

Thinking of Converting your Multistage Hatchery to Single-Stage?

As the information about improved hatch numbers, lower farm mortality, better feed conversion and fewer downgrades on single stage chicks compared to multistage becomes more open and available we are finding that our customers are becoming more creative in finding economical ways to join the new program. Usually that means looking for ways to salvage materials from existing facilities to reduce the cost of creating a single stage hatchery.

There are many situations where a complete conversion to single stage is cost-effective. There are many others where at least a partial conversion can produce high-dollar results at dime-store costs.

Should you consider such a conversion? Here are some quick thoughts to ponder which may help you to answer your own question:

Is your present equipment structurally sound? If the walls, doors, fans or trolleys are old and in need of repair, you are not off to a good start. The physical box and egg holding equipment is, generally speaking, the stuff you are going to try to re-use.

Do your present controls allow you to easily manage your incubation process under changing conditions? Single stage systems benefit immensely from the ability to stage program, a process that alters the conditions in the setter to meet the specific current needs of the developing embryos. Worse still is if you are using a thermostat based system. The complete inflexibility of those systems is going to negate virtually the entire value to be had in a single stage process.

Does your support facility have the capacity to support single stage? There are several points of concern. Multistage systems relied on the cooling value of humidity spray to support what was usually an inferior cooling system. The cooling may be inadequate due to a lack of cooling surface inside the setter or because of an undersized chiller and pipe network bringing the chilled water to the setter. Surprisingly (to us at least) some of the competitive single stage setters on

the market today still ship with humidity spraying systems. (That is probably one of the main reasons we win all the head-to-head trials!). Single stage requires significantly more horsepower in the cooling systems and that expense could be huge if your present system is marginal!

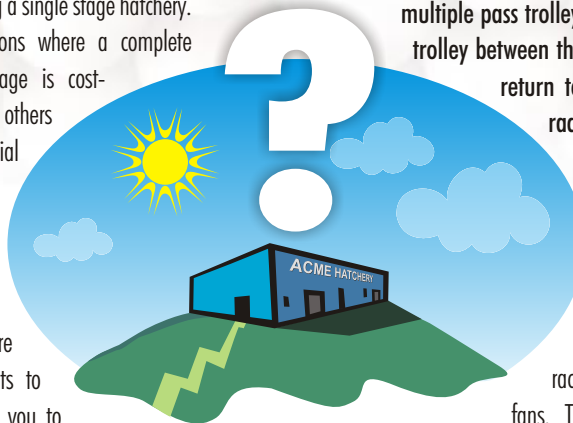
Do you have a trolley system with direct access to configured air or do you have either a multiple pass trolley layout (more than one trolley between the air prep area and the return to that area) or a fixed rack system? The fixed rack

system can be converted to single stage or modified single stage with reasonable success since the air flows from the fans directly into the racks and then back to the fans. The setters that have two or

three racks between the fans and the return air present much more of a challenge. Anything is possible (sort of) but remember that the air is the key—it must be able to move easily and predictably!

Does your present system utilize custom printed circuit boards that make it difficult or expensive for you to be able to replace defective units efficiently? Most companies stopped using custom printed boards many years ago because of the extreme backlash from customers who resented being unable to obtain commercially available replacement parts in local areas and the cost of inventorying many expensive boards. Single stage setters are under extreme pressure to operate without interruption in the later stages of the set. You cannot afford to have a control that could take more than 30 minutes to come back on line. If you have controls with custom imprinted boards you are putting heavy pressure on your maintenance team in a game that is very high stakes.

What egg tray are you using? When you use a fan like our Avida fan you can easily remove heat from a long tray. That is not so true when using an overhead fan. It is also not true when the length of the egg mass that the air must pass thru



To Our Hatchery Friends: **Your Chick Master e-News**

A lot has happened at Chick Master since the last e-News. Chick Master UK has now moved to two new homes to offer a better service and support to our customers. We now have a dedicated ventilation office deep in the heart of Somerset at Cricket Malherbie and a facility close to our previous factory in Bridgwater that will be the center of distribution and plant operations for Europe and many other markets. Please see page 4 for more details and new contact numbers.

