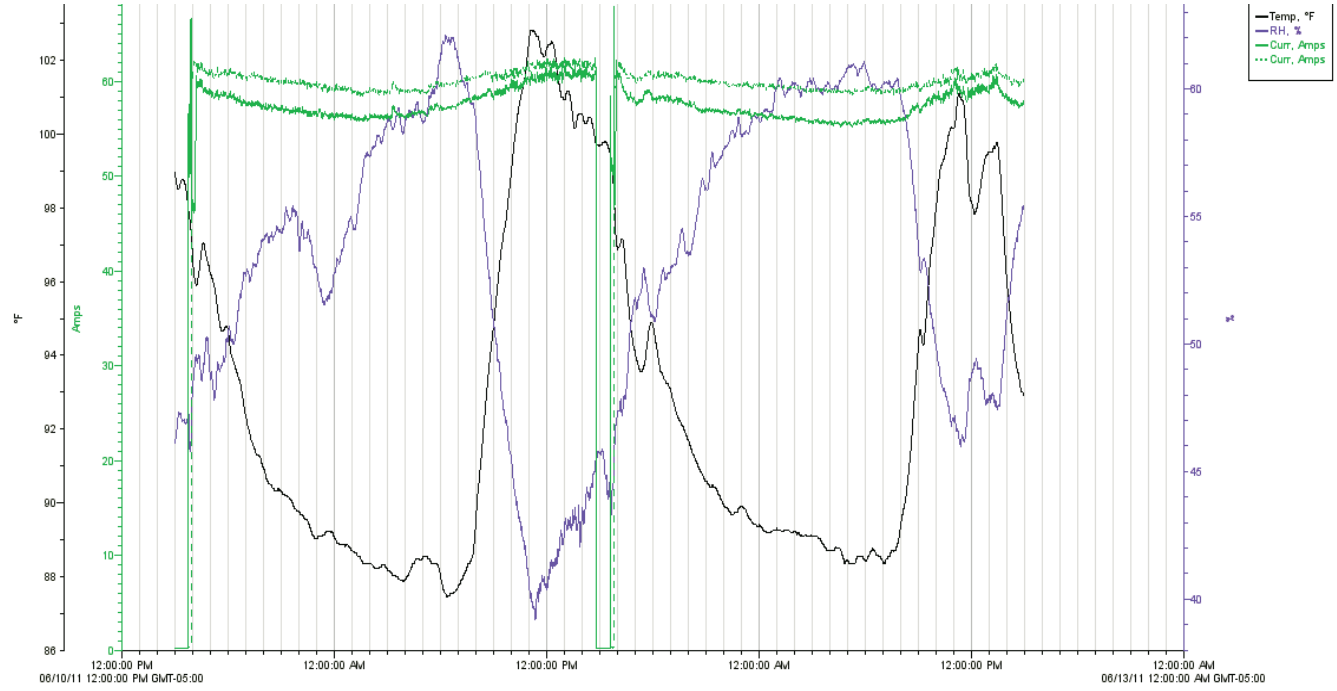
On May 31st, 2011 RESTORE1030™ was injected into both of the compressors in the chiller and the first comparison data was taken on June 2nd-4th.





What you see here is basically the same pattern in the amps and a higher ΔT represented by the space between the lower two lines on the graph above.

This set of charts represents the final data period of June 10th-12th.



Analysis of Data

Date	Ambient Average Temp, °F	Average Amps	Average Amps	Outlet Temp, °F	Inlet Temp, °F	Main Temp, °F	ΔT	Output Gain (ΔT)
5/22-24/2011(pretest)	43.39	55.07	57.34	49.32	52.82	81.70	3.50	
6/2-4/2011	81.67	55.35	57.04	49.03	53.76	81.93	4.73	35.34%
6/10-12/2011	82.00	55.69	57.61	48.97	53.96	81.22	5.00	42.95%

This data shows that the output gain in the chiller was increased significantly after the addition of RESTORE1030™. You will also note that the average amps changed very little and were most likely a reflection of decreased condenser efficiency with the heat rise from the pretest measurements.