

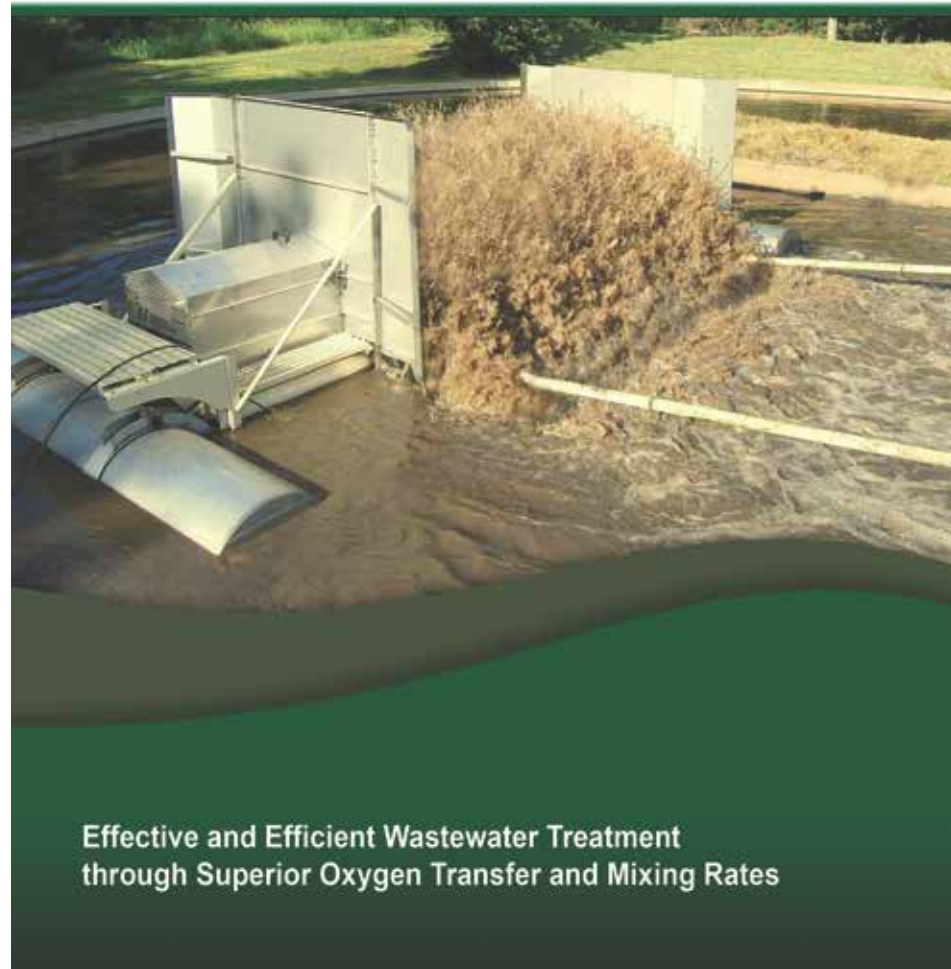
Wastewater Aeration

Enhance your wastewater process with better aeration and mixing

More efficient aeration and mixing reduces your wastewater plant's energy demand

Floating Brush Aerators can be used in complete or partial mixed lagoons, aerobic digesters, oxidation ditches, aeration basins, and equalization basins

Floating Brush Aerators



Effective and Efficient Wastewater Treatment
through Superior Oxygen Transfer and Mixing Rates

ECS House Industries, Inc.

What is a Floating Brush Aerator?

A floating brush aerator operates in wastewater by using a spinning, horizontal-rotor assembly that shears and mixes the wastewater

Welded brushes on the rotor assembly shear the wastewater and create fine bubbles that capture oxygen in the air and absorb oxygen into the wastewater

In addition to aeration, the unique horizontal flow pattern created by the floating brush aerator creates a mixing profile that mixes a much broader area when compared to other high-speed surface aerators



ECS House Industries, Inc.

Why use a floating brush aerator?

Floating brush aerators have about a 30% higher Standard Aeration Efficiency (SAE) when compared to aspirating and vertical turbine type aerators

In addition, floating brush aerators also have a much higher mixing rate (gpm/hp) than aspirating and vertical turbine type aerators

The floating brush aerators superior oxygen transfer and mixing rates create wastewater systems that operate with less horsepower.

Less hp=Less Energy= More Money



ECS House Industries, Inc.

10hp Oxygen Transfer test

@ 80% to 84% motor load we
Produce 3.1-3.2 lbs.O2/hp/hr

Compared to other surface
aerators:

Aspirating Aerators:
2.4 lbs.O2/hp/hr

Vertical Turbine Aerators:
2.2 lbs.O2/hp/hr

Oxygen Transfer Test


Results of oxygen transfer test for the SDB120TA3 Electric Horizontal-Rotor Floating Aerator are summarized below. Test data and analysis is provided in Appendix B.

