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Poultry Producers from

ChickMaster

A Few Ways to Improve Hatchery Ventilation

Eric Mol / ChickMaster Project Manager

There are many common things I see in hatcheries that are easily correctable and could save companies money and prevent future problems. I thought I would share a few of them in this article.



One major objective in any hatchery is to maintain a proper pressure cascade throughout the entire hatchery. Yet often when walking through a building there are a lot of doors that remain open, whatever the reason might be. As we all know, you can't build pressure when there are air leaks, and doors left open are big spaces for air to flow in and out. If you would like to have either positive or negative pressures in certain

areas of your hatchery, then you need to isolate these areas with closed doors so each room can be maintained as an independent environment.

A door might not seem like a big deal, but maintaining a proper pressure cascade has an important role in a hatchery. One issue is bio-security, as open doors are easy passageways for bacteria and molds. It also affects energy efficiency of the entire hatchery operation and ultimately, cost per chick. Here are a few reasons that I often get to explain why doors are left open:

- Due to extreme negative pressure in certain parts of the building (such as the separator/pull room) that forces the door open due to poor ventilation design
- They are held open with bungee cords or chains allowing the traffic to pass through the entrance more easily and avoid having to push them open all the time during transfer, setting or pulling
- They are blown open due to the lack of spring tension on the door hinges

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CC3's Manage Hatchery Environments in Ecuador

On a recent trip to Ecuador, Ing. Armando Medel of ChickMaster visited two of our customers in Ecuador that have installed CC3 climate control systems in their hatcheries. Both Reproductoras de Ecuador S.A and Avicol S.A have benefitted from the CC3 to maintain room temperatures, humidity and pressure to optimize hatchability, chick quality and reduce energy costs using the heat recovery technology. "After a few years in operation, it was great to see how these CC3's work every day with no problems", reported Armando. "It is much simpler having the CC3 at ground level than using ladders to gain access to roof-mounted ventilation systems." Besides managing the rooms, the customers also benefit from the bio-security of 100% fresh air all the time being supplied through the CC3. With more CC3's going into hatcheries every month, the unique technology is widely accepted as a unique part of the 'Hatchery in Harmony' package offered by ChickMaster.



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- The door hinges are out of adjustment due to lack of maintenance; meaning the doors get stuck in a fixed position

When the doors are open on setter and hatcher rooms we will see that the modulating dampers of the ventilation equipment start to open up in an attempt to restore the lost room pressure until they are fully open. This is going to be impossible with a leaking room. The energy consumption is increased as the system is now bringing in a larger volume of outside air that needs to be conditioned to maintain the target temperature and humidity set points. This brings increased energy consumption, more wear on the ventilation equipment, and produces no benefit to the bottom line and cost of running the hatchery.

Dealing with these varying room pressures that are not always where we would like them to be (around the typical +0.02"WC for setter rooms and +0.01"WC for hatcher rooms), it is important to make sure that you reference your plenum pressure sensors to the room itself. This will have the result that no matter what the actual room pressure is at any given time, the plenum is always the negative set point amount lower than the room and therefore maintains the same CFM flow through your setters and hatchers.



With energy conservation in mind, ChickMaster has incorporated into our **Zeus Controls** the capability to detect open and closed doors in setter and hatcher rooms. The Zeus control can avoid unnecessary energy consumption that would normally be driving dampers fully open when doors are not closed. Zeus recognizes this condition

and avoids unnecessary waste of energy. The modulating dampers in the ventilation equipment will simply maintain its last position when the doors were closed. Besides enabling or disabling this feature, an adjustable override can be implemented as well, based on customer preference. This will allow the modulating damper to switch to AUTO mode again when the timer has elapsed when bypassed.

We want to provide each and every incubator with the exact same stable climate conditions and guarantee uniform operation throughout the incubation cycle with regard to the preconditioned room climate. When there are multiple rooftop air handlers, you can't be sure that all the equally sized units are in the same

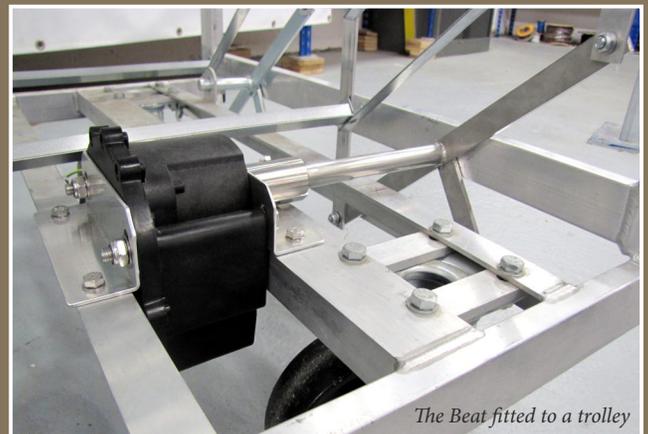
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Get the **BEAT** for your SS and Buckeye turning

