News & Reports

'Electrical stunning a viable option for pigs'

By Josh Loeb

AN animal welfare charity that exposes poor welfare at slaughter has taken the unusual step of effectively running a major abattoir to prove that an alternative to carbon dioxide (CO_2) gas killing is viable for pigs in large-scale slaughterhouses.

Eyes on Animals collaborated with welfare at slaughter expert Temple Grandin to overhaul the design of, and oversee slaughtering work in, a Dutch abattoir killing more than 600 pigs an hour after the abattoir's owner invited them to make changes.

The charity's founder, Lesley Moffat, said Eyes on Animals had lost some donors who were uncomfortable about the project. But it succeeded in providing evidence that, when automated, electrical stunning of pigs is viable for large abattoirs.

At a Universities Federation for Animal Welfare conference on humanely ending animals' lives, held in Switzerland on 6 March, Moffat showed videos of pigs slaughtered via exposure to a high concentration of CO_2, and by electrical stunning (followed by 'sticking', or exsanguination). In the CO_2 video, pigs could be seen panicking; in the electrical stunning video, they appeared to remain calm throughout.

Moffat said there had been 'pressure from supermarket chains and even some welfare labels' to move from electrical stunning to CO_2, despite the latter increasingly being viewed as unacceptable on welfare grounds (see box).

Kees Scheepens, a vet and pig farmer who has worked with Eyes on Animals, said in some abattoirs pigs' teeth had been found in compartments in which they had been lowered into gassing chambers (indicating being knocked out in panic), arguing: 'For as long as that's the case, I think there's not really a debate about the welfare impacts.

'As a pig farmer, I won't send my pigs to a plant that uses CO_2.'

CO_2 gas killing is regarded as a method of stun-slaughter in the UK and EU. But Scheepens said he believed it had been 'misclassified' and was really non-stun slaughter, saying: 'The definition of stunning is any intentionally induced process that causes loss of consciousness and loss of sensibility without pain. It doesn't have to be immediate, but it must be without pain.'

Asked if he believed exposure to high concentrations of CO_2 counted as stun-slaughter, Scheepens said: 'No'.

Moffat said: 'We want stunning to be effective. If we didn't, we would go back to non-stun slaughter. When looking for alternatives to CO_2, research has mainly been into using other gases, but...why aren't we looking at improving electrical stunning when it has so much potential?'

Eyes on Animals installed four stunning machines at the slaughterhouse it oversaw, reducing the number of pigs that had to be processed single file through pens at any one time compared with under the previous CO_2 system. Employees had more time to move each pig through the system (22 seconds per pig, compared with six seconds under the previous system). Changes were also made to lighting and lairage.

"As a pig farmer, I won't send my pigs to a plant that uses CO_2

Scheepens said meat quality was equivalent to that from pigs slaughtered using CO_2.

'There's no reason why slaughterhouses across Europe shouldn't install automatic electric stunning,' he said. 'The CEO of this slaughterhouse still doesn't regret his decision [to move away from CO_2]. He thinks use of CO_2 will be phased out anyway, and price of CO_2 goes up and down, so he thinks this was a good investment.'

Eyes on Animals has formed a consultancy, Slaughter with Care, and is looking to work with more abattoirs. *Vet Record* understands there has been interest from some UK meat industry stakeholders.

PROBLEMS WITH CO2 'STUNNING' RECOGNISED IN UK AND EU

CO_2 gas killing is a commonly used killing method for pigs. It kills the animals after first (supposedly) stunning them, but its use is increasingly questioned and there is debate over whether it can accurately be described as stun-slaughter. In 2003 the UK's Farm Animal Welfare Council concluded that exposing pigs to high concentrations of CO_2 was 'not acceptable' and should end. In 2020 a review by the European Food Safety Authority found it was impossible to prevent pigs exposed to high concentrations of CO_2 experiencing fear, pain and respiratory distress before death.

