

# CONTROLLED STUNNING

CAS technology is emerging as the harvesting solution of choice among poultry processors

BY LYNN PETRAK | meatpoultry@sosland.com

Lowering one's stress level isn't just a goal for those who work in or manage processing plants. Reducing stress in animals that are part of the supply chain is a humane approach that can result in more efficient operations and, from an end-product standpoint, better quality and consumer satisfaction.

Controlled atmosphere stunning (CAS), sometimes referred to as controlled atmosphere killing, is a technique designed to lower stress in animals – mainly broilers – before

slaughter. In this method, birds are transported in a cage or crate into an area where the oxygen is removed from their immediate surroundings and replaced with an asphyxiant gas or carbon dioxide (CO<sub>2</sub>).

## BENEFICIAL APPROACH

The gas-stunning technique is an example of how equipment can help solve challenges and issues on the line, according to Temple Grandin, Ph.D., professor of animal sciences at Colorado State Univ., a designer of

livestock handling facilities and a contributing editor to *MEAT+POULTRY*. She cites the Humane-Aire CAS process developed by Zeeland, Michigan-based Midway Machine Technologies and Nacogdoches, Texas-based Bright Coop Inc. "They take the Bright Coop (cage) and run it through the system in five stages, gradually increasing the amount of CO<sub>2</sub> (carbon dioxide)," Grandin explains.

There are various advantages to gas stunning, both from an animal welfare and operational standpoint.

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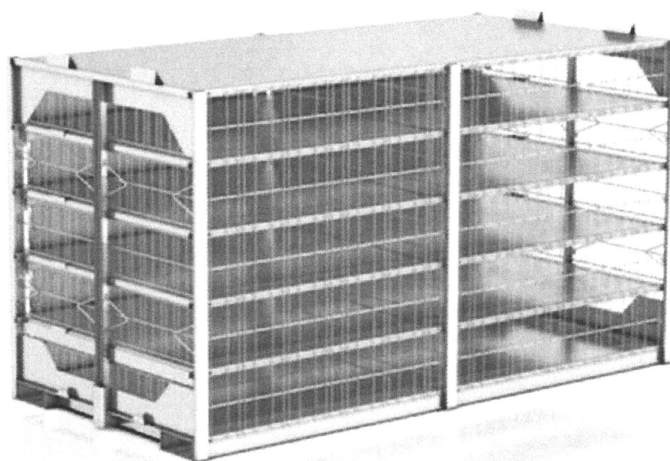
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This Bright Coop cage is run through the CAS system in five stages where the amount of CO<sub>2</sub> is gradually increased.

"It's very stressful hanging chickens on the line, and you also have to make sure that people aren't abusing chickens. Now, with controlled atmosphere stunning, the birds come in the travel container and stay in the container until they are dead, so you have gotten rid of some of the problems," Grandin says. "It's a much better working environment for employees. They don't have to work in the dark and they don't have all of the feathers and flapping."

CAS, in the form of high-performance systems like Humane-Aire, is being embraced by more poultry processors as an alternative to electrical stunning that works well and is also in alignment with what today's foodservice operators, retailers and consumers are demanding, reports Terry Geertman, co-owner of Midway Machine Technologies. "Both chicken and turkey are doing well," he says, noting that the company recently installed a system in Canada in addition to CAS equipment set up at Miller Poultry's facility in Indiana.

Adds Tim van Schaik, product manager for Marel USA in Lenexa, Kansas: "We definitely see a shift in priorities with regards to animal well-being over the last years, especially with customers who are connected and/or suppliers to national foodservice brands as well as high-end products such as organic or antibiotic-free product. We feel that the general public, and of course NGOs, are becoming more and more aware of animal well-being."

Another movement propelling CAS is broiler chicken welfare standards set by the

Global Animal Partnership (GAP), which have a goal date of 2024 for implementation. General Mills, for example, announced that by 2024, the company will only use breeds accepted by GAP or Royal Society for the Prevention of Cruelty to Animals (RSPCA) and processed using multi-step-controlled atmosphere stunning.

While CAS is effective for birds and meets animal welfare standards from various customers, it also benefits processors. The equipment can be relatively easily implemented at the farm and/or plant without negatively impacting line speeds.

