AgSpeak™

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VAL-CO designs and manufactures our equipment to assure that quality is built in. This is our top priority. In this and in previous editions of AgSpeak, read about the results you can experience in your barn with our world-renowned watering systems, our rugged feed systems, and our top-performing ventilation and control systems. But we also take pride in bringing advances in technology to agriculture.

As in other industries, being connected to relevant information becomes more important with each passing year. With more demands on our time and the increasing need to be in more than one place at any given time, remote access can help us conduct our business from anywhere. Connectivity gives us the ability to physically be in one place, but virtually be in another. The ability to be virtually present in our barns and production facilities to remotely monitor and manage pays big dividends in today's world.

Over the next few years, you will see more VAL-CO products with the built-in ability to connect with you wherever you may be. Use of this technology to monitor and maintain optimal conditions in livestock facilities, whether someone is present or not, will lead to improved animal performance and welfare.

But being constantly connected is a double-edged sword. We are all familiar with how constant access to information and our business activities can begin to feel like more of a burden than a benefit. Looking even further ahead, the next step beyond connectivity will be expert systems that can maintain optimal conditions without our 24/7 involvement – because we all have something on which to spend our time that is even more important than our business.

Phil Risser
President & CEO
Valco Companies, Inc.

Common Problems in Swine Ventilation

by Ericka Mongeau

The automation in today's swine industry has made it easier to maintain house conditions, but it isn't always as easy as it sounds. Here are some of the most common problems seen in swine ventilation, and simple solutions for them.

Not understanding the controller

Most modern barns rely on a controller to keep track of the temperature in the barn and manage the interplay between air inlets, exhaust fans, and heaters, but just setting everything to turn off when it reaches setpoint is a recipe for wasting money. If your setpoint in the barn is 85°F and the fans are set to come on at 86°F and the heaters at 84°F, odds are you will be wasting money on propane. Most controllers have a delay in how quickly they recognize temperatures changing – it takes a while for the air to heat or cool the temperature sensor – and if on and off points of fans and heaters are set too closely, by the time the control recognizes the barn is the right temp, it may already be a degree over your setpoint, the fans kick back in, and the whole barn seesaws between heating and cooling, wasting propane and electricity.

Ventra™ PRO Controller

Solution: Leave at least 1 degree F between your setpoint and the

end of your first stage of heating/cooling. So, if the barn setpoint is 85°F, turn on cooling fan #1 at 87°F and turn it off at 86°F. By the time the temperature sensors detect 86°F it may already be 85°F in the barn. Same thing (in the opposite direction) for heating.

Going cheap on fans

Sure everyone likes to get a deal, but in barn fans, the upfront cost is less than half the story. Electricity usage over the life of your fans will blow past the initial cost, and not selecting a tunnel fan with at least 21 cfm/watt (a measure of how efficient a fan is at moving air versus electricity used) will end up costing you more in the long run.

Solution: Check out VAL-CO's line of high-performance fans (https://www.val-co.com/support/literature) or look online at BESS labs to compare the various models.

Not maintaining the equipment

Your new barn works great, but after two turns of weanlings the airspeed has slowed, condensation has begun appearing around curtain edges and ceiling inlets, and the pigs in the back of the barn have started showing more scratches and tail bites. Curtain machines are workhorses of barn ventilation, especially the ATLAS™ line of farm-duty machines, opening and closing inlets and curtains hundreds of times a day. Over time, cables will begin to stretch and limit collars may need to be adjusted to ensure all inlets and curtains close tightly. Likewise, fans left to their own devices will give less performance when neglected and poor ventilation, no matter the cause, leads to poor growth and poor pig behaviors.

VAL-CO not only offers the top performing 54" fiberglass fan, but now has a 36" fiberglass available with a flat panel cone!

Solution: To get 20% more airflow from your fans just wipe them down with a rag or brush – cleaning stuck-on dust from shutters and housings can put 20% more air through a fan versus a dirty one. While you're down there, check to make sure the belts aren't worn down and change as needed. Curtain machines need greased every so often and cable stretch removed, and if there is a curtain drop make sure to check, and test, the functionality regularly.

Evaporative Cooling With High Pressure Fogging Systems

by Sean Francey

When we talk about evaporative cooling, most people think first of cool pad systems. Today, however, we want to highlight the less well known but more versatile evaporative cooling that comes from fogging systems.

