Using temperature & humidity data loggers

Hatcheries control environmental temperature and relative humidity from the egg room through to the chick room to produce and deliver good quality chicks.

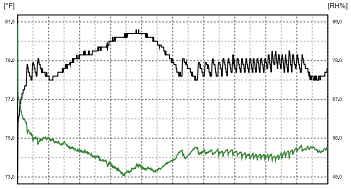
The room conditions are monitored by thermostats and hygrostats which are connected to the air handling unit (AHU) controller. Some modern hatcheries have additional monitoring software with integrated controls, allowing the hatchery staff to pull up real time and historical data. However, it is necessary to make sure that what the system measures is correct and what is seen on a display is really what the eggs, incubators and hatchers are experiencing.

Uncontrolled temperature fluctuations in the egg room will increase embryo mortality and therefore damage hatchability. Unstable conditions in incubator and hatch rooms will force the incubators to work harder trying to maintain optimal conditions. In so doing, they will often create hot and cold spots, which affects embryo growth rate and increases energy use in the hatchery.

Most hatcheries perform daily spot checks on temperature and humidity and record them. Others will look at the averages displayed by their integrated automatic monitoring tools. Even when temperature or humidity are seen to be out of the optimal range, action is not always taken. Using a temperature and humidity data logger, which is capable of autonomously recording temperature and humidity over a defined period at certain intervals, comes in very handy to check on the integrated systems. The digitally stored information can be downloaded into an excel spreadsheet or directly viewed as seen in Graph 1.

The logging summary of the incubator room shows an average room temperature of 26.1 C (79 F) and an average relative humidity of 51.7%. A closer look reveals that the room was running warmer for several hours during the day compared to a more stable temperature during the night. Humidity was also slightly affected during the day. By just looking at averages one would think everything is fine when in reality it is not. The temperature fluctuation was caused by doors being left open.

Loggers can be placed at different positions within the room to find out if the temperature or humidity levels are even throughout the room. It is good practice to locate the loggers at egg level in various locations throughout the egg room or at the actual air intakes of the incubation equipment. This way it is possible to learn and understand the behavior of the hatchery ventilation and control systems, and if everything is as it should be. Loggers can also be used inside the machines to monitor machine stability. There are many types of affordable small temperature and humidity loggers available on the market. It is important to look for good quality ones that give accurate readings, and have the option to be adjusted when needed after calibration. Look for configurable parameters, good battery life and a sturdy, waterproof design capable of withstanding the hatchery environment.



Graph 1 *Incubator room temperature and relative humidity.*