Our Heat Recovery and Energy Management systems have gone from strength to strength. Cobb-Vantress has installed the first full system in North America and our CC3 systems are in great demand with new installations in Europe, USA and South East Asia. Hatcheries can now expand or upgrade their ventilation systems without the major expense of installing new ducting and capital equipment inside the hatchery. With added heat recovery and/or dehumidification it is easy to see why this innovative product is in such demand in cold, temperate or tropical climates alike.

We have recently launched our new Avida S single stage setter incorporating an innovative floor turning system for ease of maintenance and cleaning. Already we have systems installed in Italy, USA and the UK all giving excellent results.

Our Oracle control system will soon give you all the functionality of Galaxy but will also incorporate an interactive hatchery calendar and maintenance program package and much more. The Oralarm is another related product that will give you an affordable and effective hatchery alarm system if you are already running Oracle.

Our popular smaller range of specialty incubators has been streamlined and is now available in three sizes, the Corto, Mediano and Grande, with capacities ranging from 1,000 to 5,000 chicken eggs and combination options also available.

We have met many of our customers at trade shows throughout the world from Atlanta to Bangkok. This has stimulated much interest in our incubation and ventilation products as well as renewing old friendships. Look out for Chick Master at Agrena in Egypt, Space in Rennes, France as well as many seminars in the USA and the Philippines and Indonesia over the coming months.

Please email news@chickmaster.com with your suggestions and requests

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Incubator Environmental Control

COOLING

A few weeks ago at one of our regional training meetings we were asked to explain how we balance the water cooling, air cooling and cooling effect of water sprays in our equipment. Well, by now most of you know that our position on humidity spray is that every moment they don't run is a good moment, and a well-designed setter and hatcher can have all good moments except in very demanding conditions like high altitude.

Despite my outright loathing for equipment that needs humidity spray to work, I did my best to answer the question. In order to do so, the first thing everybody had to understand is that equipment is designed with potential to perform in a certain manner but that potential is usually different from reality, because other variable conditions make the potential either unnecessary or impossible. So, here's a quick recap of how the meeting proceeded:

"The way the question is phrased tells me that what you want to know is how these three systems work together to keep developing embryos cool. In order to answer it, I have to add a fourth element—cabinet radiation heat loss. This is a small but important element of the picture.

Cabinet radiation loss is simply the amount of heat that the setter or hatcher box is able to shed by allowing heat to pass thru its roof and walls without the assistance of air or water carrying it. Our goal is not to have a completely insulated cabinet that holds all heat in. The cabinetry is designed to release excess heat in the critical late stages of the setter' or hatcher's work. The setter does need to accumulate heat in the early days of set but the temperatures at that time are much lower than towards the end of the set. So the price we

pay for shedding heat late is a very, very small loss of heat early. The roof, front and back of setters are always exposed to the hatchery conditions. Side walls may or may not be. Therefore, we attempt to channel the heat to the exposed walls. As a side note, the heat lost from those points is usually valuable heat for the hatchery (it is radiant so there is no air quality issue). There are variables that convert potential to reality on cabinet radiation. An end machine has an entire wall exposed to cool conditions that a middle machine does not have. A group of setters in a cold building could have the entire roof section exposed to extreme cold if the area above the machine is not insulated. The Avida steel structure transfers heat from inside to outside much more quickly than the Avida S cabinet. So, once again the cabinet radiation loss is more about potential and capability than it is about specific reality in all places. As a quick "rule of thumb", cabinet radiation should account for 5% to 10% of the heat loss at peak temperatures.

The water cooling system inside the Avida setter is capable of removing 75% to 85% of the animal heat in most hatcheries. This is also true also of the Classic with split cooling but would not be true of pre-2001 setters that usually had a single cooling zone or block set Buckeye units of that age that had somewhat irregular patterns of heat load. Those older machines were designed to handle 50% to 65% of the heat thru water cooling but with today's birds the reality is probably closer to 40 to 60% removal through those systems. Those estimates simply mean that the surface area of the copper coils is capable of transferring that much heat to the circulating medium inside it under normal rates of flow and entering temperature of the water. In order to reach that potential, the medium itself must be cold enough to absorb that heat and

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becomes greater. For example, our 126, 130 or 132 egg trays are almost 10 inches shorter than our 165. Removing the heat from an egg mass sitting on the smaller trays is much easier than removing it from the 165. That, in a nutshell (I almost said "eggshell"!) is the reason we do not offer the 165 tray in an 18 high version but do routinely offer the 126, 130 and 132 in an 18 high format. Converting to smaller tray sizes AND having only one tray between the air supply and the wall is quite feasible. Not so easy to do so with the longer trays and almost impossible in the multiple trolley systems where the air gets progressively altered as it passes thru each successive trolley.

