

## **Air Products Breathes New Life Into Aquaculture Industry With Affordable/Reliable Oxygen Generators For Increased Production Of Healthier Fish**

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Today at the Aquaculture 2001\* exhibition, Air Products and Chemicals, Inc. (NYSE:APD) unveiled its new Vacuum Swing Adsorption (VSA) Oxygen Generator-available in 120, 40 and 5 liter capacities-to the North American aquaculture market.

Unlike Pressure Swing Adsorption (PSA)\*\* oxygen generation systems, the new VSA oxygen generator has only three moving parts, making it a low maintenance, highly reliable system for most aquaculture operations, including ponds, raceways, re-circulation systems, flow through, sea cage, net pen and hatchery operations, as well as bait and leisure fisheries. Also, an air compressor is not required with the new VSA generator, helping to greatly reduce operating and maintenance costs.

The benefits of using pure oxygen in aquaculture-higher productivity, lower costs and healthier fish stocks-are well known. Compared to air, pure oxygen provides nearly five times the driving force for oxygen transfer, helping to reduce fish stress, boost metabolism, improve growth rates and limit disease. However, the typical costs associated with operating and maintaining traditional designs of oxygen generators have been prohibitive for many fish farmers. In addition, there have often been reliability issues associated with these conventional systems. Air Products' new generation of VSA oxygen generators has been designed specifically for the aquaculture industry to make on-site oxygen generation a highly affordable and reliable option.

"A combination of simple, robust design and easy maintainability have enabled us to produce an extremely efficient system," said Dr. Helen Marsden, Air Products' global business manager-Aquaculture. "Our new VSA oxygen generators are more economical than conventional generators and in some circumstances, more economical than cylinder or liquid oxygen tank supply. They also have a number of other direct benefits over conventional generators, including up to 30 percent lower power consumption, up to 20 percent lower maintenance, and single button, unattended operation, as well as a lightweight compact design that allows for easy maneuverability. All of these attributes make the VSA generators particularly ideal for remote fish farming locations."

Dr. Marsden added that the new generators are also far more efficient than traditional aeration systems, making available more oxygen molecules to enable fish to completely metabolize food and thus grow to market size more quickly.

In North America, the aquaculture industry is an estimated \$1 billion market, with over 4,000 fish farms in the U.S. alone. Air Products has been serving the worldwide aquaculture market for many years-from trout farmers in the UK to catfish farmers in Mississippi; from bass farmers in Spain to eel farmers in Holland. Over the next several months, the company plans to deploy its new, compact, 'plug-and-play' VSA generators to the global aquaculture industry as a novel, value-added option for reliable and cost-effective on-site oxygen supply.

Air Products and Chemicals, Inc. ([www.airproducts.com](http://www.airproducts.com)) is the world's only combined gases and chemicals company. Founded nearly 60 years ago, the business has annual revenues of \$5.5 billion and operations in 30 countries. Air Products is a market leader in the global electronics and chemical processing industries, and a longstanding innovator in many industrial markets, including coatings, adhesives and polyurethanes. The company distinguishes itself through its 17,500 employees around the world, who build lasting relationships with their customers and communities based on understanding, integrity and passion.

### **EDITOR'S NOTES:**

\*Aquaculture 2001 is the World Aquaculture Society conference and exhibition, including the international triennial conference and exhibition of the National Shellfisheries Association and the Fish Culture Section of the American Fisheries Society. For more information, visit the Aquaculture 2001 Web page: <http://www.wasmeetings.org/Pages/Orlando2001.html>.

\*\*In the oxygen generation process, air is pushed through a bed of zeolite sieve beads specially designed to separate oxygen from nitrogen and other gases in the air (by adsorbing the nitrogen molecules and allowing oxygen to pass through to a collection vessel). Traditionally, in Pressure Swing Adsorption (PSA) generators, oxygen is produced from the sieve bed under pressures as high as 8 bar, requiring a compressor to be used (a significant running cost that is eliminated with VSA technology). PSA generators also have many pressure activated pneumatic valves and switches, while Air Products' new VSA oxygen generators use a more reliable single electrically-actuated four-way valve.