A Comparison of Surface Aerators from Three Top Manufacturers

1997 Independent Oxygen Transfer Testing Report

AQUATURBO SYSTEMS, INC.

waste water treatment equipment

October 1997

Dear Wastewater Treatment Professional:

During the Summer of 1997, and for the first time in the United States, an oxygen transfer test was conducted in which three major surface aeration manufacturers had their equipment tested in the same basin at the same time by the same independent tester. **A true "apples to apples" comparison!**

And the winner is... AquaTurbo® Aerator.

AquaTurbo® proved under these tight controls to be 10% more efficient than the nearest competitor in oxygen transfer. That's 10% more oxygen transfer under identical, simultaneous conditions. If, like most people, you *haven't* heard of AquaTurbo®'s unique and superior screwpeller technology, don't be surprised. This technology is new in the United States, but has been known and proven worldwide since 1983. In fact, the AquaTurbo® has been *proven #1 in every independent technology comparison test it has participated in around the world!* Technology that offers:

- A track record of more than 15 years and more than 3,000 units in operation
- The highest oxygen transfer available
- Units up to 200 horsepower — larger than any other aeration technology.

This technology has been independently tested and proven superior time and time again. Over the last fifteen years, the AquaTurbo® Aerator has been independently tested in ASCE clean water testing and in field testing conditions against diffused aeration, slow speed surface aerators, and high speed surface aerators. **In every test it has undergone, the AquaTurbo® Aerator has been the top performer!** And since 1995, the AquaTurbo® Aerator has been manufactured in Springdale, Arkansas by AquaTurbo Systems, Inc., and is available and serviced in the United States.

Please read the report and call Bruno Poot or Dave Gibson at AquaTurbo Systems for more information about how the AquaTurbo® can solve your aeration needs. If you're sufficiently impressed — and we think you will be! — you can order your first AquaTurbo® Aerator at 35% off the published list price.

Sincerely,

AquaTurbo Systems

P.S. This breakthrough technology has more than fifteen years' proof in tests and referencable case studies. Don't waste your time on wastewater — call now!

AQUATURBO SYSTEMS

P.O. Box 189
Springdale, AR 72765

1754 Ford Avenue
Springdale, AR 72764

Tel. (501) 927-1300
Fax (501) 927-0700

OXYGEN TRANSFER CAPABILITIES COMPARISON EVALUATION

OF THE

AIRE-O_2®

AERATION INDUSTRIES INTERNATIONAL, INC.
75 HP AIRE-O_2® TURBO

AQUA-AEROBIC SYSTEMS, INC.
75 HP AQUA-JET®

AQUATURBO SYSTEMS

AQUATURBO SYSTEMS, INC.
75 HP AQUA TURBO®

FLOATING 1200 RPM AERATORS

FOR

INTERNATIONAL PAPER CORPORATION

by

GSEE, INC.
LAVERGNE, TN.

June, 1997

GSEE
ENVIRONMENTAL CONSULTANTS

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1. INTRODUCTION

During the week of June 16, 1997, Aeration Industries International, Inc., Aqua-Aerobic Systems, Inc. and Aquaturbo Systems, Inc. jointly retained GSEE, Inc., to perform comparative unsteady state clean water oxygen transfer tests on their respective 75HP 1200 RPM floating aerators and report the results. The tests were performed for the use of International Paper Corporation.

Testing of the aerators occurred at the Aquaturbo Systems, Inc. facilities located in Springdale Arkansas. The aerators were installed in the 50' x 50' x 15' deep test basin. A liquid depth of 12'-2" was maintained during all testing. Triplicate tests were performed on each manufacturers aerator. The sequence of testing was performed as follows:

1. Aquaturbo Systems Aqua Turbo® 75HP
2. Aqua Aerobics Aqua-Jet® 75HP
3. Aeration Industries AIRE-O_2® TURBO
4. Aqua Aerobics Aqua-Jet® 75HP
5. Aeration Industries AIRE-O_2® TURBO
6. Aquaturbo Systems Aqua Turbo® 75HP
7. Aeration Industries AIRE-O_2® TURBO
8. Aquaturbo Systems Aqua Turbo® 75HP
9. Aqua Aerobics Aqua-Jet® 75HP

The aerators supplied for testing by Aeration Industries International, Inc. and Aquaturbo Systems, Inc. were brand new, direct from factory units. The Aqua-Aerobic Systems, Inc. aerator was taken directly from service at an International Paper aerated lagoon. The unit had been in service for approximately two months prior to being tested.

The following witnesses were present during the testing:

Witness	Representing
Al Champion	International Paper
Moira Layman	International Paper
Susan Isom	Aeration Industries International, Inc.
Rudy Karliner	Aeration Industries International, Inc.
Ron Weis	Aqua-Aerobic Systems, Inc.
Johny Haegeman	Aquaturbo Systems, Inc.
Bruno Poot	Aquaturbo Systems, Inc.
David Jacobs	Aquaturbo Systems, Inc.
Gerald Shell	GSEE, Inc.
Michael Hicks	GSEE, Inc.

Oxygen transfer is determined using the clean water non-steady state test procedure as described in the ASCE's "***A Standard for the Measurement of Oxygen Transfer in Clean Water***". All test results use both the ASCE log-deficit linear and non-linear regression analysis methods for the determination of the mass transfer coefficient. Test results are reported at standard conditions of 20°C liquid temperature, one (1) atmosphere barometric pressure, zero (0) dissolved oxygen, and alpha (α) and beta (β) equal to 1.0 (clean tap water).

