

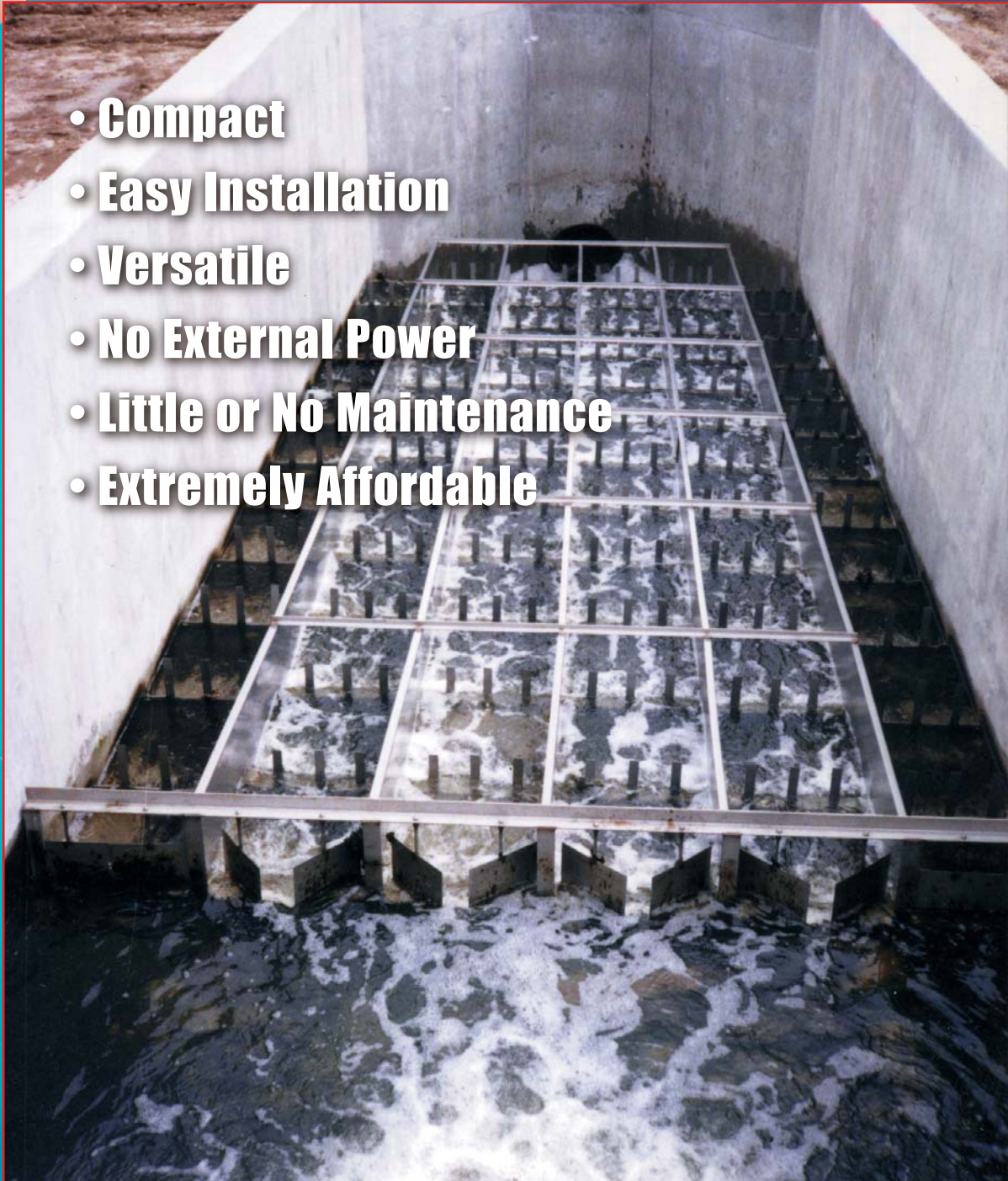
JMS

JIM MYERS & SONS, INC.

LOW-PROFILE CASCADE AERATORS

The Most Efficient and Economical Method for Post Aeration

- **Compact**
- **Easy Installation**
- **Versatile**
- **No External Power**
- **Little or No Maintenance**
- **Extremely Affordable**



Smallberry 

DIVISION OF

J I M M Y E R S & S O N S , I N C .

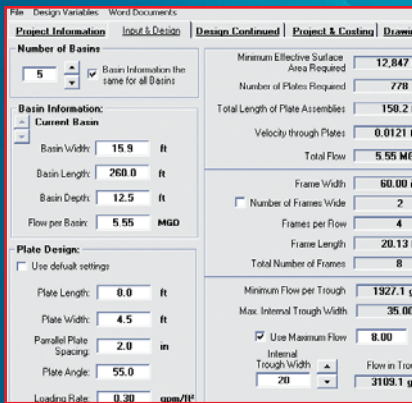


LOW-PROFILE CASCADE AERATORS

U.S. Patent #5,259,996

In 1962, Jim Myers & Sons, Inc. was founded to serve the steel fabrication needs of the municipal water and wastewater industries in the Carolinas. Today, JMS is a nationally-recognized, full-service leader in water and wastewater equipment and systems:

All the equipment we design and the systems we build are developed in-house by our staff of professional engineers and designers, utilizing the latest AutoCAD, 3-D modeling, and FEA/CFD technologies, along with our own proprietary design software (below).