For customers with ChickMaster single-stage SS models or Buckeye setters, you know that the turning actuators have not always been as heavy-duty as you would expect. This was a model selected by engineers years ago that was an off-the-shelf actuator not really designed for the rigorous conditions of working in an incubator.

We are now ready to offer a better solution with our new **BEAT** actuator upgrade and conversion kit. Unlike alternative solutions that require a changeover of all actuators and a transformer to make them work, the BEAT can be used on any trolley so they can be used and changed as needed. The BEAT is specially designed for its purpose so that it lasts longer and does the job better than the original actuator supplied with the equipment. It has a 240 volt motor, is IP tested for safety, has an injection molded casing, a rotary design operation that simplifies the seal of the shaft, and a simple conversion kit for ease of fitting. If you want to feel the BEAT, contact your sales manager to discuss how you can see for yourself it is the solution you have been looking for and has already been tested and proven. Turning is an essential process in incubation. Keeping the 'BEAT' is the way to a 'Hatchery in Harmony'.

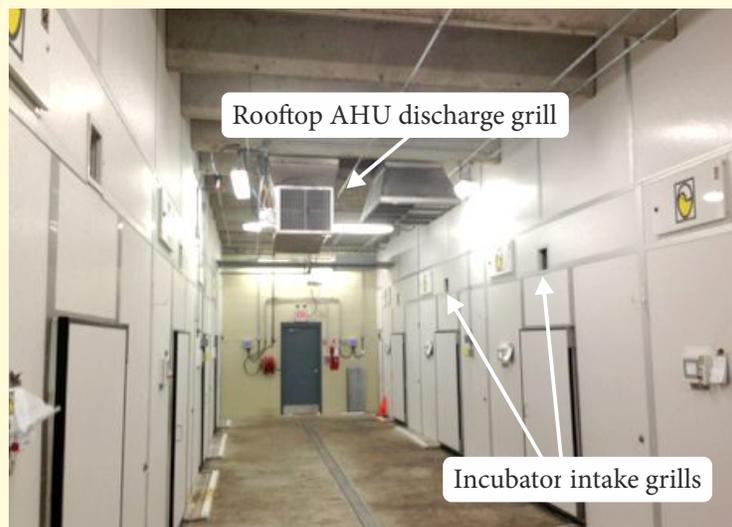


The Beat fitted to a trolley

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mechanical condition and able to supply the same amount of heating and cooling BTUs, or volume of ambient air. All of these three criteria can cause an imbalance in the room climate if they are not equal. Good controls and technology can reduce or avoid the imbalance that affects hatch performance and chick costs.



Zeus controls have the upper hand in hatchery climate controls as it can receive a feedback control signal from up to six individual rooftop air handlers with modulating dampers. It can send an alarm if one or more of the modulating dampers are not in the intended location. This will avoid running a section of your incubation room warmer or colder than the rest of that room, based on the current ambient climate for that season. As seasons change, so do the ventilation needs for a room. Zeus control recognizes those changes to keep the room balanced with multiple air handling units.

Something that is often overlooked is the condition and management of the air handler discharge grills in the incubation rooms. I often have to adjust them to avoid having them pointing towards the intake of an incubator for the following reason. The mixed discharge air from staged heating or cooling from air handlers can vary between 120°F for heating and 58°F for cooling. It is imperative to avoid bringing the precise temperature control inside an incubator out of balance by directing the very warm or very cold air into the micro climate of an incubator and upsetting the climate. The discharge grills should be directed toward the center of the room and to the floor to give this discharge air as much time as possible to properly mix with the existing room air. Then the air can become the intended target set point to enter the intake of the incubators.

One of the well-known necessary evils in climate control is room humidity. There are various ways of adding moisture to the room climate but this can have a negative impact on the room if not

distributed evenly, properly, and with care. Humidity is important to manage weight loss of the hatching eggs, but too often cooling is the net result of too much humidification.