2. DESCRIPTION OF THE AERATION TEST BASIN

All testing occurred in the Aquaturbo Systems, Inc. 50' x 50' test basin located in Springdale, AR. as shown in Figure 2-1. The power supply is 460-Volt 3 Phase. Power was monitored using a recording power analyzer.

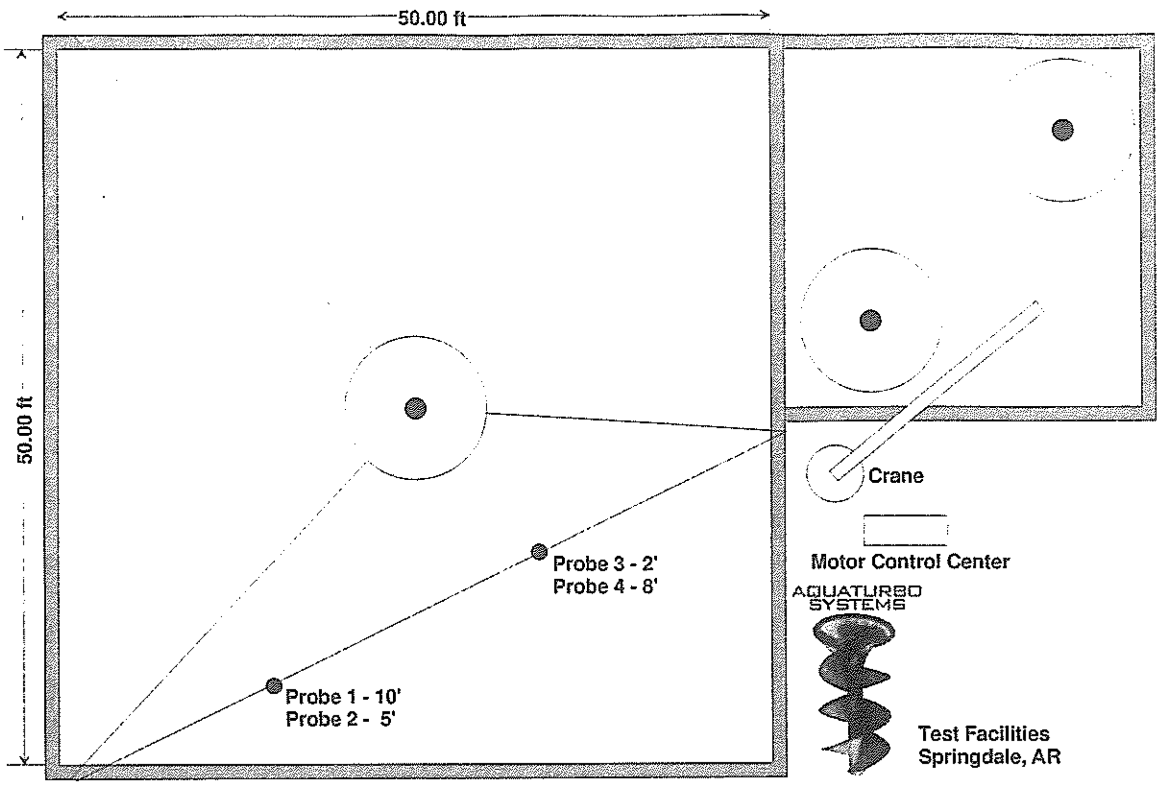


Figure 2-1 Test Facility

3. DESCRIPTION OF THE AERATION DEVICES

3.1. Aeration Industries International, Inc. AIRE-O_2® TURBO Aerator

The AIRE-O_2® TURBO aerator consists of the following:

1. Reliance Electric 1175 RPM 75 HP motor
   ID No.: 02MH005676 G001 WY Frame 405 LPZ
   230/460 V - 180/90 A
   NEMA Nom. Eff. - 90.2%
2. Stainless Steel Float Assembly
3. Intake Cone Cross Assembly

This aerator uses a screw impeller with a fixed (non-rotating) diffuser head. Please note that this is a new unit, designed and built by Aeration Industries International, Inc., and should not be confused with the former AIRE-O_2® TURBO built for 6 years under license from Aquaturbo Systems, Inc. Figure 3-1 shows the details of the AIRE-O_2® TURBO 75HP aerator.

