

## SuperOx Test Demonstration Performed for an Environmental Group

September 19 – 26, 2011

### Executive Summary

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On September 19, 2011, the SuperOx team conducted a test to demonstrate the operation and effectiveness of the portable SuperOx Box™ for staff of a nationally recognized environmental services company. The test was performed in two phases. Phase I was designed to show the ramp-up of dissolved oxygen and oxygen saturation levels over a four-hour period during which the SuperOx Box™ was in operation. Phase II was designed to show the dissolved oxygen and oxygen saturation retention over a one-week period without the SuperOx Box™ operating.

In both phases measurements were taken for dissolved oxygen (mg/l), oxygen saturation (% O<sub>2</sub>), and water temperature (deg F). The test was performed in a warehouse with a large roll-up door open to the outside without air conditioning. All equipment was cleaned, inspected, and calibrated prior to the test assuring all equipment met the recommended specifications. Two 500-gallon water tanks were used, a source tank and the test tank to hold the water that was oxygenated. Testing began by filling the source tank with 375 gallons of city tap water, which was de-chlorinated using sodium thiosulfate. The water was cooled with 400 pounds of ice to 61.3 deg (F). The oxygen generator was turned on and allowed to stabilize. Next, hoses were attached to the discharge and input valves on the SuperOx Box™ as well as the water tanks then, the valves were opened to allow the water to flow. The pump was primed and turned on to transfer the water from the source tank to the test tank once through the SuperOx process. When 300 gallons of the source tank water had completed a first pass through the SuperOx Box™, the SuperOx Box™ was turned off and the hoses were reconfigured for recirculation in the test tank only. During the test, Eric Bergeron, requested the SuperOx team add additional hose to the discharge valve from the SuperOx Box™ into the test tank to simulate the length of hose they may use at their project sites. One hundred feet of clear, flexible PVC hose was added to the return line to the tank, which took approximately 45 minutes to install.

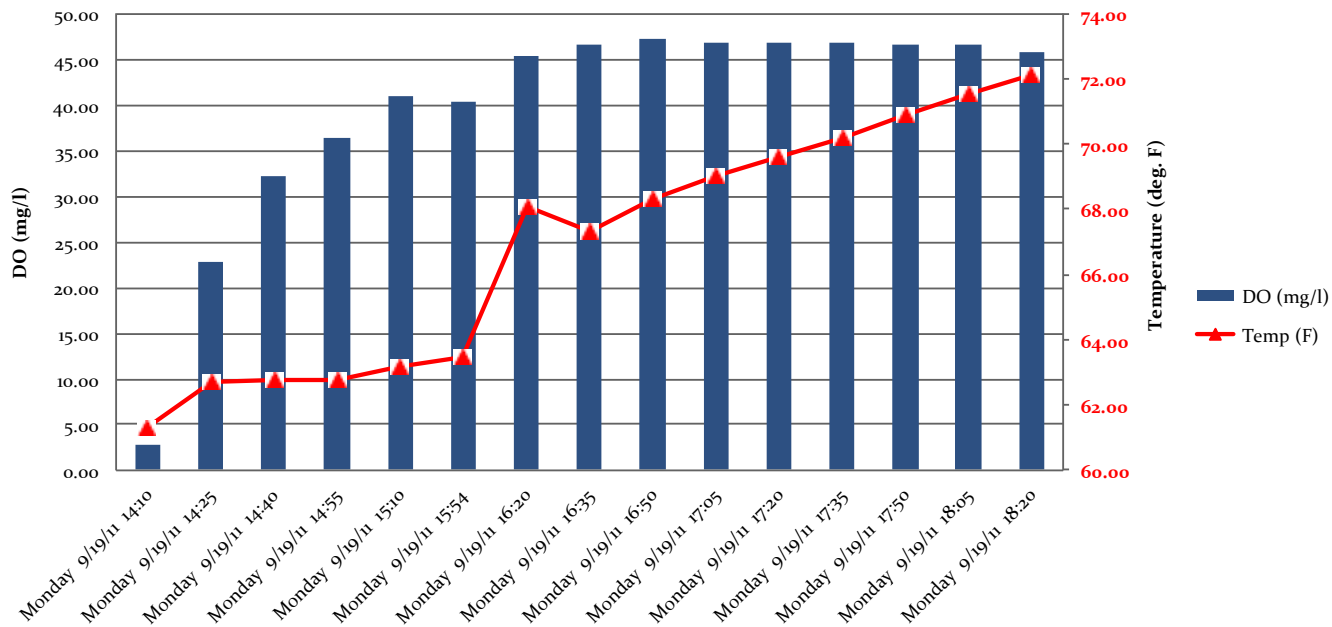
As the 300 gallons of test water was continuously recycled through the SuperOx Box™, readings were taken every 15 minutes starting at 2:10 PM until 6:20 PM on 9/19/2011 when Phase I of the test was completed. A peak DO reading of 47.2 mg/l, and 514% O<sub>2</sub> saturation was reached by 4:50 PM. The water temperature was 68.3 deg (F) at the time of those readings.