If you are considering converting a multistage hatchery into



Buckeye multi-stage setter running in single stage mode

single stage but are terrified at the prospect of changing all of your drain systems and ventilation packages you should talk to our sales people. Not all things are possible but we are pretty well versed on what things are and the conversation is free! ☺

VFD (Variable Frequency Drive)

TRIPLE PAYBACK FOR A SINGLE INVESTMENT



Our industry has been an environmentally aware group for years. We are basically farmers who take great pride in the quality of our products and the protection of our environment. Recently, escalating energy costs have forced us to also become more aware of the use of energy. Our guideline of "More Chicks, Better Chicks, Greener Environment" has been joined by "Lower Costs".

One means of achieving lower costs is by replacing standard motors with motors coupled with variable speed drives. This technology has been available for many years but only recently has it received widespread attention in our industry. Virtually every three phase application can benefit from the use of a frequency inverter (variable speed drive), but Chick Master has been fortunate enough to have a fan design that can be run in either direction which allows us to:

1. Improve the efficiency of electricity by correcting the phase angle of your power which in turn lowers your electric bill;
2. Reduce the fan speeds at appropriate times to eliminate unnecessary movement of air and the energy consumed by that;
3. Vary the air turbulence pattern thru blade reversal resulting in environmental consistency inside the setter resulting in ever better bird quality than that provided in a standard drive Avida setter.

Our Energy Management team also reviews your hatchery for possible use of frequency inverters in other areas of your hatchery like pumps and drives.

**MORE CHICKS • BETTER CHICKS
LOWER COSTS • GREENER ENVIRONMENT**

COOLING - Continued from page 2

carry it away. That is a function of the temperature of the medium and the speed at which it passes thru the coils as well as the turbulence that must be present in order to mix the cold water (middle of the stream) with the heated water (that which touched the coil). Thus it is very safe to say that it would be rare moment when the potential that the system is capable of is matched by the actual. Upgrades, such as split cooling and double bank cooling, increase the potential of the coils in these older machines to more like 75%.

Humidity spray (ugh!) has been used by Chick Master and everyone else to make up for cooling deficiencies in the equipment itself. Spraying cold water will make air feel cooler but it makes a "bad neighborhood" in a hatcher; more like Hell's next door neighbor for the birds who have to try to breathe. In setters, cold spots, droplets and elevated air flows necessary to get egg dry-down in a humid environment make this a costly and negative proposition. In some setters there is no choice—there is no other way to cool your eggs. Do not fool yourself. You will get hatch percentage if that is the only thing important to you—but you will get it at the expense of dragged out hatches, increased utility bills and frequent hatches of poor quality birds. When all the stars align correctly a system using spray will work. When the conditions get hot and humid to start with different story.

Be that as it may, the humidity spray on a Classic, a Buckeye or old CM hatchers usually provided about 25% to 35% of the necessary cooling. There are no humidity spray nozzles in Avidas. And, by the way, there are more than 3000 Avidas now running quite nicely without them. And the Zephyr hatchers can live without them as well if you have a correct chiller package running. Your birds will thank you if you do.

In the end, the element that must clean up for all the inadequacies of the water and the cabinetry is the air movement. The air that is required to pass thru the system

just to remove some humidity and all the excess CO₂ is going to remove about 20% of the heat at peak heat load if the incoming air is at the correct humidity and temperature. If we plan air flow just to remove CO₂ it is not going to remove enough humidity to get the egg dry-down we are looking for since the air movement required for CO₂ removal is only going to average about 1 to 1.5 CFM per thousand eggs (in an Avida for example there is zero air flow for six days. On day 18 that flow may be 3 to 4 CFM per thousand but the average will come back to needing about 1 to 1.5 CFM per thousand eggs). For that reason, the flow of air generally exceeds the amount required to remove CO₂ because the humidity is a very critical issue in bird quality.