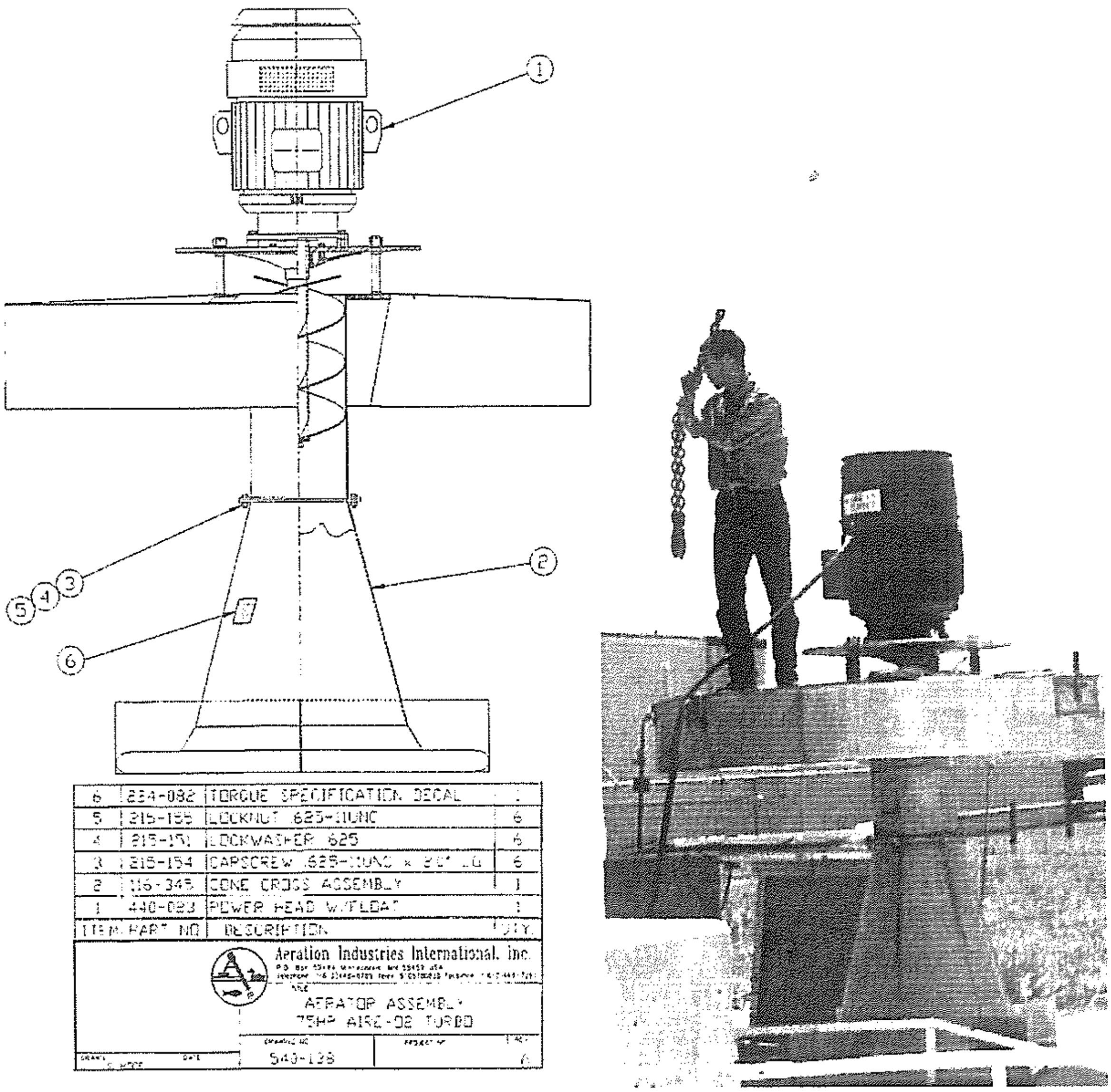


Figure 3-1 AIRE-O_2® TURBO Aerator

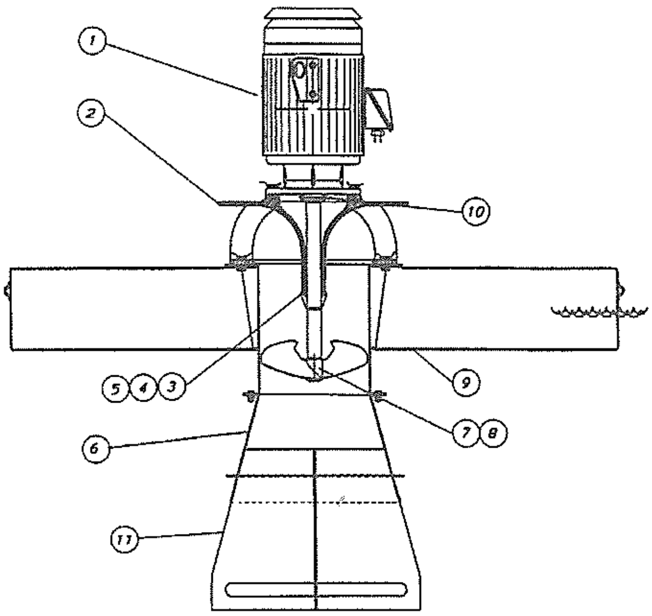
3.2. Aqua-Aerobic Systems, Inc. - Aqua-Jet® Aerator

The Aqua-Jet® aerator consists of the following:

1. Reliance Electric 1180 RPM 75 HP motor
   ID No.: 01MAN30168 G 003 YX Frame 405 LPZ
   460 V - 87.9 A
   NEMA Nom. Eff. - 93.6% (Guaranteed Eff.: 93.0%)
2. Stainless Steel Float Assembly (Ser # 16517)
3. Intake Cone Assembly

This aerator uses a marine type impeller with a fixed (non-rotating) diffusion head. Figure 3-2 shows the details of the 75HP Aqua-Jet® aerator.

Note that the Aqua-Jet® aerator was supplied by International Paper from one of its wastewater treatment facilities, and not supplied by the manufacturer solely for the purpose of this testing.