During Phase 2, readings were taken from 9/19/2011 through 9/26/2011 every 12 hours without the SuperOx Box™ operating. Over the next 6 days of the test the DO level decreased from 45.8 mg/l to 11.98 mg/l. The O<sub>2</sub> saturation decreased from 523% to 162% while the temperature increased from 72.1 deg (F) to 88.3 deg (F). Data and graphs depicting the results of Phases I and II follow.

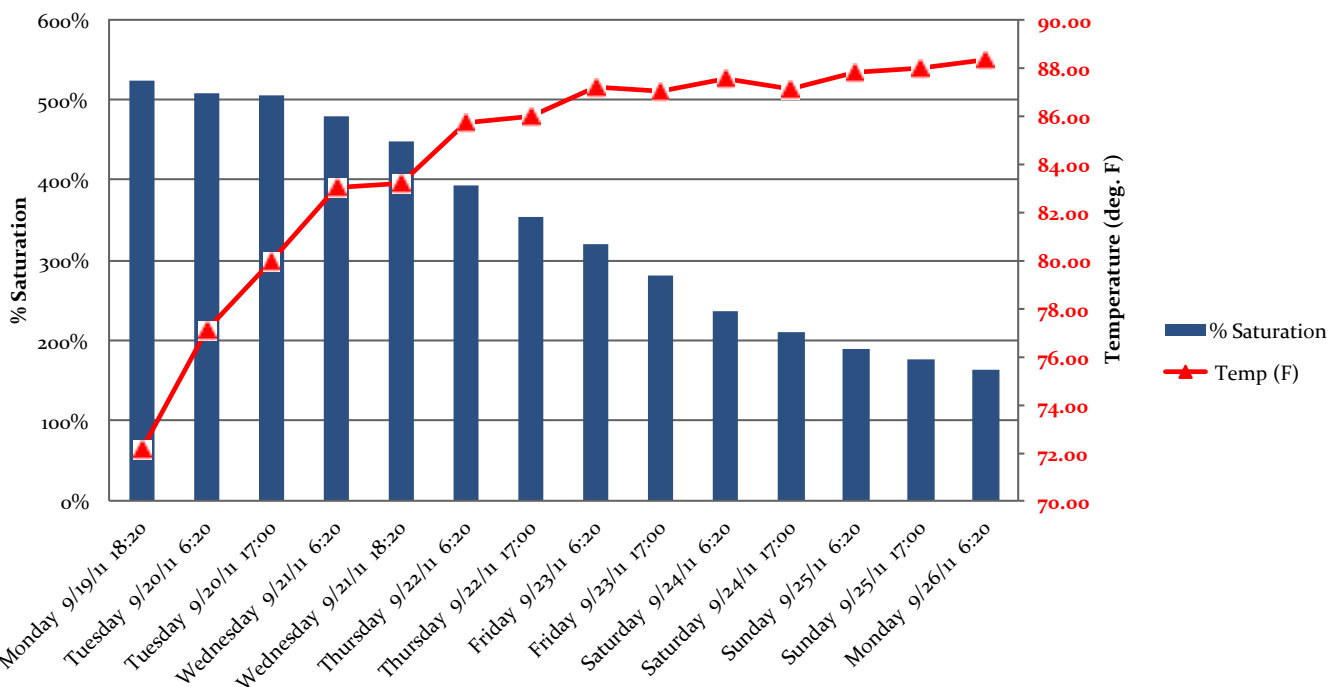
The test demonstration shows the dramatic increase in oxygen concentration as well as the long retention time for the oxygen in the test tank. The results were developed using a test unit utilizing an earlier prototype of the technology that has subsequently been engineered with better transfer efficiencies.