First to clear up a little confusion of terms: Fogging, misting, and sprinklers. Some people use them interchangeably but there is a difference. Fogging systems differ from misting or sprinklers in that they produce a much smaller droplet. Sprinklers operate at mains pressure (about 20-65 psi, typically) and put out a drop of water up to 1/16" diameter (2mm). Misting systems may run at 80-200 psi and put out a smaller droplet, around 100 microns – about the thickness of a human hair. Fogging systems operating at 700-1000 psi produce droplets around 25 microns – as fine as the point of a needle. The smaller the droplet the more quickly it can evaporate. The faster it can evaporate the less likely it is to wet the floor, litter, or equipment.

Next understand that the same principle operates in fogging (or misting or sprinkling) as in a cool pad – water is evaporated into the air – lowering the air temperature while increasing the relative humidity (Rh). So for every 2.5% increase in Rh through fogging, we can decrease the temperature about 1°F (0.5°C).

So what makes fogging different from cool pads – what are the reasons for or against using it?

PROS:

- Fogging, unlike cool pads, allows cooling anywhere in the tunnel barn – not just at the tunnel inlet end. Many barns struggle

Comparative Size

Relative Size	Comparative Size	Atomization
	Point of Needle (25 Microns)	Fog
	Human Hair (100 Microns)	Fine Mist
	Sewing Thread (150 Microns)	Fine Drizzle
	Staple (420 Microns)	Light Rain
	#2 Pencil Lead (2000 Microns)	Thunderstorm

to keep an even temperature down the length of the house, with a temperature rise of 10°F (5.5°C) from one end to the other common. With fogging – cooling can be evenly distributed down the length of the barn.

- Fogging works in natural barns – even with no fans at all fogging can be used or retrofitted into naturally-ventilated barns to provide evaporative cooling.
- Can be used anytime to add humidity – chicks and poults, especially, benefit from an Rh of 50-60% at placement, but in dry, colder climates when brooders or furnaces are used to warm the barn Rh is typically 20-30%. Fogging systems can be used to increase Rh and decrease airborne dust in addition to being used later in the growout for cooling purposes.

<u>CONS</u>:

- Fogging systems need to be designed custom for every barn application – If the cool pads are left running too long you delay drying out the litter, but the excess water that can't be evaporated is simply recycled through the sump. With a fogging system sized incorrectly or run too long the floors and equipment will get wet.
- Fogging systems have a higher maintenance requirement – if the pump goes out on a cool pad system a garden hose can be used to soak down the pads. If the pump goes out on a fogging system there is no easy backup to provide evaporative cooling.

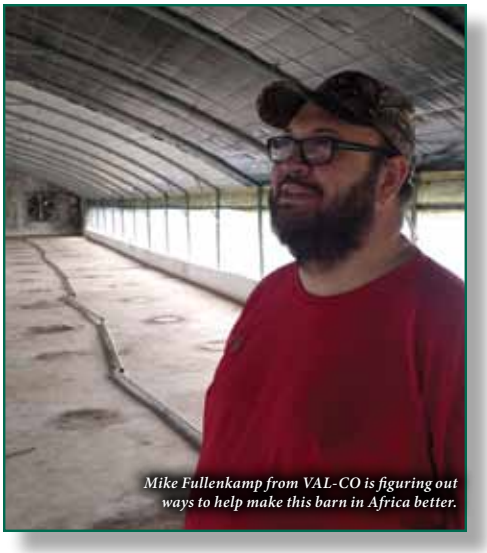
Is one "better" than the other? It all depends on the application and personnel involved. Are you retrofitting an existing barn or building new? Fogging installs easily in retrofits but it is likewise easy to frame out cool pads in a new building project. Is all the air brought in through the ceiling? Cool pads could be a significant investment here. What is the average outside temperature? It may be too hot early on in a growout but too soon for significant airspeed – fogging would be an ideal way to cool young animals, but in cooler climes unnecessary. And why not do both? If you already have cool pads but the temp rises more than 5°F from the inlet end to the fan end add fogging halfway down the house to boost the cooling and maintain a more even temperature.

VAL-CO in Africa

Africa is the second-largest continent in the world both in size and population. As of 2009, about 14.7 percent of the world's population resides in Africa. As diverse as it is large, over 1500 languages are spoken across the continent. Each country also brings with it a unique culture, economy, and climate. Each of these effects the agriculture industry, and especially poultry farming. There are some large-scale farms that raise millions of birds, but more commonly, farmers live in rural areas and their barns have a capacity of less than 500 birds.