11	STABILIZER CROSS ASSEMBLY	304 STN. STL
10	LABYRINTH SEAL GUARD	NEOPRENE
9	FLOAT ASSEMBLY	304 STN. STL.
8	PROP PIN	17-4 PH STN. STL.
7	PROPELLER	316 STN. STL
6	INTAKE CONE ASSEMBLY	304 STN. STL.
5	FLUID DEFLECTOR	NEOPRENE
4	THRUST WASHER	U.H.M.W.
3	ANTI-DEFLECTION INSERT	DELRIN
2	DIFFUSION HEAD	304 STN STL.
1	MOTOR	

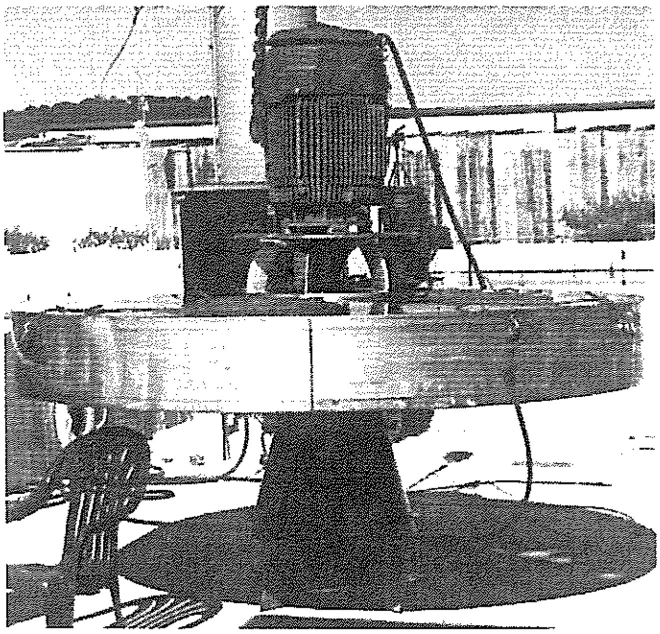


Figure 3-2 Aqua-Jet® Aerator

3.3. Aquaturbo Systems, Inc. Aqua Turbo® Aerator

The Aqua Turbo® aerator consists of the following:

1. Reliance Electric 1175 RPM 75 HP motor
   ID No.: 01MAN43091 G 003 PZ Frame 405 TD
   230/460 V - 180/90 A
   NEMA Nom. Eff. - 90.2%
2. Stainless Steel Float Assembly
3. Intake Cone Cross Assembly

This aerator uses a patented (Archimedes type) screw centrifugal impeller. Figure 3-3 shows the details of the Aquaturbo Systems Aqua Turbo® 75HP aerator.

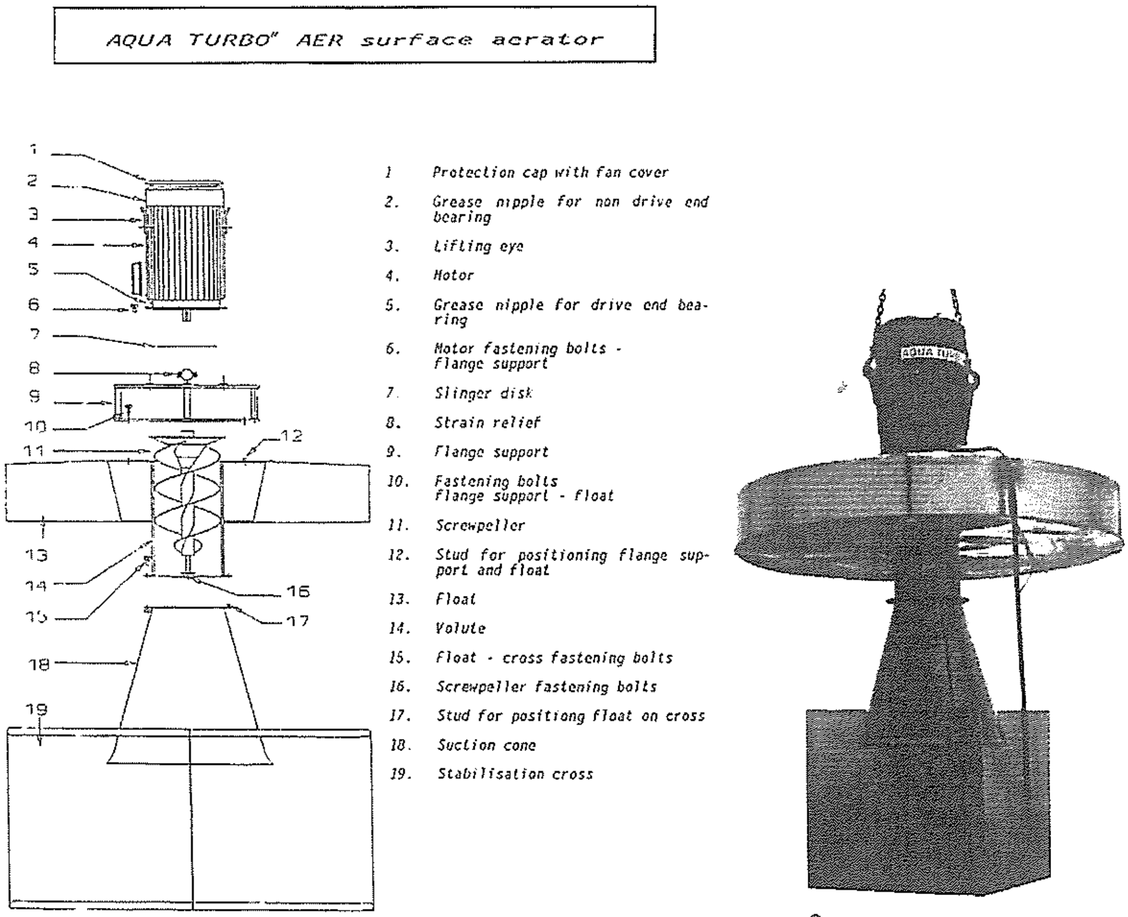


Figure 3-3 Aquaturbo Systems, Inc. Aqua Turbo® Aerator

4. TEST PROCEDURES

Before testing, the 50' x 50' aeration basin was thoroughly cleaned and filled with potable water to a depth of 12'.