True to our roots, all fabrication, manufacturing, machining, and testing is still expertly performed at our 50,000 ft² Charlotte facility.



Under the guidance of our experienced site supervisors, JMS systems have been efficiently and successfully installed in plants all across America and internationally, as well.

The Low-Profile Cascade Aerator (LPCA™) is a free flowing, efficient, packaged, channel-type aeration device that can be installed in new or existing treatment facilities at an economical cost.

The LPCA is an open-channel type aerator for use in a liquid containing basin, pipeline, or channel. Specifically, the purpose of this unit is for raising the dissolved oxygen (DO) concentration level of the treated basin effluent.

The LPCA is a cascade design only in the sense that it is water gravitating successively over stages of baffles. Contrary to prior art-cascade designs, where water falls steeply from step to step requiring great depth for installation, the LPCA utilizes optimum slopes less than 5.5 degrees. Each channel is fitted with a series of turbulence-control aeration baffles and air-induction plates.

The LPCA is fabricated with a sloping bottom divided into a plurality of channels. Each channel is provided with a plurality of low-head aeration baffles staged to create velocity and pressure changes throughout the length of the channel. Air infusion plates are attached to the crest of the baffles for injecting air into the liquid.

Flow into each channel is controlled at the inlet by a weir. Weir heights will vary for each channel. The first stage channel is designed for the minimum flow rate of the treatment facility being served.

All channels slope to a common receptacle. The receptacle connects to an opening that communicates to the exterior of the basin.

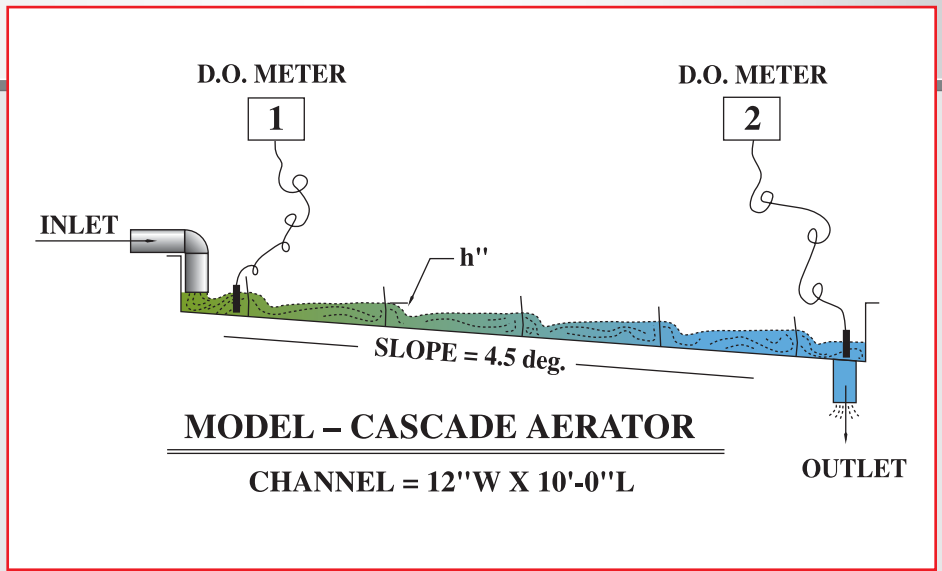
When installed in a liquid-filled basin, the aerator inlet is submerged below the liquid surface to inhibit floatable solids from passing through the aerator. The aerator may be provided with adjustable legs. The legs shall be for supporting, leveling, and anchoring the aerator and provide adaptability, as necessary, for retrofitting within existing lagoons or treatment basins.

The refined, small air bubbles and mixing created by the utilization of natural gravitational forces through controlled application of velocity, pressure differentials, baffles, air induction plates, and controlled head make the LPCA the most efficient and economical method for post aeration.



Oxygen Transfer Testing

Laboratory studies, Tests 1 and 2, were performed at Mississippi State University, using a model 12" wide x 10' long to determine optimum transfer efficiencies. Clear tap water was deoxygenated by sodium sulfite in the presence of cobalt chloride. Flow was induced and readings taken at timed intervals using two rapid response D.O. Meters. The recorded readings from deoxygenation to total saturation were plotted to determine the mean average oxygen transfer efficiency. Testing was performed with varying Heads (h") through 6". Efficiency is approximately the same from 2"(h) through 4"(h).