SN: 17831	Delivered Horsepower	8.0 (80% motor load)
	SOTR	24.45 lbs/hr
	SAE	3.1 lbs/hp-hr
SN: 17832	Delivered Horsepower	7.9 (79% motor load)
	SOTR	24.51 lbs/hr
	SAE	3.1 lbs/hp-hr
SN: 17833	Delivered Horsepower	8.2 (82% motor load)
	SOTR	25.30 lbs/hr
	SAE	3.1 lbs/hp-hr
SN: 17834	Delivered Horsepower	8.4 (84% motor load)
	SOTR	27.05 lbs/hr
	SAE	3.2 lbs/hr

Professional Engineer:

Date

8/11/11


Wm. Craig Light, P.E.



ECS House Industries, Inc.

5hp Mixing Test

12' from rotor: 4,135 gpm/hp

16' from rotor: 5,021 gpm/hp

20' from rotor: 5,103 gpm/hp

Aspirating & Vertical Turbine

Mixing rates range from

1,800-2,300 gpm/hp

Velocity Profile

Results of the velocity profile test for the SDB059TA2 Electric Horizontal-Rotor Floating Aerator are provided in Exhibit No. 3.

Pumping Rate

Results of the pumping rate calculations for the SDB059TA2 Electric Horizontal-Rotor Floating Aerator are summarized below. Copies of the calculations are provided in Appendix D.

Distance from Aerator's Rotor	Volumetric Flow Rate per Delivered Horsepower
12 feet	4,135 gpm/hp
16 feet	5,021 gpm/hp
20 feet	5,103 gpm/hp

Professional Engineer:

12/6/12
Date

WCL
Wm. Craig Light, P.E.



ECS House Industries, Inc.

Lagoon Application

Floating Brush Aerator

Advantages:

Shore Mounted Mooring System

Unique Horizontal Flow Pattern

Complete Oxygen Cap Across the Lagoon

Increased Oxygen Transfer & Mixing Produce a Higher Quality Effluent



ECS House Industries, Inc.

Cable Anchored Lagoon Application

**Oxygen Cap covers entire lagoon
surface**

Easier to access the aerator

**Floating Brush Aerators only
have to use one cable versus
multiple anchoring cables**



ECS House Industries, Inc.

Aerial view

Mixing profile of bio-solids storage lagoon

Complete mix and oxygen cap cover the lagoon's surface



ECS House Industries, Inc.

Floating Brush Aerators

Oxidation Ditch Application

20% Horsepower Reduction due to Higher Oxygen Transfer & Mixing Rates

Routine & Easy Maintenance Create Less Downtime for Plant Personnel



ECS House Industries, Inc.

Oxidation Ditch

Custom retro-fit anchoring

Splash shields are standard

Access platforms

Floating brush aerators can pivot to fluctuating water levels, maximizing oxygen transfer and mixing at all times



ECS House Industries, Inc.

Orbal Plant Retro-Fit

Unique anchoring system

Access to aerators

**Reduced overall horsepower by
35%**



ECS House Industries, Inc.

Value Added

Engineering & Design

**CNC Machined Stub-Shaft
assemblies**

Grease-Lubricated Bearings

Splash shields

Sealed, Direct-Drive

Rotor Assembly

Stainless Steel Floatation Tanks

Floatation Band Attachments

Heavy Duty, Pipe Frame

Adjustable Rotor Depth

Testing Facility



ECS House Industries, Inc.

CNC Machined, Stub Shaft Assemblies

Piloted, Bolt-In Stub Shaft Assemblies

Shafts are true, less than .001 tolerance

Alignment of the shafts create a smooth operation and a high-speed direct-drive

Shaft replacements can occur in the field

All shafts are fabricated from 316 stainless steel



ECS House Industries, Inc.