Four (4) YSI dissolved oxygen (D.O.) meters and probes were placed in the test basin and later used to monitor the dissolved oxygen concentration during each test. The four probes were located as follows:

Position 1
- Probe 1 ¼ of the liquid depth
- Probe 2 ½ of the liquid depth

Position 2
Probe 3 ½ of the liquid depth
Probe 4 ¾ of the liquid depth

Overall test procedures include:

After filling the test basin with tap water, add enough cobalt chloride catalyst to obtain a concentration of cobaltous ion less than 0.1 mg/l. Dissolve the catalyst into the basin contents by running the aeration system a minimum of thirty minutes before testing.

Add enough (150-200% of stoichiometric, 200-250 lbs.) sodium sulfite to deoxygenate the tap water in the basin to start each test. Monitor the dissolved oxygen concentration as it depletes then starts to rise, using the *in-situ* dissolved oxygen probes. Measure the water temperature using the D.O. Probe thermisters.

With the aeration system operating at the specified liquid depth, start monitoring as the oxygen concentration increases. Collect data to cover a range of dissolved oxygen concentrations from 1.0 mg/l to 98% of saturation, obtaining a minimum of 20 data points for each probe.

The aerators were tested in the following sequence:

1. Aquaturbo
2. Aqua Aerobics
3. Aeration Industries
4. Aqua Aerobics
5. Aeration Industries
6. Aquaturbo
7. Aeration Industries
8. Aquaturbo
9. Aqua Aerobics

I. The **general test procedures** are:

1. Thoroughly clean the aeration basin before testing and fill with tap water to the desired liquid depth (12').
2. Operate the aeration system in potable water at the operating liquid depth for 30 minutes before testing to obtain temperature and mixing equilibrium. Record liquid temperature a minimum of two times during each test run. Monitor aerator power usage via an integrating power meter. Confirm power by independently checking operating volts and amps.
3. Install 4 dissolved oxygen probes with integral stirrers at locations in the test tank as required.
4. Use Cobalt Chloride ($CoCl_2 * 6H_2O$) as a catalyst at a concentration of 0.1 mg/l.
5. Use anhydrous sodium sulfite technical grade (Na_2SO_3) to deoxygenate the test liquid. Add sufficient sulfite solution (150 - 200 % of stoichiometric) before each test run to decrease the oxygen concentration to 1.0 mg/l or less D.O. and maintain the low concentration for 2 to 3 minutes.
6. Use the azide modification of the Winkler method to calibrate the D.O. probes daily prior to testing. Collect a minimum of twenty (20) D.O. observations for each D.O. probe between 10 and 98% of saturation.

II. Detailed test procedures:

A. Initial setup
1. Inspect aeration basin for adequate cleanliness and correct water depth.
2. Check installation of the power monitoring equipment.
3. Check D.O. probe thermisters for liquid temperature monitoring.
4. Prepare 4 YSI (Yellow Springs Instruments) Dissolved Oxygen (D.O.) probes for installation.
   a) Replace electrolyte solution and membrane for each D.O. probe
   b) Connect probes to YSI D.O. meters
   c) Check each probe for functioning stirrer mechanism
   d) Connect all D.O. meters to computer for data logging

5. Check the placement of each D.O. probe in the test basin.
6. Start the aerator and begin aerating the test tank.
7. Collect at least three samples from the oxygen saturated aeration basin for analysis using the Winkler titration method to determine the D.O. concentration.
8. Calibrate all D.O. probes and meters to the saturation value determined by the Winkler method.
9. Dissolve Cobalt Chloride into a container of water.
10. Pour Cobalt solution into the aeration basin.
11. Allow a minimum of thirty minutes mixing of the cobalt into the aeration basin before the start of testing.

B. Procedure for clean water aeration testing.
1. Position aerator in center of test basin.
2. Connect power.
3. Check Rotation.
4. Operate for thirty (30) minutes to obtain mixing equilibrium.
5. Read and record the following data:
    a) Site barometric pressure (PSIA)
    b) Operating power (kW, V, A)
    c) Liquid Temperature (°C)
    d) Aeration basin oxygen saturation value C_{so} (mg/l)
    e) Ambient temperature (°F)
    f) Relative Humidity (%)
6. Add the sodium sulfite into the aeration test basin.
7. Begin observing D.O. meters.
8. Monitor D.O. on each of the YSI meters as it drops to less than 1.0 mg/l.
9. Continue recording D.O. values versus time for each of the D.O. probes, obtaining a minimum of 20 D.O. values for each probe.
10. Stop all recording of D.O. values when the aeration basin has reached $6/K_La$ (30 - 40 minutes anticipated for these tests).
11. Perform non-linear and log-deficit linear regression analyses on the collected data per ASCE Standard.
12. Determine K_La_{20} values for each probe
    a) Calculate SOTR and SAE.
13. Repeat steps 1-12 for each test run.

