

## **Summary - Improving Electrical Waterbath Stunning**

### **Staff Proficiency**

At the point of shackling, staff should be fully aware of the effect they can have on the welfare of the birds and the quality of the carcass. This should be communicated to them by the onsite animal welfare officer or the business operator. The people responsible for hanging the birds should be regularly rotated to other duties to reduce operator fatigue and to ensure they retain full concentration. Operators who are fatigued from extensive, repetitive tasks are more likely to allow the birds to fall against the breast comforter and cause wing flapping which can result in red wing tips and/or compression damage to the shanks of the chickens, by forceful or uneven shackling of the legs.

### **Reducing flapping on the shackle line**

Flapping on the shackle line should be kept to a minimum, however, it is important to note that no flapping is not an indicator of no stress. Flapping can be induced by handling, inversion, the act of shackling and tight shackles. Flapping is particularly of concern as it can lead to dislocations, fractures and muscle hemorrhages. Birds that struggle on the production line may adversely affect the meat quality by depleting adenine triphosphate (ATP) and glycogen in the breast muscle, resulting in a build-up of lactic acid in the muscle. This results in a low muscle pH which then reduces the water holding capacity of the meat.

A structural change that business operators should make to the line to reduce flapping is to install a breast contact strip, also known as a breast 'comforter'. These strips should be installed to extend below each bird's head and the strip must be in constant contact with each bird's breast along the entire length of the line. An additional recommendation is to install a breast support conveyor underneath the shackle line that moves in time with the line. This conveyor supports the weight of the birds which reduces pressure on their legs in the shackles. The conveyor can also support the birds in a more upright position than traditional lines, which may result in reduced struggling at hang-on and more efficient entry to the waterbath.

### **Utilising entry ramps to reduce pre-stun shocks**

Another vital structural change to install is an entry ramp to reduce pre-stun shocks. A bird's head must be the first thing that enters the electrified water. If another part of the body, such as the wing, enters first then the bird will receive a severely painful electric shock. The bird's head must be submerged in the water within approximately 100 milliseconds (ms) of the first electrical contact, as it has been shown that an animal perceives the application of a potentially painful stimulus within 100-150ms. A smooth entry ramp with a steep incline that ascends over the entrance to the waterbath will allow a bird's head to swing directly into the water and so reduce the incidence of pre-stun shocks – this is important as these shocks can also cause ineffective stunning and red wing tips.

## **Maintaining good quality electrical stunning**

Controlling resistance and maintaining good quality electrical contacts are necessary to ensure the effective stunning of the birds within the correct electrical parameters. The three critical control points of electrical contact for operators to be aware of, and to regularly assess, in a waterbath system are; 1) earthed rubbing bar interface with shackle 2) shackle interface with a bird's legs and 3) bird head interface with water/electrode.

## **Assessing effective stunning**

For a bird to receive an effective stun, the threshold current must be immediately reached, or exceeded, in order to induce immediate unconsciousness. If too little current is supplied it is likely that the bird will be electro-immobilised, which is commonly mistaken for an effective stun. However the bird will still be sensible to pain and this is unacceptable on welfare grounds.

Operators should be trained in assessing an effective stun and ensuring correct neck cuts are made to allow rapid and profuse blood loss.

Visual signs of an effective stun:

- No rhythmic breathing
- Absence of corneal reflex
- Absence of spontaneous eye blinking
- A lack of intrinsic control of muscles
- Constant rapid body tremors
- Wings held tightly against the body

The neck cut is the final step in the slaughter process and its purpose is to cause death to the stunned bird<sup>1</sup>. To ensure a quick death, and mitigate a likelihood of the bird recovering from the stun whilst bleeding out, the cut must sever all the major blood vessels in the bird's neck and most importantly, the two common carotid arteries. An operator will be able to see when these are both cut due to the distinguishable jet streams that appear once both are cut. The operator should also ideally sever the two jugular veins.

## **Welfare issues in waterbath stunning systems**

Whilst every measure should be made to improve waterbath stunning systems, there are indisputable inherent flaws in the system that decrease welfare:

1. The inversion and shackling of conscious birds which causes stress
2. The difficulty in controlling the effectiveness of the stun for each individual bird
3. Commercial systems that require batches of birds to be processed simultaneously, leading to varied resistance within the waterbaths and possible ineffective stunning
4. Stunning systems being operated at a constant voltage, causing difficulty in delivering the correct amplitude to each bird
5. Scientific evidence that suggests that the majority of current actually flows through the body of the bird rather than its brain, demonstrating that some birds are potentially not being rendered insensible to pain but rather experiencing pain from electric shocks.

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<sup>1</sup> In stun-to-kill waterbath systems, the initial electrical stun is designed to cause instantaneous death.