Farmers face many challenges, especially in the context of local infrastructure. Due to a lack of electrical availability, many farmers have simple barns that don't require electrical power. For example, in layer houses, birds are grown on the ground with suspended feeders and drinkers. Nests are built with cement and eggs are manually collected. Broiler houses use manual feeding and drinking, and naturally ventilated houses. Some use homemade wood feeders.

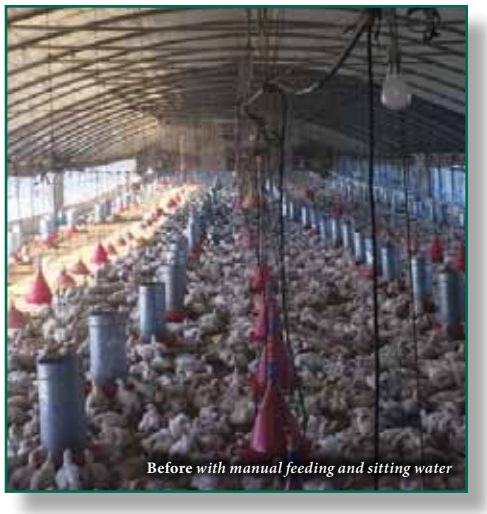
Numerous problems can stem from trying to use these rudimentary farming techniques on a large scale. For example, when manual feeding, 50 kg (110 lb.) bags of feed are hauled around the barn to fill up the feeders. In the process, much of the feed is spilled on the ground, creating waste, inviting pests, and harboring bacteria. Bell drinkers, if not carefully maintained, create a breeding ground for diseases and algae. And natural ventilation, while cost effective, can't provide birds with the optimal temperature and humidity conditions that keep them comfortable.



Mike Fullenkamp from VAL-CO is figuring out ways to help make this barn in Africa better.

We've helped many farmers reduce their labor requirements and improve sanitation by installing automatic feeding and watering systems. Feed manufacturing companies only ship feed in bags, which makes filling the feed bins on the farm difficult, so there are still some challenges to overcome. But overall, farmers are seeing improved production.

VAL-CO is working hard to help farmers in Africa and around the world to develop the poultry industry to the highest standard. We are dedicated to providing support and training to farm managers as they learn how to use this new automatic technology.



Before *with manual feeding and sitting water*

After *with automatic feeding and fresh water on demand*

Top left: Manual feeding & bell drinkers can be unsafe for birds.
Top right: Automatic feeding & fresh water lines create a better environment.
Right: Feed delivery is now much easier.

Grower Spotlight

M&K Farms - Matt & Karen Moeller

Matt Moeller and his wife, Karen, are integral members of the South Dakota hog farming community. A farmer from birth, Matt grew up with pigs on the family farm, and often worked with his father and uncle caring for the livestock.

Today, Matt raises wean-to-finish hogs, without antibiotics, for Smithfield Foods. His farm has 11,000 spaces that house nearly 25,000 pigs annually. While he currently has a full-time helper, he and his wife are often in the barns doing chores, administering vaccinations, or moving pigs.

In 1998, Matt began farming hogs on a larger scale, raising feeder to finish pigs. In 2008, he enlarged his operation, and added new barns outfitted with the Ventra PRO controllers. The controller's features and performance, combined with a great manufacturer and installation support system, convinced him to retrofit his older barns. In 2016, Matt converted his feeder to finish operation to wean to finish, and updated the older barns to the Ventra PRO. "The technology is there, the service is good, and I'd recommend it to anyone."

Karen and Matt Moeller

Matt is more than just a hog farmer, he's an advocate for hog producers all over South Dakota. For six years he served on the Board of the South Dakota Pork Producer's Council and, for most of that time, was the Chairman of the Demand Enhancement Committee, a role that required him to promote pork at events large and small. He's cooked pork at events like Daytona with the National Pork Board and teamed up with a local radio station in Rapid City for their Hog Wild

event – at the end of which there is a drawing for a whole hog and other goodies.

During his tenure with the SDPPC, Matt helped to influence public policy regarding hog farming and the pork industry in general. He attended the Pork Leadership Institute, sponsored by the National Pork Producers Council, to learn how to advocate for the pork industry to legislators. Using what he learned, Matt has testified on bills and proposals in Pierre, South Dakota's capital.

As an avid philanthropist, he's always finding ways to give back to his community through pork. He has volunteered his time cooking pork at many local events, such as Hot Harley Nights, a family-friendly motorcycle parade in Sioux Falls, SD, that raises money for the Make-A-Wish Foundation. When the Shrine Circus is in town he helps to keep the show running smoothly, carrying ice, making snow cones, and helping in any way he can.


