

Euthanasia for the Ages

It is the reality in commercial swine production that ultimately the animal's life will be terminated. In most cases, this will occur through the regular processing system to produce a variety of pork products. However, it is inevitable that situations will arise that require an animal to be euthanized on the farm, perhaps due to injury or illness. At the time, it is the caretaker's moral obligation to "render the pig insensible, with minimal pain and distress until death."

Even though there are a multitude of recommended euthanasia methods, they all have been derived from other industries and, therefore, present many logistical and operational challenges when used in commercial pork production systems.

Therefore, in late 2007, the National Pork Board organized a conference of equipment manufacturers, producers, veterinarians and safety experts to identify goals and challenges of developing a euthanasia system specifically designed for commercial pork production facilities.

These discussions led British specialist manufacturer Accles & Shalvock and its North American distributor, Bunzl Processor Division, to embark upon developing a system specifically designed for the euthanasia of swine in commercial operations. It's worth noting that A & S has produced high-quality traditional captive-bolt devices for almost a century.

The company's efforts were targeted at producing a euthanasia system that could be used throughout the pig's lifespan, adhered to basic international standards and followed the criteria outlined by the European Food Safety Authority. The EFSA has previously stated that on-farm euthanasia techniques should:

- ▶ Induce unconsciousness and death either simultaneously or sequentially.
- ▶ Not rely on a secondary kill step (for example, bleeding) to cause death.
- ▶ Be proven effective.

Through extensive design, engineering and testing programs, A & S has developed a product that combines the techniques of controlled blunt-force trauma and penetrating captive bolt into a euthanasia system for pigs ranging from newborn piglets to mature sows and boars. (See photo 1.)

CASH Euthanizer: The CASH Euthanizer unit is a heavy-duty, cartridge-propelled, captive-bolt device with interchangeable bolt assemblies. The unit provides a non-penetrating captive bolt to be used for piglets and a variety of penetrating bolt assemblies for pigs ranging from large nursery to adult swine.

The barrel assembly may appear very similar to A & S' CASH traditional captive-bolt design; however, there are significant differences that allow the unit to be used over the wide range of pig sizes and ages that are found on commercial pork operations.

CASH Euthanizer Non-penetrating Captive Bolt: For newborn, suckling and small nursery piglets, the unit provides controlled blunt-force trauma through the application of a specially designed non-penetrating captive-bolt assembly. The critical parameters for the muzzle assembly include a muzzle face that is designed to accommodate the dimensions of a piglet skull - a flat muzzle head with radiused edging and a restricted stroke length.

This assembly can be used with a combination of cartridge strengths to specifically target the physiological parameters - such as skull thickness, hardness, brain depth - of each size or age category of pigs. On-farm comparative analysis has demonstrated that application of the CASH Euthanizer non-penetrating captive bolt, used with a properly matched cartridge, results in immediate insensibility and a humane death. (See photo 2.) In addition, there was minimal external damage, bleeding or reflex activity (padding), and a reduced time of death compared to manual blunt-force trauma or traditional non-penetrating captive-bolt units.

Through dissection of the brain and scoring of traumatic brain injury it has been shown that the CASH Euthanizer non-penetrating captive bolt creates massive damage in all of the primary regions of the brain necessary to ensure an effective and humane death for the animal. (See photo 3.)

These results are supported by research conducted by Terry Whiting, who demonstrated more than a 99 percent effective kill rate of isowean piglets using the CASH Euthanizer during required mass-destruction operations.

CASH Euthanizer Penetrating Captive Bolt: For larger pigs, the CASH Euthanizer uses penetrating captive-bolt technology, which has been specifically developed for on-farm euthanasia. The basic differences between traditional penetrating captive bolts and the CASH Euthanizer are a system of captive-bolt assemblies (varying in length, mass and edging parameters), multiple-strength cartridges and recessing of the bolts within the muzzle to optimize impact velocity.

Each kit incorporates a short-, standard- and extended-length penetrating bolt that can be combined with four different cartridges. This provides a combination of muzzle designs and cartridge strengths that can be specifically targeted to address an animal's physiological parameters, such as skull thickness, skull hardness or brain depth for any age and size category. These combinations result in massive destruction of the brain (including the brainstem), causing immediate insensibility with minimal bleeding or reflex activity (padding), and a reduced time to death compared to traditional penetrating captive bolts. (See photo 4.)

On-farm evaluations, research programs and mass-destruction opportunities have demonstrated that with the CASH Euthanizer penetrating captive-bolt system a person can easily exceed a 98 percent effective kill rate. Given additional training and experience with the process, a 99 percent kill rate is well within the grasp of most production personnel.

So, what can be expected? Industry experience, preliminary research results and use in mass animal-destruction operations show that the CASH Euthanizer causes sufficient destruction of the animal's brain to result in immediate loss of consciousness and a humane death for pigs ranging from a newborn to mature sows and boars.

Having had the opportunity to use this system more than 10,000 times in various research projects, use on commercial farms and during the mass-destruction operations, we can attest that the CASH Euthanizer is the first commercially available product that has proven itself as a humane, effective and reliable euthanasia technique for all ages and sizes of pigs.



Photo 1 : CASH Euthanizer Kit



Photo 2 : Little to no external damage



Photo 3 : Traumatic brain injury scoring



Photo 4 : Penetration tract from the CASH Euthanizer