5. DATA ANALYSIS METHODS

The basic mass-transfer model used to determine oxygen transfer is as follows:

Eq. 5-1

$$C = C^*_\infty - \left(C^*_\infty - C_O\right)e^{-k_L a_T}$$

where:

C	=	D.O. Concentration, mg/L
$\mathbf{C^*_\infty}$	=	Equilibrium D.O. concentration, the concentration obtained as time approaches infinity, mg/L
$\mathbf{C_0}$	=	D.O. concentration at time zero, mg/L
$\mathbf{K_La_T}$	=	Apparent volumetric mass transfer coefficient, hr^{-1}

The overall mass transfer coefficient (K_La_T) is obtained experimentally by aerating deoxygenated water and observing the rate of change of dissolved oxygen (D.O.) concentration about time.

A non-linear regression of D.O. about time is used to determine K_La_T.

The mass transfer model can be rearranged to determine K_La_T using a log-deficit linear regression as follows:

Eq. 5-2

$$K_La_T = \frac{60}{T_2 - T_1} \ln\left[\frac{C_SO - C_1}{C_SO - C_2}\right]$$

where:

K_La_T	=	Apparent volumetric mass transfer coefficient, hr^{-1}
C_SO	=	The observed saturation concentration of oxygen in the test basin at test temperature and barometric pressure at equilibrium, mg/l after an aeration period equal to $6/K_La_T$
C_1 and C_2	=	Dissolved oxygen concentration at time T_1 and T_2 respectively, mg/l

For purposes of comparison, K_La_T must be corrected to standard temperature, 20 °C. The appropriate correction has been found empirically to be:

Eq. 5-3

$$K_La_{20} = K_La_T\Theta^{(20-T)}$$

where:

T	=	Test liquid temperature (°C)
Θ	=	1.024 for all T

With the value of K_La_{20} known, it is possible to calculate the pounds of oxygen transferred to the test liquid at standard conditions of 20 °C, maximum oxygen deficit (dissolved oxygen equal to zero), one atmosphere barometric pressure, and alpha and beta equal to 1.0 (clean tap water) for each sample point.

Eq. 5-4

$$SOTR_i = Q_{Oi} = K_La_{20}C_S\frac{C_i^*}{C_{sm}}\frac{14.7}{BP}WW$$

where:

Qo_i	=	Pounds of oxygen transferred to the test liquid, lb. O_2 /hr, for Probe i
C_s	=	9.092 mg/l, standard D.O. concentration at 20 °C and one atmosphere
C^*_i	=	Saturation value for Probe i at $6/K_La_T$, mg/l
C_{sm}	=	Oxygen saturation concentration from **Standard Methods**, mg/l
BP	=	Site barometric pressure, PSIA
WW	=	Weight of water, million pounds

The overall average value of SOTR is then calculated as the average of the individual SOTR values determined for each sample point.

Calculate the standard aerator efficiency (SAE_{wire}) using the following equation:

Eq. 5-5

$$SAE_{wire} = No = \frac{SOTR}{HP_{wire}}$$

where:

No	=	Aerator efficiency, lb. O_2/hr-Hp
SOTR	=	Qo, standard oxygen transfer rate, lb. O_2/hr
HP_{wire}	=	Measured power usage (kW x 1.341)

The final reported SAE value will be based on HP_{shaft} as follows:

Eq. 5-6

$$SAE_{shaft} = No = \frac{SOTR}{HP_{wire} \times Eff}$$

where:

No	=	Aerator efficiency, lb. O_2/hr-HP_{shaft}
SOTR	=	Qo, standard oxygen transfer rate, lb. O_2/hr
HP_{wire}	=	Measured power usage (kW x 1.341)
Eff	=	Nameplate NEMA Efficiency

6. DISCUSSION OF RESULTS

Table 6-1 summarizes the results GSEE, Inc. obtained from analysis of the oxygen transfer testing data. Individual computer printouts of the data analysis, including time versus D.O. plots and complete power summaries for each test run, are contained in Appendix 9.1. Power Analyzer printouts are included in Appendix 9.2. Laboratory analyses of water samples collected during the testing are included in Appendix 9.3. Raw data sheets from the tests are included in Appendix 9.4.

Table 6-1 Summary of Results

Non-Linear Regression Analysis									
Run	Manufacturer	K_La_{20} 1	K_La_{20} 2	K_La_{20} 3	K_La_{20} 4	K_La_{20} Avg	SOTR	HP_{motor}	SAE_{motor}
1	Aqua Turbo Systems	9.09	8.44	9.03	8.69	8.81	150.9	65.2	2.32
2	Aqua Aerobics	7.59	7.63	7.29	8.05	7.64	131.8	64.1	2.06
3	Aeration Industries	7.14	7.11	6.78	6.67	6.93	119.9	57.5	2.08
4	Aqua Aerobics	8.63	8.19	7.78	8.27	8.22	141.5	65.0	2.18
5	Aeration Industries	6.95	7.06	7.18	7.23	7.10	121.4	58.0	2.09
6	Aqua Turbo Systems	8.58	7.91	8.80	8.67	8.49	147.7	64.8	2.28
7	Aeration Industries	7.41	7.27	7.51	7.17	7.34	125.1	57.5	2.17
8	Aqua Turbo Systems	9.42	9.42	9.35	9.26	9.36	160.2	64.5	2.48
9	Aqua Aerobics	8.35	8.71	8.94	8.58	8.64	147.8	64.1	2.31