Benefits extend to the poultry products as well. "If you do it right, you don't have broken wings and dark spots," Grandin remarks.

Geertman agrees. "It produces a more consistent meat, along with a reduction of blood in the meat and joints. But, in the electrical stunning process birds are hung while conscious and some birds get more stunning than others, for example, so there can be meat and bone damage from muscle contraction," he notes.

Humane-Aire is designed to be cost-efficient for processors, which is another benefit. "When we built it, it was important to us to have the ability to handle operational costs. We are able to do that and have a good return on investment. The sustainability of those systems is critical," Geertman says. "There is a competitive edge for processors."

## IMPROVEMENT AND INNOVATION

Even as it has become an increasingly popular alternative to electric stunning, there have been refinements in CAS technology. "Poultry processors were initially adopting CAS to eliminate the live shackling of birds and improve animal welfare at the processing plant. The higher breast meat yield balanced the return on investment. Now, with more knowledge based on science and thorough validations of the operational systems, the priorities are shifting and just an improvement for animal welfare is not sufficient. The focus is now more on the risk for animal welfare and product quality in the entire live bird handling," says Wouter Veerkamp, poultry processing researcher for Amsterdam-based Meyn Food Processing Technology.

Areas of improvement focus on solutions to the need for adjustment based on flock characteristics and weather conditions for


Humane-Aire

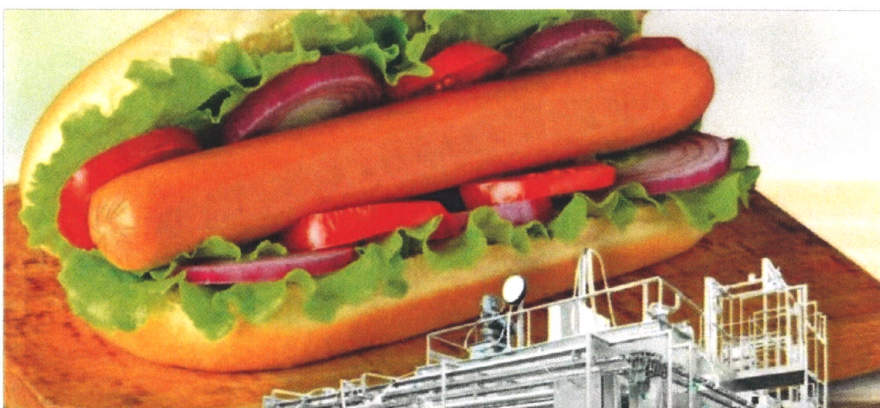
bird size, Veerkamp says. In Meyn's batch stunning system, birds remain in the transport module and are smoothly transported in a CAS unit, and the atmosphere settings for birds are already the same. Newer features in the batch stunning system include an automatic leak test and sliding door, he adds.

According to van Schaik, Marel introduced its Stork ATLAS live bird handling in the US market last fall, which includes a "Smart-Stack" module that provides more space to each bird and also increases loading capacity for fewer truck movements and less CO<sub>2</sub> emissions. Meanwhile, Marel's CAS "SmoothFlow" uses a mixture of CO<sub>2</sub> and O<sub>2</sub> or a multiphase stunning in a single straight horizontal line. "This smooth flow virtually enables an even more controlled atmosphere during the process of stunning, ensuring the best possible end product quality. Stunned broilers leave the system still maintaining their physiological functions," he explains, adding that the straight inline setup is also a continuous process that assigns the same stunning time and atmosphere level to every single broiler.

Meanwhile, Baader, with US offices in Kansas City, Kansas, released an above-ground CAS system earlier this year in conjunction with Auburn Univ. in Alabama, as a follow up to its below-ground CAS system with low CO<sub>2</sub> consumption and a small footprint. "The above ground stunner conveys drawers containing birds through five chambers, each with increasing levels of CO<sub>2</sub> similar to the below ground system. A key feature is the usage of a premixed CO<sub>2</sub> and O<sub>2</sub> gas mixture during the induction phase," explains marketing coordinator Alex Pangilinan.

As processors look to the future, Grandin offers some

suggestions for those who invest in CAS equipment. "If you get one, you have to buy a large enough machine so if you expand production, you aren't tempted to speed up the process. I can't emphasize it enough that you can't speed up the process," she says, adding that control is pivotal in many contexts. 



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