There are more than 3,000 Avidas now running quite nicely without humidity spray nozzles.

Altitude changes the equation somewhat as does highly humid or exceptionally dry supply air. In the middle stages of incubation the air flow will remove more than 20% of the heat load because of the critical requirement to remove egg moisture. It is very likely that you were thinking that 30% to 40% of the heat is removed by the air and, frankly, that is probably a more accurate picture of reality—especially in a multistage system where users invariable run way too much air thru the setters. In a multistage application this necessitates the running of the humidification system to replace the moisture taken away by excessive air flow.

We closed the point by promising that we are working diligently to bring all of these pieces together in an effective (performance and cost) cooling SYSTEM under a single control. We will see that day dawn, but it is not this particular day. In the meantime, understand how these pieces work together and give the manufacturer as much respect as you feel they deserve. There are many people in the marketplace touting "upgrades" to fix "issues" that they don't begin to really understand. Be educated. It is better than being fooled! 🐣

GREAT NEWS FOR CHICK MASTER ORACLE USERS and Hatcheries that Need an Inexpensive Alarm

INTRODUCING THE ORALARM

We've had several requests/suggestions from Oracle users asking if they could use the Oracle as an alarm system. Since the Oracle was designed to be a simple data collection tool and an even simpler event display vehicle it didn't take long for us to realize we could provide a very effective alarm system to Oracle users at an extremely low cost. Here's what we have for you:

When you installed the Oracle (or, for some of you, when you do install the Oracle) you found that every setter and hatcher that is linked to the Oracle routinely transmits the pertinent data whenever an alarm condition occurs. Many of you have added GeMeric room controllers for pressure, temperature and/or humidity control. In the last year or so a significant number of Oracle users have added one or more Zeus controllers to improve room control while adding the ability to communicate directly with your setters and hatchers for changing temperature and humidity settings. With all of that data sitting in the Oracle, all we had to do is find an efficient and reliable way to get it out to you.

Recent releases of Oracle software (available free to Oracle users) allow you to add text messaging to your system as long as you provide the Oracle with internet access. That medium allows the Oracle to send you a text message anytime an alarm situation occurs that meets your predefined criteria of an event you wish to be notified about. That left us with one significant issue—how do we inform you if the Oracle itself stops working? Well, we just created an add-on piece of hardware that includes an auto-dialer with a prerecorded message. If the Oracle loses contact with the controls it is monitoring, it will activate the text messaging system and the voice system (assuming you are allowing it to do both) to let you know that it is not able to detect all possible alarm situations that it normally reports on. If the Oracle itself stops working (computers have been known to crash), the auto dialer will be activated. It will attempt to complete a call to a list of telephone numbers provided by you to alert you that the Oracle has failed.

So—to recap—if you have an Oracle installed you need to ensure that it has access to the internet, access to a land telephone line that will remain live in the event of a power failure, access to a mobile phone capable of doing SMS text messaging and, of course, an email account to work through. These are all pretty common things that all or most of you have easy access to. To this you add the Chick Master **Oralarm** module and you have an alarm system. Naturally the more devices that are wired in to the Oracle, the more alarm protection you have! 🐣

Visit our on-line parts shop at www.chickmaster.com

and start earning points today.



I ♥ the internet

If you have any part of you that enjoys asking "Why?" that part of you has to agree with my statement. Somebody out there has an answer to almost everything (still searching for the answer to "How can I lose weight without exercising or eating shredded cardboard"). Well, the other day I got curious about the principles at work in our heat recovery systems. The concept is so effective and so inexpensive it seemed inconceivable to me that no one else in our industry ever designed a product like this. I found some interesting stuff.

First of all, I got acquainted with the term "run-around coil". This is not a coil that steps out at night and cheats on its pump. It refers to a simple closed loop that moves heat from one place to another, picking it up in spots that don't want it and transporting it to places that can use it. Simple enough. Then I read about the fact that liquids (water, basically) are 100% efficient in capturing and releasing heat energy. Other than the loss caused by the transfer capability of the pipes that transport the liquid, whatever heat goes in is available to come out. Far more efficient than trying to move heat energy in air.