Matt and Karen with their "Pork Promoter of the Year" plaque.

"I love what I do. I walk outside every day and I'm on vacation."

Water Line Maintenance

The goal of every poultry farmer is to grow healthy birds with consistent weights and water plays a large part in making that happen. We tend to focus on the amounts of water – how much is supplied? How much is consumed? Important, but perhaps we should focus first on water quality and accessibility. All that worry about flow rates and water pressure doesn't mean anything if the lines are dirty, crooked or uneven.

What happens when water lines are dirty?

Dirty lines often contain sediment from the water source, or from additives that are run in the water for production improvement. The sediment gets caught in the nipple seat and causes the drinkers to leak, resulting in wet floors. Dirty lines also have biofilm and scale deposits. Biofilm is a collection of bacteria and other organisms that live together in a sticky film inside pipes, regulators, and nipples drinkers. It protects itself with a mucous membrane (slime) that neutralizes cleaners and releases bacteria into the water that the birds are drinking. Scale is a result of hard water and mineral build up in the pipes and can limit or even block water flow through the system.

How do you fix dirty water lines?

Three things need to happen to keep water lines clean. The first is high pressure flushing. The second is high concentration cleaners. The third is low concentration daily cleaners.

High pressure flushing removes the sediment in the lines and can also help to wash out the biofilms and scale deposits that are loosened after cleaning. It's recommended that lines be flushed at least one time per week, for one minute per every one hundred feet. Lines should also be flushed after running medications, vaccinations, or anything else through the medicator, to prevent biofilm growth.

High concentration cleaners are used to break down the biofilms and scale deposits that can inhibit water flow or affect water quality. Always follow manufacturer recommendations on concentration and application, and always flush the line thoroughly afterwards.

Low concentration cleaners are run daily through the water lines. The concentrations are high enough that the birds are not affected by their presence, but the formation of biofilms is still prevented.

What happens when water lines are crooked?

Air locks. Air locks occur in high points in the water lines and prevent water flow through the entire length of the system. This is most common with young birds when pressures are too low to push through the lock, but can occur at any stage. These air locks can cause drinkers upstream from the air lock to leak, but they also create "dead spots" where large groups of birds may be receiving little to no water. The result is dehydration and decreased food consumption that leads to lower bird weights – detrimental in broiler operations where every day counts.

How do you fix or prevent air locks?

We recommend raising both the regulator and end-kit 1" higher than the rest of the line so that air can escape out at these points. If the line is greater than 150' in length, consider adding a mid-line air vent.

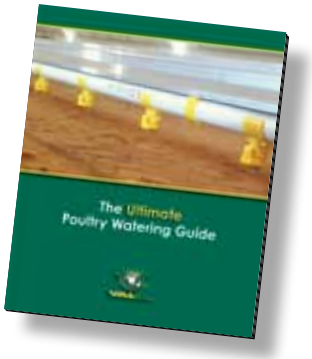
What if the lines are uneven?

Flow rates are dependent on water pressure. Water pressure increases with the angle of the slope, therefore, uneven lines result in a variation of flow rates through the nipples from one section of the house to the next. Uneven lines can also result in unequal drinking opportunity – lines might be too high for birds in one spot and too low for them in another. In either situation, the impaired access to water negatively impacts growth.

How can you make sure the water lines are even?

Measure them! It can be tedious and time consuming but the advantages of having even water lines far outweigh the time spent leveling them out.

Scan the QR Code or visit
val-co.it/TheWaterBook



In The Spotlight

Employees

Name:
Jason E. Boss

Position:
Senior Product Manager

Where were you born? Iowa

Hobbies: Golf, racquetball, Iowa Hawkeyes football

First Job: Paper route

If you could share a meal with anyone, living or dead, who would it be and why?
My wife's grandmother and my grandmother because they both passed away when we were under the age of 10 and they were our favorites. I'd like to discuss where our lives have taken us and ask what advice they would have for us going forward.

What changes have you seen in your years in the industry?
The desire of consumers to want their eggs laid in a cage free or free-range environment, but not realize what that means — the space and cost ramifications that come with those desires.

What technology do you see coming in the industry?
Most in the industry would say the only way to care for chickens is to 'walk the flock.' There will come a time though when audio and video monitoring, along with the existing environmental controls that monitor and adjust, will replace human interaction.

