A Campbell Scientific system continually monitors and controls water quality in each of 12 individual tanks at the Stolt Sea Farm facility in Elk Grove, California. The tanks house sturgeon, raised to produce premium caviar.

With perfection as the rule, caviar producer turns to CSI

Discriminating control for discriminating tastes

In August 1996, Stolt Sea Farm (www.stoltseafarm.com) installed a Campbell Scientific, Inc., monitoring and control system at its recirculating facility in Elk Grove, California. The system monitors dissolved oxygen levels, water temperature, and total dissolved gases, and based on those measurements, automatically controls solenoid values for oxygen control. The CSI system includes a CR10X, AM416 multiplexer and three SDM-CD16AC relay devices. The system constantly monitors the water quality of tanks used to grow sturgeon, and consequently produce caviar. The system constantly sends water quality data from each of 12 tanks to a base station PC.

Carl Beckham of Stolt Sea Farm has devised a very effective way to monitor oxygen from each of the 12 tanks, without the added expense of long cable lengths for each sensor. Instead of each dissolved oxygen probe being mounted to individual

A CR10X datalogger (right), AM416 multiplexer (top) and three SDM-CD16AC relays monitor and control 12 fish tanks.

APPLICATION AT A GLANCE

Application type:
Aquaculture monitoring and control

Project area:
Northern California, USA

Contracting agencies:
Stolt Sea Farm

Datalogger(s):
Campbell Scientific CR10Xs

Communication links:
Short Haul Modem

Measured parameters:
Dissolved oxygen, water temperature, total dissolved gases

Controlled parameters:
Dissolved oxygen content via solenoids

Sturgeon, raised from eggs, spend eight to 10 years in monitored Stolt Sea Farm tanks before roe is processed into caviar for a world market.

Continued from front

tanks, he has created a system were tank water continuously flows through PVC pipe to the monitoring station. Each OxyGuard Dissolved Oxygen probe is then installed in a standpipe attached to these flow-through pipes. The system also uses an additional Royce Dissolved Oxygen Probe. The CR10X is programmed to systematically compare the DO reading from each tank to the DO measurement received from this 13th probe. If the difference in measured values becomes too large, it is time to recalibrate the probe.

The data that are monitored from the CR10X are displayed on an office computer at the farm. The CR10X communicates with the PC in the farm's office via RAD Short Haul Modems. In addition, PCAnywhere software allows monitoring and control of the CSI system from individual employee homes. Finally, an LED display on the monitoring station itself also allows current conditions to be viewed by workers inside the tanks.

In early 1999, Stolt Sea Farm added a CSI system to its facility in Wilton, California. Sensors in the Wilton system are placed in the drainage standpipes from each of 26 individual tanks. Because the CR10Xs are mounted inside Stolt Sea Farm offices at Wilton, the connection between PCs and
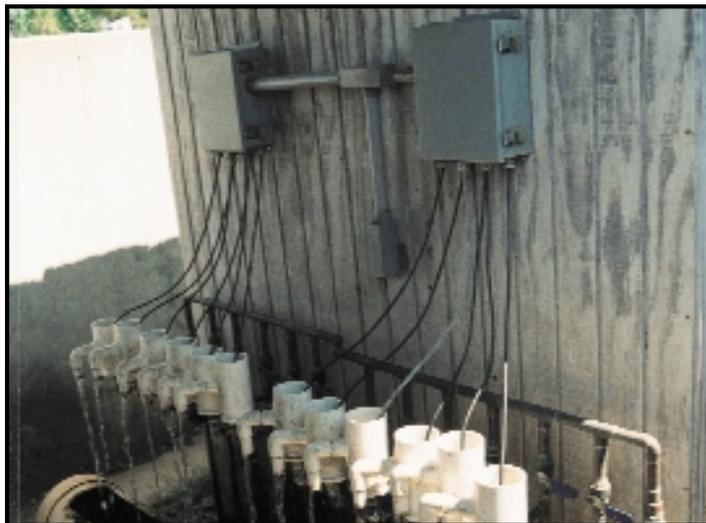
Rather than deal with the added expense of extra cable lengths for 12 individual dissolved oxygen probes, Stolt Sea Farm devised a system in which water continuously flows from the tanks through PVC pipe to sensors at the monitoring station.

CR10Xs are via direct wire. As at the Elk Grove site, the CR10X monitors DO levels and, based on the conditions, controls oxygen release into the tanks.

Prior to installing the CSI system, Stolt Sea Farm was using an OxyGuard system at the Wilton site. The new CSI equipment completely replaced the monitoring and control system while allowing the existing OxyGuard Dissolved Oxygen Probes to remain in use.

CAMPBELL SCIENTIFIC, INC.