

## **Higher Yields and Lower Costs: Advantages of Integrated Hatcher-wide Control Solutions**

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Historically, hatcheries have used very basic controls and very little automation, monitoring or instrumentation in their operations. Today's automation and control technologies can be applied throughout the hatchery to help improve the efficiency and integrity of operations, improve monitoring and data collection, extend the life of equipment and infrastructure and reduce overall expenses.

A basic control application that most people can identify with is a thermostat. A thermostat measures the temperature against a setting and initiates an action - turn on the furnace.

Today's control strategies are based largely around Programmable Logic Controller (PLC) technology. These are well proven products used in many applications, including process control. These control loops are based on various digital or analog signals (called "Inputs") that provide a status or signal that is collected as data and/or used to initiate an action or response via a digital or analog "Output". Typical inputs include:

- status (on/off, open/closed, etc.)
- levels
- pressures
- temperatures
- flows
- or any other variable that can be measured (PH, DO, TSS, turbidity, weight, ...).

These inputs are then processed to initiate an action (start or stop a pump, trigger an alarm, etc.) and the data can be collected and reported. Today, most PLC applications also have a Graphical User Interface (GUI) which provides for an intuitive way for the user to interface with the process to see the process status, view and collect data, and change settings.

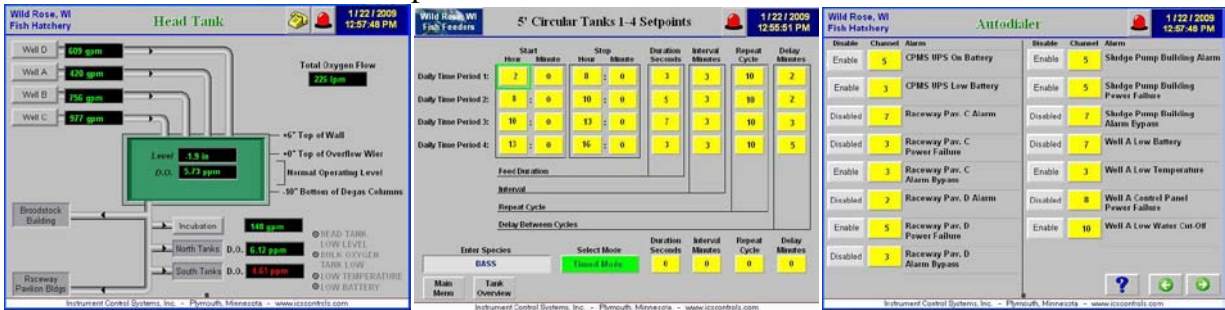
Within a hatchery, there are many individual processes to which monitoring control technology can be applied, including:

- pumping of source water from a well, stream or lake
- pre-process treatment of source water
- process water circulation and recirculation
- feeding and transfer of stock
- post-process wastewater treatment and solids removal

- effluent pumping and return to source/ground

In addition, there are other aspects of facility operation that could be monitored and controlled such as lighting, HVAC and access.

An example an automated process and recirculation will be shown and a demonstration unit will be available for a “hands on” experience.



Not only are there benefits to automation, control and monitoring of each process within the hatchery, these process can be integrated together into one control system, providing for better process efficiency/optimization and a single point of access for information and action related to the operation.

Many pieces of equipment or individual process may have controls built-in. However, a “systems integrator” can provide the customization and interconnections necessary for your facility - providing operators with a common platform for control, data, reporting and alarming for their process as well as a single point of responsibility for service and support of the control technology.

Beyond the integration of various processes within a hatchery, it is also possible to integrate the operations and data from multiple hatcheries. This is becoming increasingly relevant in improving data and reporting.

Benefits for implementing integrated control strategies include:

- Improved Operations
  - Higher yields - more and bigger fish, lower mortality rates
  - Better Utilization of Staff
  - More and Better Data
- Lower Life Cycle Costs
  - Faster start ups and ramp ups
  - Lower operating costs (water, energy, consumables, labor)
  - Lower maintenance costs (fewer starts/stops of equipment, preventive/predictive maintenance)

## About the Author

Chris Cole has been with ICS Healy-Ruff since 2003. ICS Healy-Ruff is the industry leader in control solutions for water and wastewater applications. Prior to that, he spent many years in various businesses with Honeywell International. He has a B.A. (cum laude) from Saint Olaf College and an M.B.A. from the University of Minnesota.