What excites you about your work and makes it easy for you to come to everyday?
When I started at VAL-CO it was an industry new to me, but relatable to my extended families past livelihood. There is always something new to learn and it's great to help the customers succeed, which helps VAL-CO succeed.

Products

Hemisphere® Z-Pro™ Mixing Fan

This patented technology, developed for whole house air mixing, dramatically reduces temperature variations in the facility by moving a large volume of air with minimal drafts. The innovative low profile (12" tall) design makes it perfect for low clearance ceilings. The Hemisphere Z-Pro controls circulation through the entire building volume to eliminate dead spots while improving heat distribution. The special material coating that is on the Hemisphere Z-Pro has been proven in many conditions, making this mixing fan ideal for swine, layer and floor bird applications.

VHED Tube Heater

The Heat-Rite™ VHED infrared heater will provide comfortable radiant heat in extreme conditions. The rigid burner design features stainless steel fasteners with a powder coated finish. An internal partition separates the combustion air from the electrical components to increase longevity. The burner tube is made of ALUMI-THERM steel which is a titanium alloy/aluminum blend for added safety. The rest of the heat exchanger consists of heat treated aluminized steel with nickel/chrome coated hanging hardware that will maximize radiant output while providing a long lasting appearance.

Ideal for hog barns and other livestock applications, the rugged design of the Heat-Rite VHED heater sets itself apart from the competition. Other notable features include: direct spark ignition that provide a low amp draw to allow more heaters to be tied into a single circuit. A low voltage thermostat connection located inside of the heater, external LED "burner on" light, and an ignition module diagnostic light for ease of troubleshooting.

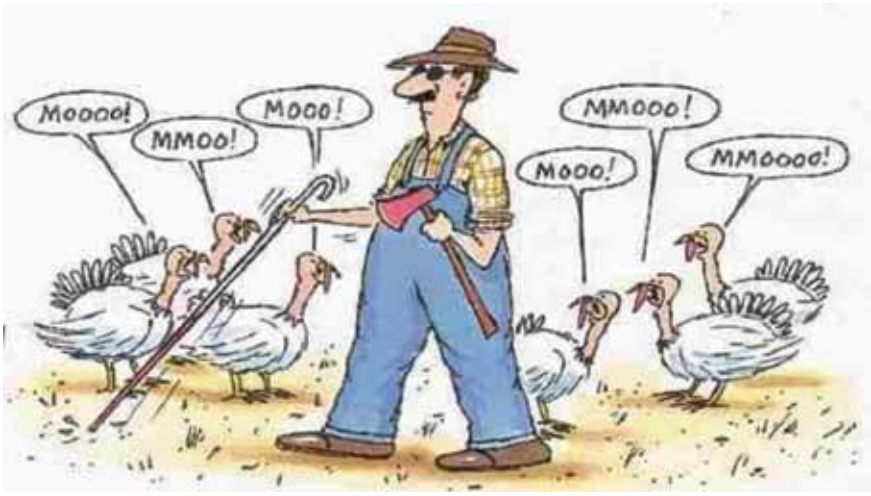
*Visit **www.val-co.com** for more info and to find a dealer near you!*

Fun Stuff

Counting Your Chickens

"If there were 20 chickens in the coop," said the teacher, "and two were missing one morning, how many would you have?"

"Well," answered her pupil, "if they were mine in the first place, I'd have 18. If they weren't, I'd have 2."



The Farmer and the Code Enforcement Officer

A Vermont farmer was standing in his barnyard when an official-looking car pulled up. The driver got out and introduced himself as the local code enforcement officer.

"I was noticing your fence," he said. "You have three 3-inch rails. You need to have either three 4-inch rails or four 3-inch rails."

"Ya don't say," said the farmer.

"I'm afraid I'm going to have to write you up," continued the code officer, but as he was doing so, he had to keep swatting away at some flies that were buzzing around his head.

"Havin' some trouble with them circle flies, are ya?" asked the farmer.

The man stopped writing for a moment. "Well, yeah," he said, "if that's what they are. I've never heard of circle flies."

"Well, circle flies are common on farms," replied the farmer. "Ya see, they're called circle flies because they're almost always found circlin' around the back end of a horse."

"Oh," said the code officer, as he continued writing.

After a minute, he stopped and said, "Hey, wait a minute! Are you trying to call me a horse's rear end?"

"Oh, no, no," replied the farmer. "I have too much respect for code officers and the government to even think about callin' ya that."

"Good," said the man, as he went back to writing the citation.

After a long pause, the farmer added, "Hard to fool them flies, though."

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