Log-Deficit Linear Regression Analysis									
Run	Manufacturer	K_La_{20} 1	K_La_{20} 2	K_La_{20} 3	K_La_{20} 4	K_La_{20} Avg	SOTR	HP_{motor}	SAE_{motor}
1	Aqua Turbo Systems	9.06	7.91	8.49	8.00	8.36	143.3	65.2	2.20
2	Aqua Aerobics	7.50	7.51	7.22	7.41	7.41	127.8	64.1	1.99
3	Aeration Industries	7.08	7.13	6.65	6.41	6.82	118.0	57.5	2.05
4	Aqua Aerobics	8.52	8.12	7.43	8.31	8.09	139.4	65.0	2.14
5	Aeration Industries	7.29	7.31	7.26	7.47	7.33	125.3	58.0	2.16
6	Aqua Turbo Systems	8.43	8.53	8.41	8.71	8.52	148.2	64.8	2.29
7	Aeration Industries	7.24	7.17	7.65	7.25	7.33	124.9	57.5	2.17
8	Aqua Turbo Systems	9.11	9.11	9.09	9.00	9.08	155.4	64.5	2.41
9	Aqua Aerobics	8.43	8.84	8.74	8.36	8.59	146.9	64.1	2.29

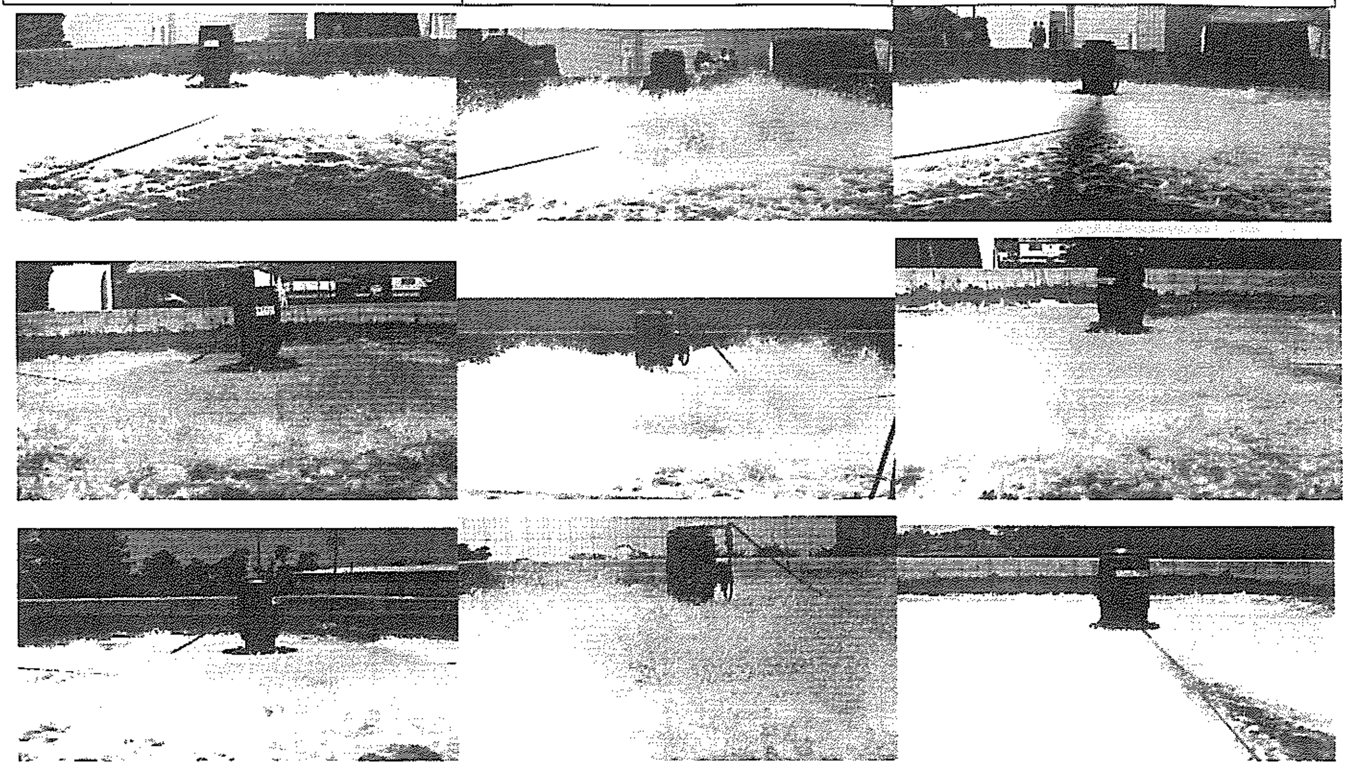
Overall Average of Both Analysis Methods									
Run	Manufacturer	K_La_{20} 1	K_La_{20} 2	K_La_{20} 3	K_La_{20} 4	K_La_{20} Avg	SOTR	HP_{motor}	SAE_{motor}
1	Aqua Turbo Systems	9.08	8.18	8.76	8.35	8.59	147.1	65.2	2.26
2	Aqua Aerobics	7.55	7.57	7.26	7.73	7.53	129.8	64.1	2.03
3	Aeration Industries	7.11	7.12	6.72	6.54	6.88	118.9	57.5	2.07
4	Aqua Aerobics	8.58	8.16	7.61	8.29	8.16	140.4	65.0	2.16
5	Aeration Industries	7.12	7.19	7.22	7.35	7.22	123.4	58.0	2.13
6	Aqua Turbo Systems	8.51	8.22	8.61	8.69	8.51	148.0	64.8	2.29
7	Aeration Industries	7.33	7.22	7.58	7.21	7.34	125.0	57.5	2.17
8	Aqua Turbo Systems	9.27	9.27	9.22	9.13	9.22	157.8	64.5	2.45
9	Aqua Aerobics	8.39	8.78	8.84	8.47	8.62	147.3	64.1	2.30