Low atmospheric pressure stunning (decompression-induced hypobaric hypoxia) was once considered a potential alternative, but researchers found it was associated with unacceptable ear pain in pigs. Head-only electrical stunning using handheld tongs is regarded as impractical for large abattoirs as it is labour intensive since pigs are individually stunned.

Eyes on Animals believes automated electrical stunning improves welfare at slaughter for pigs while allowing the requisite high levels of throughput for large abattoirs. However, the charity has emphasised that this is not the only corrective measure needed, saying further changes – such as improved conditions for abattoir workers – are needed too and that care must be taken to ensure electrical stunning machines are correctly maintained.

Editorial

There is only one 'R' in abattoir

THE '3Rs' (replacement, reduction and refinement) framework underpins the design of animal experiments in laboratories. Whether it could be applied in other contexts, for example abattoirs, is worth considering.

The first R (replacement) is not relevant in an abattoir context. By definition, abattoirs slaughter animals to produce food. Alternatives to meat produced from animals would not require an abattoir – but that's a different issue.

Likewise, for the second R (reduction), it is feasible for the number of animals killed to produce food to be reduced, but is this in the gift of either the operators of individual abattoirs or the sector as a whole to determine? Probably not.

That brings us to the third R (refinement). This is certainly a relevant principle when it comes to the slaughter of livestock.

As a broad generalisation, operators of abattoirs appear slow to make refinements – but not necessarily because they don't want to. They may feel locked into imperfect legacy systems. They operate within a regulatory and legislative straitjacket that exists for good reasons but is hardly conducive to innovation. There are other factors beyond their control, not least the demands of supermarkets. To overhaul a large abattoir would surely entail disruption, potentially resulting in animals ready to be sent for slaughter becoming 'backed up' on farms (which may, incidentally, cause welfare harms). Perhaps most significantly, refinement likely means expense.

The continuing use of high concentrations of CO_2 to 'stun to kill' pigs is illustrative of the frustratingly slow pace of change. This method of slaughter has, despite its UK and EU legal status as a permitted method of 'humane stunning', been acknowledged by many welfare experts as deeply suboptimal. Whether it is even accurate to describe lowering pigs into a pit filled with high concentrations of CO_2 as a form of stunning is debatable (stunning is supposed to be painless, and CO_2 gas killing is acknowledged to cause pain).

Authorities in the UK and EU are aware of the problems with CO_2. They have for decades been searching – so far mostly in vain – for viable alternatives. As the news story on p 242 of this issue outlines, an animal welfare charity, Eyes on Animals, has now taken matters into its own hands by effectively taking charge of a large abattoir in the Netherlands to remove CO_2 equipment and replace it with automated electrical stunning machines – a major example of refinement.

Welfare at slaughter expert Temple Grandin worked as an adviser on the project and was behind several associated changes, such as raising the height of barriers to pens through which pigs must proceed. Raised barriers mean pigs can see other pigs but not people. This has the effect of keeping them calmer.

The redesign also enabled pigs to be moved from lairage to the electrical stunners in smaller groups. There was less pressure on abattoir workers to move them as quickly. Both people and pigs seemed less stressed.

> **Operators of abattoirs may feel locked into imperfect legacy systems**

In a quest for continual improvement (the essence of refinement) a specialist consultancy formed by Eyes on Animals now hopes to consider every aspect of animals' experience of abattoirs, potentially including the 'soundscape' and smells they experience, with a view to making the process as a whole progressively more humane.

In a scientific research context, refinements have included the use in some facilities of 'playful' (so-called 'rat tickling') techniques for handling rodents (*VR*, 23/30 July 2022, vol 191, p 54) and of tunnel handling of mice (moving them inside of tubes rather than picking them up by their tails) (*VR*, 12 October 2019, vol 185, pp 424–425).

Ostensibly small changes like this have potential to enrich animals' lives, improving both their welfare and the welfare of people around them.

The first two Rs may not be applicable in abattoirs, but any progress on the last R should be applauded.

Josh Loeb