

ELECTRICAL SAFETY REQUIREMENTS

Electrical safety standards for electrical processing technologies are defined by the New Zealand Safe Application of Electricity in the Meat Processing Industry guidelines (NZ 6116:2006).

Dressing operations on electrified carcasses requires conformity to Class A specifications. Class B specification is considered touch safe but does not allow operational contact with the carcass. Class C is unsafe under any conditions and requires stringent safety standards.

The variable frequency electrical processing technologies can operate as either Class A or Class B, depending on the selected voltage and waveform.



WHO ARE WE?

Carne Technologies is committed to providing systems and expertise to improve product quality and processing efficiencies in the primary, secondary and retail meat sectors.

We develop, manufacture and supply state-of-the-art technologies for use in carcass processing, and real-time quality measurement systems. The technologies are integrated with in-depth consultancy to design, tailor or optimise processes and procedures in the abattoir, boning room or retail meat preparation facility. Our highly experienced technical team provide remote support for all our equipment and can problem solve processing and quality problems.

The pioneering technologies we have developed in New Zealand are being used by meat processors around the globe.



ELECTRONIC PROCESSING SYSTEMS

CARNE TECHNOLOGIES

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ELECTRICAL STUN SYSTEM

This system is programmable to produce variable frequencies

The stunning system can be set up as either a reversible head only stun or a full stun kill system using head to body current pathways.

This system has been successfully implemented for electrical stunning of cattle and sheep.

BENEFITS OF HIGH FREQUENCIES:

- » reduced risk of blood splash (ecchymosis)
- » elimination of broken bones
- » Improved post stun movement control
- » Controlled pH decline – avoids problems with excess stimulation often found following 50Hz stun kill systems

HARDWARE DETAILS:

- » Bipolar current-controlled output
- » Maximum voltage 600V RMS
- » Programmable variable frequency: DC to 10,000Hz

STUN MONITOR AND LOGGER:

- » Continuously monitors the output voltage and output current throughout the stun
- » Alerts operator to non-conformity to 4 different, user-defined stun parameters
- » Records and stores each stun as a separate record
- » Graphical display of voltage or current for each stun



ELECTRICAL PROCESSING TECHNOLOGIES

Carne Technologies has developed variable frequency equipment for a number of applications in carcass processing. In all cases, effects of the electrical inputs on the quality of the product need to be carefully considered.

Electrical inputs to a carcass can trigger excessively rapid pH declines, particularly for grain-fed cattle. This has adverse effects on meat quality, including eating quality.

The key benefit of variable frequency technology is to control the pH response to the electrical input.

Electrical processing technologies that benefit from variable frequency waveforms include:

CARCASS IMMOBILIZATION AFTER STUNNING

Electrical immobilization of beef and sheep carcasses after stunning eliminates carcass movement, improves worker safety and allows higher throughput speeds.

ACCELERATED BLEEDING

Uses a specialised electrical stimulation waveform to accelerate blood loss after sticking in beef and sheep carcasses; increases blood yield in the bleeding area and reduces blood loss during dressing.

BACK STIFFENING

Used to stiffen back muscles during hide pulling of beef carcasses, to reduce the risk of vertebral separation and broken backs; applied using an automated or manual probe.

HARDWARE DETAILS:

- » Unipolar or bipolar waveform options
- » Programmable variable frequency output
- » User defined voltage selection between 70 and 300V

CARCASS ELECTRICAL STIMULATION: SURESTIM.

Surestim accelerates the meat tenderization process and optimizes meat quality for a premium eating experience.

Electrical stimulation is used to accelerate the tenderisation of meat. Faster tenderisation means less maturation time needed to reach optimal eating quality. Electrical stimulation also benefits meat colour and drip loss during storage.

Capturing the full benefits of electrical stimulation depends on matching the rate of pH decline in the carcass to the carcass chilling rate; this is the so-called temperature/pH window.

SureStim provides reliable and effective stimulation of carcasses to produce a consistent pH decline. The SureStim settings can be adjusted to match a target pH with the plant chilling regime. Settings are defined as part of the commissioning of the SureStim system.

HARDWARE DETAILS:

- » Programmable output waveform
- » User defined voltage selection: maximum 300V
- » Touch-safe output – minimal safety requirements compared with high voltage stimulation

STIMULATION MONITOR AND LOGGER:

- » Continuously monitors and logs the output current during stimulation
- » Continuously updated graphical display of the day's stimulation performance
- » Stores a record of the stimulation output for retrospective analysis
- » LED display of current output