Next, I found some information about the heat transfer characteristics of various materials. Copper is my new hero. I also understood why we used to put cardboard in our shoes during those cold winters when I was a kid in New Hampshire. (That worked to keep feet warm but had a downside when we had holes in the sole of the shoe.)

Last I came across the discussions about dehumidification and use of chillers to remove humidity while reheating with waste heat. Simple but effective use of the chiller capacity. I even found some theory about the use of humidity spray inside the exhaust ducting to dehumidify incoming air on hot, humid days. Water quality is an issue of course but a really interesting concept—use water spray to dehumidify air. Seems backwards doesn't it? Well, it isn't. It's pretty smart.

So in the end, I've come to the conclusion that we haven't created matter out of air nor have we cured cancer. We've taken a number of common sense principles, woven in some innovative thought and taken an approach that fits our industry. There are lots of opportunities to invest in: heat exchangers, humidifiers, controls and packages that incorporate buzzwords like "Smarter This" and "Intelligent That". Growing up in New Hampshire taught me another thing. Anybody can claim anything they want. It's the reality inside that counts.

Talk is cheap except when it's long distance during prime time!

New homes for Chick Master UK

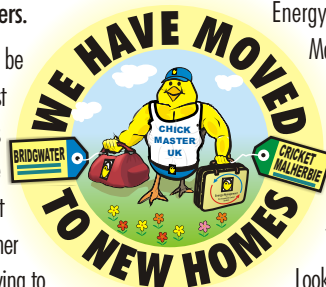
Chick Master UK has moved to two new locations to offer better service and support to our customers.

The factory and distribution operations will be in a new facility in Bridgwater, England, just a short distance from our old location. This facility is 2,700 square meters and will be the center of distribution and plant operations for Europe and many other markets. Our Ventilation Group will be moving to its new home in Cricket Malherbie which is approximately

35 minutes south of Bridgwater. This will be the center of our

Energy Management Division and General Management of our European operations. Our main phone lines will stay the same for our new Bridgwater facility but we do have new numbers for Cricket Malherbie, please make a note of the new contact details at the bottom of this page.

Look for an announcement and invitation to visit our new facilities this fall so we can show off our homes.



Please contact us for any product or support information you may require



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Chip Campbell

Ask the Eggspert

Your chance to ask our hatchery and embryology expert the questions.

Q On the morning of hatch pull, I have a lot of water running out of the hatcher. The cooling coils are heavily covered in wet chick down and the hatcher temperature is running above set point. Some hatcher are alarming due to high temperature at pull time. What can I do to improve this situation?

Mr. J. Bornstein - USA

A This condition is a result of continual condensation being formed on the coil due to the chilled water passing through the coil to quickly. Since the water is passing through the coil at a faster rate, it is unable to absorb enough heat to prevent the coil from developing condensation. As the chick begin to hatch, chick down will accumulate. As more down accumulates, it will begin to insulate the coil and thus further reducing the coil's ability to remove heat from the hatcher. This will increase the temperature in the hatcher resulting in longer cooling "on" times.

In order to maximize the ability of the coil to remove heat from the hatcher, we need to slow the water flow rates through the coil. Slowing the water flow will allow the chilled water to remove more heat energy from the hatcher. When we remove more heat energy over the length of the coil, it will reduce the amount of condensation on the coil. I recommend closing the chilled water valve by 1/4 increments. After each adjustment observe the condition of the coil after each hatch. The cooling coils should be dry with only a dry covering of chick down on the first several loops. Continue to make 1/4 adjustments to the valve until the desired condition is achieved. It may take several hatches before the water flow is adjusted properly to remove the maximum amount of heat energy from the machines.

Please send your 'Ask The Eggsperts' questions to: enews@chickmaster.com

FUN TIME

You have an 8 gallon container full of water, an empty 5 gallon container and an empty 3 gallon container. You want to divide the water equally with your friend so that each of you has 4 gallons of water. Using only these three containers can you divide the water up so that each of you has 4 gallons? No tricks, no additional water added, just using the three containers. **No cheating!**

Answers in e-News #21