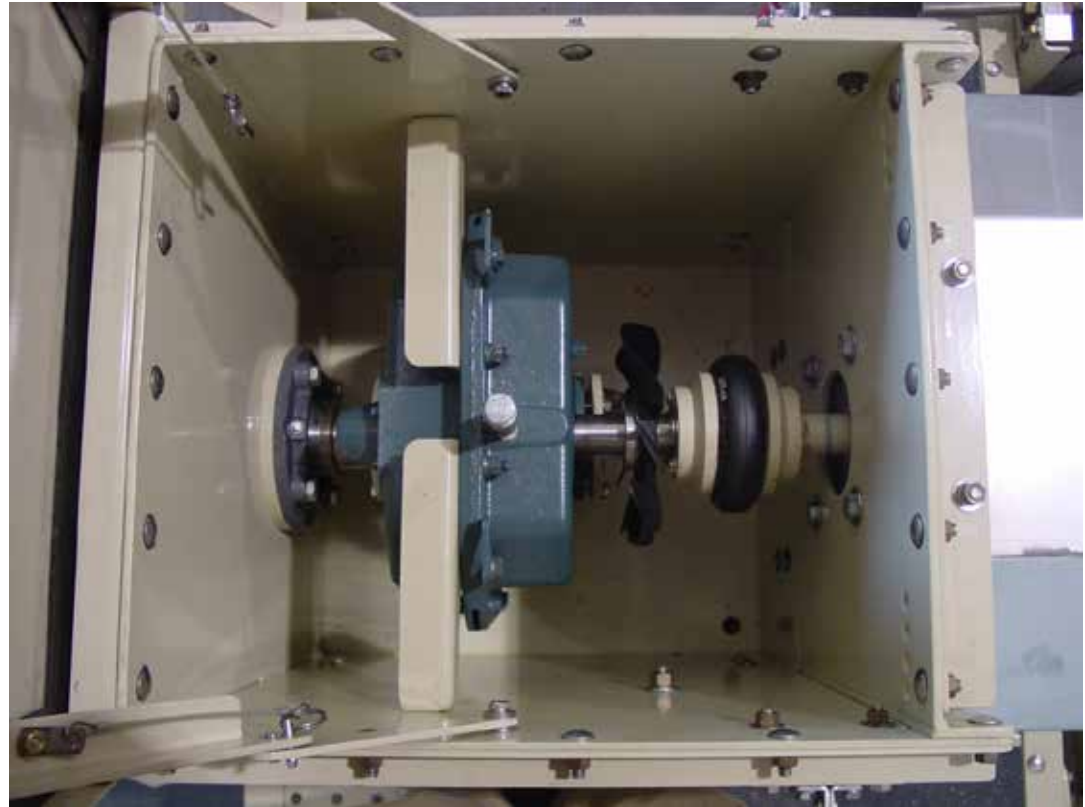
Enclosed, Direct-Drive

Sealed drive enclosure

High-speed coupled direct-drive

Internal fan for cooling

Easy access with hinged cover



ECS House Industries, Inc.

Oil Change Kit

**Oil change should occur every
2,500 hours**

**Battery operated and easy to
operate**



ECS House Industries, Inc.

Grease-Lubricated Bearings

Corrosion resistant, grease lubricated bearings

Lubricated automatically with a spring, loaded lube site

Refill grease approximately every 6 months

We do not use wastewater to lubricate bearings



ECS House Industries, Inc.

Splash Shields

Will not allow splash and/or debris to accumulate around drive enclosure and non-drive end bearing

Double-sealed protection will not allow debris to penetrate drive enclosure and non-drive end bearing enclosure

Double-seal also uses a flinger to ensure water and debris will not “wick” down the drive and non-drive shafts



ECS House Industries, Inc.

Rotor Assembly

Heavy walled, schedule 40 pipe

Our rotor pipe is twice as thick as the competition's rotor

Heavy walled rotor pipe will not deflect, warp due to the heat created by welding the brushes to the rotor pipe

Brushes are welded to the rotor pipe on both sides for added durability and strength



ECS House Industries, Inc.

Brush Assembly

Robotic Welder

Consistent welds

**Welds both sides of the brush to
the rotor pipe**



ECS House Industries, Inc.

Stainless Steel Flotation Tanks

304L stainless steel construction

16 gauge thickness

Pressure tested

Filled with closed-cell foam



ECS House Industries, Inc.

Floatation Band Attachments

304L stainless steel

7 gauge thickness

Extra support gussets

**Rubber insulator between band
and float used to prevent
electrolysis**



ECS House Industries, Inc.

Heavy Duty, Pipe Frame

Schedule 40 pipe frame

**Welded together for strength
and durability**



ECS House Industries, Inc.

Adjustable Rotor Depth

Four-point, rotor depth adjustment to assure proper amperage

Stainless steel all-threads with brass nuts are adjustable. Once set, re-adjustment is not necessary



ECS House Industries, Inc.

Testing Facility

On-site test pool for oxygen transfer & mixing tests

Research & development on different aerators sizes and custom retro-fit designs



ECS House Industries, Inc.

Chad House, CEO
ECS House Industries, Inc.

3720 Highway 1 South
Cherry Valley, Arkansas 72324

(870) 588-3773 office
(870) 588-4669 fax

www.houseindustriesinc.com