

Monitoring Recirculation Systems at Harbor Branch Oceanographic Institute



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YSI Aquaculture Monitoring & Control
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More than 250 scientists, engineers, mariners and support staff – as well as thousands upon thousands of fish – put the latest in oceanographic and aquaculture technology to the test every day at the Harbor Branch Oceanographic Institute (HBOI). Located in Ft. Pierce, Florida, HBOI is one of the world's leading not-for-profit oceanographic research centers, and home to an innovative center for aquaculture research.

Deep in the Institute's 60-acre Aquaculture Development Park, a replicated research array of eight recirculating systems – each comprised of four 7,000-liter tanks – provides a platform for studies that will help aquaculture operations around the world. Within each system, YSI Monitor and Control instruments take hourly readings of pH, dissolved oxygen (DO), temperature and salinity. The monitors are placed in the sump of each system and provide water quality data on the returning water before it reaches the treatment system, which includes biofiltration, degassing and oxygenation. "It's basically the point of the system's lowest water quality, and allows us to determine how to manage our treatment system," says USDA-ARS aquaculture engineer Tim Pfeiffer.

A recently-completed six-month feed study for growing out hybrid striped bass underscored the importance of the data collected by the YSI equipment.

While the focus of the study was on the effects of diet on survivability, growth, and other variables the hourly water quality monitoring by the instruments helped keep the study on-track. "By monitoring and controlling the water quality, the impact it has on any treatment effect during the study can be minimized," Pfeiffer explains. "It is also valuable



The YSI 5200A Monitor continuously measures several water quality parameters, controls, connects to a PC, alarms, and has a powerful desktop software.

to have a historical data record of water quality during the study period. If a water problem occurs during the night, we can go back and look at the data to determine approximately when the problem occurred and how long the system was under that condition, or how fast the condition was deteriorating."

That bounty of data – and level of detail – has inspired those involved in the facility's operation to implement design changes to the current recirculation systems.

Though labor to operate and maintain an aquaculture research facility like that at HBOI is not usually a point of consideration, Pfeiffer sees the process control capabilities of the monitors as a real asset. "We would like to utilize more of the features of the YSIs, especially the process-control features," he says. "Feedback control for emergency

oxygenation, control of facility lighting, or feeding operations are areas we would like to implement the control features of the meter."

Another promising feature of the products is the link with AquaManager, proprietary data management software that allows users to view data from the monitors remotely. "We have integrated control, logging, monitoring and alarm features into AquaManager to fit directly into applications like those that Dr. Pfeiffer is developing," notes Tim Grooms, YSI product manager. "Our goal is to create monitoring tools that facilitate the work being done at the cutting edge of the aquaculture industry."

Pfeiffer says he's found the YSI monitors to be reliable,



which wasn't much of a surprise, with adequate required maintenance. "We've used YSI handheld products - DO and pH meters - which in the past and present have always performed well," he says.

Getting quick answers on equipment questions has helped Tim Pfeiffer focus on bigger questions facing the aquaculture industry. In HBOI's 10-foot tanks, scientists like Pfeiffer can peer into the future of aquaculture. There, the water circulates, the data flows, and the fish are bulking up happily, tracked and safeguarded by hourly water quality readings.

For additional information regarding Harbor Branch Oceanographic Institute, please visit www.hboi.edu

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