Average Aeration Manufacturer Results								
Manufacturer	K_La_{20} 1	K_La_{20} 2	K_La_{20} 3	K_La_{20} 4	K_La_{20} Avg	SOTR	HP_{motor}	SAE_{motor}
Aqua Turbo Systems	8.95	8.55	8.86	8.72	8.77	151.0	64.8	2.33
Aqua Aerobics	8.17	8.17	7.90	8.16	8.10	139.2	64.4	2.16
Aeration Industries	7.19	7.18	7.17	7.03	7.14	122.4	57.7	2.12

Note that the two analysis methods (linear and non-linear) produce very similar results. Also, in all cases, the individual K_La_{20} values obtained from each probe for each run were within ±10% of the average value for the test run and the individual K_La_{20} values obtained from each probe were within ±15% of the average value obtained from triplicate tests performed on each aerator. This meets the spatial uniformity and reproducibility requirements of section 8.2 of the ASCE Standard.

The following photographs depict each aerator during each test run:

AERATION INDUSTRIES INTERNATIONAL, INC. AIRE-O_2® TURBO 75 HP AERATOR	AQUA-AEROBIC SYSTEMS, INC. AQUA-JET® 75 HP AERATOR	AQUATURBO SYSTEMS, INC. AQUA TURBO® 75 HP AERATOR



7. CONCLUSIONS

Based on the testing completed on the Aeration Industries International, Inc., Aqua-Aerobic Systems, Inc. and Aquaturbo Systems, Inc. 75 HP 1200 RPM floating aerators, the following is concluded:

1. Aeration Industries International, Inc., 75HP AIRE-O_2® TURBO aerator had an average operating HP_{motor} (HP_{shaft}) of 57.7.
2. Aeration Industries International, Inc., 75HP AIRE-O_2® TURBO aerator had an average observed SAE of 2.12 lb. O_2/Hr/HP_{motor}
3. Aqua-Aerobic Systems, Inc., 75HP Aqua-Jet® aerator had an average operating HP_{motor} (HP_{shaft}) of 64.4.
4. Aqua-Aerobic Systems, Inc., 75HP Aqua-Jet® aerator had an average observed SAE of 2.16 lb. O_2/Hr/HP_{motor}
5. Aquaturbo Systems, Inc., 75HP Aqua Turbo® aerator had an average operating HP_{motor} (HP_{shaft}) of 64.8.
6. Aquaturbo Systems, Inc., 75HP Aqua Turbo® aerator had an average observed SAE of 2.33 lb. O_2/Hr/HP_{motor}

8. CERTIFICATION

GSEE, Inc., certifies that the results presented in this report are accurate and were obtained using the test procedures described above.

Gerald L. Shell, PE

7/21/97

Discover the Engineering . . .

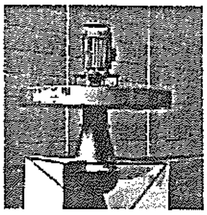
AQUATURBO SYSTEMS, INC. is a wholly owned U.S. subsidiary of **AQUASYSTEMS INTERNATIONAL** of Brussels, Belgium. Established in 1984, **AQUASYSTEMS INTERNATIONAL** produces aeration and mixing equipment utilizing a centrifugal Screwpeller technology inspired by the Archimedes' screw.

The Screwpeller is up to 30% more efficient than propeller driven technologies at transferring kinetic energy into water. Using a dual flite design reduces motor bearing wear and minimizes plugging when compared to conventional technologies. The simplicity and high energy efficiency of the Screwpeller results in a product that has a minimum number of parts and maintenance.

Experience the Benefits

In 1996, **AQUATURBO SYSTEMS** opened a manufacturing facility in Springdale, Arkansas. The facility includes two large test tanks and the equipment necessary to fabricate 100% of its products. All Aquaturbo products are fabricated in 304L stainless steel and tested to the highest standards to deliver equipment with the longest operating life in the industry.

AQUASYSTEMS and **AQUATURBO SYSTEMS** continue to research and develop more powerful methods of applying Screwpeller technology to create more efficient aeration and mixing products.

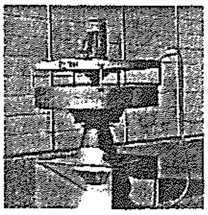


AQUATURBO® AER

surface aerator

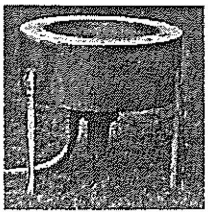
AQUATURBO® MIX

mixer



AQUATURBO® AER/MIX

combined surface aerator/mixer



AQUADECANT®

floating decanter

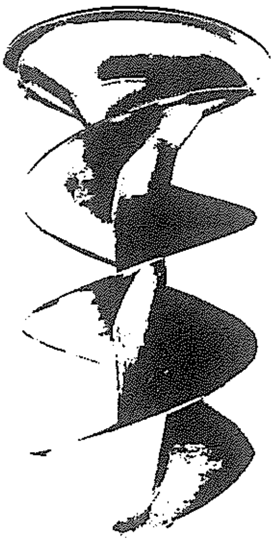
AQUATURBO SYSTEMS

Rated # 1 Every Time!

AQUATURBO®
Aerator

From

AQUATURBO
SYSTEMS



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