[www.superobox.com](http://www.superobox.com)

**Temperature and DO Measurements vs Time  
Day One, 15 Minute Intervals**



**Temperature and Percent Saturation Measurements vs Time  
Open Tank Test, 12 Hour Readings**



Date	Time	Day, Date, and Time	DO (mg/l)	Temp (F)	% Saturation	Notes
9/19/2011	2:10 PM	Monday 9/19/11 14:10	2.78	61.30	28%	Initial source water readings prior to test
9/19/2011	2:25 PM	Monday 9/19/11 14:25	22.80	62.70	236%	End of first pass through the SuperOx unit
9/19/2011	2:40 PM	Monday 9/19/11 14:40	32.20	62.80	337%	End of second pass through the SuperOx unit completed by recycling the sample tank
9/19/2011	2:55 PM	Monday 9/19/11 14:55	36.40	62.80	370%	
9/19/2011	3:10 PM	Monday 9/19/11 15:10	40.90	63.20	430%	
9/19/2011	3:54 PM	Monday 9/19/11 15:54	40.40	63.50	433%	Added 100' of clear flex 1.5" ID PVC W/ a connection at the 50' junction
9/19/2011	4:20 PM	Monday 9/19/11 16:20	45.40	68.10	494%	1st reading after the 100' of clear hose was added
9/19/2011	4:35 PM	Monday 9/19/11 16:35	46.50	67.30	509%	
9/19/2011	4:50 PM	Monday 9/19/11 16:50	47.20	68.30	514%	
9/19/2011	5:05 PM	Monday 9/19/11 17:05	46.80	69.00	517%	
9/19/2011	5:20 PM	Monday 9/19/11 17:20	46.80	69.60	521%	
9/19/2011	5:35 PM	Monday 9/19/11 17:35	46.70	70.20	526%	
9/19/2011	5:50 PM	Monday 9/19/11 17:50	46.60	70.90	529%	
9/19/2011	6:05 PM	Monday 9/19/11 18:05	46.50	71.50	529%	
9/19/2011	6:20 PM	Monday 9/19/11 18:20	45.80	72.10	523%	End Phase 1 of the test and 15 minute interval readings - SuperOx Box™ turned off
9/20/2011	6:20 AM	Tuesday 9/20/11 6:20	43.00	77.10	508%	Beginning of Phase 2 and 12 hour interval readings
9/20/2011	5:00 PM	Tuesday 9/20/11 17:00	41.80	80.00	504%	Note: Approximately 80 gallons of water leaked from the hoses that were added
9/21/2011	6:20 AM	Wednesday 9/21/11 6:20	39.30	83.00	479%	
9/21/2011	6:20 PM	Wednesday 9/21/11 18:20	34.70	83.20	447%	
9/22/2011	6:20 AM	Thursday 9/22/11 6:20	31.00	85.70	392%	
9/22/2011	5:00 PM	Thursday 9/22/11 17:00	27.40	86.00	354%	
9/23/2011	6:20 AM	Friday 9/23/11 6:20	24.60	87.20	321%	
9/23/2011	5:00 PM	Friday 9/23/11 17:00	21.20	87.00	280%	
9/24/2011	6:20 AM	Saturday 9/24/11 6:20	18.11	87.50	237%	
9/24/2011	5:00 PM	Saturday 9/24/11 17:00	15.63	87.10	210%	
9/25/2011	6:20 AM	Sunday 9/25/11 6:20	14.80	87.80	190%	
9/25/2011	5:00 PM	Sunday 9/25/11 17:00	12.75	88.00	176%	
9/26/2011	6:20 AM	Monday 9/26/11 6:20	11.98	88.30	162%	End of Phase 2 and 12 hour interval readings.