Steam is the best way to do this, but it comes with a steep price tag and operating cost. It avoids cooling the room climate through the evaporation of water because it already is a vapor. Water droplets from spray humidifiers however do cool the room air due to the evaporation of the water which requires heat and gets this from the room air and cools this down as a result. This will cause a continuous cycle of heating and spraying with an attempt to maintain the proper desired room climate as humidity creates imbalance in the rooms.

If you have some form of spray nozzles or misters it is important to direct the mist in a way where it can evaporate in the room and not be directed towards the intake of incubation equipment. This will prevent the evaporative cooled air from entering the incubator intake and bring the micro climate out of balance. With the combination of the automatic PID control temperature tuning (standard on our Zeus), and the configurable pulsed timing for humidity control, we are able to maintain stable temperature and humidity with graphs that can be monitored on our PC-based **Maestro** system.



A few common problems that I see often in hatcheries, had for many years few solutions. Today with better management practices and improved technologies, hatcheries can manage the incubation process better through ventilation systems that are designed to do their job and do it with minimum cost. Ventilation and energy consumption do not have to go together hand in hand. Through better controls and more sophisticated ventilation systems that utilize heat recovery, the future hatchery can do more today than ever before.

Gama Farms Expands its 'Hatchery in Harmony'



As one of the leading poultry companies in the Philippines, Gama Farms in Cagayan de Oro has recently completed its expansion with ChickMaster Classic C576 setters and Avida AH192 hatchers. To make this expansion run efficiently, Gama included the **CC3-5400 DE** to manage the room temperatures, room pressures and humidity levels. The CC3 uses the heat removed from the cooling water of the incubators that is recaptured and utilized for the dehumidification of the setter and hatcher rooms. Managing humidity and moisture loss is a challenge in tropical climates, but the CC3 has proven to be an energy efficient way to get this done.

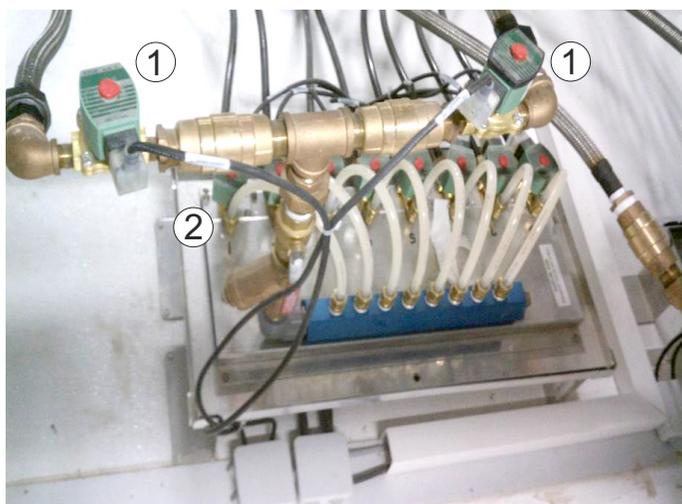
The setters and hatchers feature the Genesis IV Controls, giving Gama easy access to information on the color touch screens located on each machine. These controls can be orchestrated with the **Maestro Management System** on a centrally controlled computer that is both visible from the computer or by remote access with an internet connection. The hatchers have a capacity of 31,680 eggs which is double the amount of eggs set in each Classic setter. Using two setters to transfer into one hatcher offers savings in the number of hatchers required and reduces building space. The C576 and AH192 are proven performers worldwide, giving Gama superior hatchability and chick quality.

Congratulations to Gama Farms on this expansion and the future success as a supplier of quality poultry in the Philippines.

CM Parts Corner: Solenoid Valves Keep Setters and Hatchers Cooling and Heating

Controlling the flow of cold water to your setters and hatchers requires a hard-working solenoid valve. This device allows the water to flow when setters & hatchers are looking for water cooling. If the valve is working, cold water quickly flows through it and to the coils for effective lowering of incubator temperatures. If it is not functioning as it should, setters and hatchers take longer to cool and can result in high temperature alarms. The **Maestro** or **Advisor** will indicate this by noting the slow cooling process.

In Avida setters, the solenoids not only control cooling, but also allow the valves to manage the heat-up process using hot water to quickly get the egg mass to the desired temperature. Those valves control hot water after setting and then switch the same coils over to cooling once the embryos become exothermic. Monitoring and maintaining solenoid valves should be part of a regular maintenance program. Keeping your valves in good working condition will result in more healthier chicks.



Hot and chilled water distribution manifold assembly 600D-74-4934

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