TEST 1

Date 7/14/88
 Location Mississippi State University
 Flow Rate 100 GPM
 Head h=2"
 Temperature 23°C
 Saturation @ Sea Level 8.7
 Time Intervals of D.O. Sampling Each 30 sec.

Probe 1	Probe 2	O ₂ Rise
1.8	4.3	2.5
2.1	4.6	2.5
3.2	5.8	2.6
3.7	6.4	2.7
4.3	6.6	2.3
4.5	7.0	2.5
5.1	7.6	2.5
5.7	8.3	2.6
5.9	8.6	2.7
Average rise per linear foot - .255 mg/1/ft		

TEST 2

Date 7/14/88
 Location Mississippi State University
 Flow Rate 40 GPM
 Head h=1"
 Temperature 23°C
 Saturation @ Sea Level 8.7
 Time Intervals of D.O. Sampling Each 30 sec.

Probe 1	Probe 2	O ₂ Rise
3.6	5.8	2.2
3.8	6.2	2.4
4.2	6.4	2.2
4.4	6.4	2.2
4.6	7.0	2.4
4.8	7.2	2.4
4.9	7.4	2.5
5.1	7.5	2.4
5.2	7.6	2.4
5.4	7.6	2.2
5.5	7.9	2.4
5.6	8.1	2.5
Average rise per linear foot - .236 mg/1/ft		

A model was field tested at a local pool with the following results:

TEST 3

Raw samples prior to post aeration:
 Temperature 31°C
 O₂ level 3.9 mg/l
 O₂ saturation level 8.1 mg/l

Post aeration results:
 Flow Rate 40 GPM
 h 1"
 O₂ level 7.7 mg/l

Date	8/15/88
Location	Tupelo, MS
Flow Rate	40 GPM
Head	h=1"
Temperature	27°C
Saturation @ Sea Level	8.0
Time Intervals of D.O. Sampling	Continuous
Probe 1	3.9
Probe 2	7.7
O ₂ Rise	3.8
Average Rise Per Linear Foot	.38 mg/l/ft

Permanent installation test results for the City of Shannon, MS:

TEST 4

Date 4/17/91
 Location Shannon, MS WWTF (Lagoon)
 Flow Rate 110 GPM
 Head h=2.25"
 Temperature 26°C
 Saturation @ Sea Level 8.2 PPM
 Time Intervals of D.O. Sampling 60 sec./each pt.
 Aerator Size 12"Wx16'L w/2 6"W Channels
 Average Rise Per Linear Foot275 PPM in 4 ft

Sample No.	Location	Reading (PPM)
1	Inlet	7.0
2	24" Downstream	7.9
3	48" Downstream	8.1
4	72" Downstream	8.2



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Smallberry Low-Profile Cascade Aerators from JMS

The high-tech, precision design of the patented LPCA™ system accomplishes what no other post-aeration system has ever been able to do. Its day-to-day operation is so incredibly simple that it requires no external power of any kind and virtually no maintenance whatsoever. The unit is compact, self-contained, and designed for minimal installation expense.

This unique design offers customers a cost effective way to meet federal regulations for both existing and new treatment systems.

The patented Low-Profile Cascade Aerator is revolutionizing the post-aeration marketplace.

The Smallberry system is offered in several configurations, making it extremely versatile. Unit lengths are based on average rise at 1" (h) mean average. Widths are selected based on a maximum (h) of 5".

The next generation of post-aeration is here and your JMS sales representative is ready to assist you with your needs.

Installations (partial listing)

Industries

- Sanderson Farms, Inc. (MS)
- Conagra, Inc. (AL & LA)
- Farbest Foods, Inc. (IN)
- Nissan, Inc. (Canton, MS)

Institutions

- S.E. Louisiana Hospital, LA
- S.W. Community College, MS
- MS Valley University, MS

Municipalities

- Moncks Corner, SC
- Buffalo, MO
- Ozark, MO
- Aberdeen, MS
- Shannon, MS
- Olive Branch, MS
- Short Fork, MS (Corps of Eng)
- Checotah, OK
- Stillwell, OK
- Jay, OK
- Spring Hill, KS
- Port Barre, LA
- Pearl River, LA
- Arlington, TN
- Lakeland, TN
- Buda, TX

WATER TREATMENT EQUIPMENT

- Plate Settlers
- Horizontal Flocculators
- Vertical Flocculators
- Walking Beam Flocculators
 - Troughs
- Skimming Equipment (Paddle Wheel & Helical)

WASTEWATER TREATMENT EQUIPMENT

MATERIAL HANDLING

- Belt Conveyors
- Screw Conveyors
- Storage Hoppers, Bins, Silos
- Live Bottom Feeders
- Slide Gates & Diverter Valves

SEPARATION SYSTEMS

- Grit Classifiers
- Screening Compactors
 - Scum Pipes
- Level Control/Decanters
 - Airlift Pumps

Your JMS Sales Representative:



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"Making a Difference for Generations"