An AM Warkup 2,000-place bed-and-breakfast finisher unit on an arable farm

How technology has moved on to shape modern pig buildings

AM Warkup consultant Nick MacIvor charts how pig buildings and the technology that goes into them have moved on since the first *Pig World* Building Supplement

It came as something of a surprise to realise that this is the 12th *Buildings Supplement* and, as far as I can remember, Warkup has contributed to all of them.

Nick MacIvor

As a serial hoarder, I have them tucked under the past 24 copies of *Pig World* I limit myself to retaining. Of course, I had to read the previous ones, each a snapshot in time, highlighting industry concerns, developments and wider issues on the buildings front.

For a buildings geek like me, they made interesting reading. The early publications focused on the increased progress in building high-quality finishing accommodation – mainly, but not exclusively, third-party bed-and-breakfast units.

More and more units were being built on traditional arable farms and represented a trend towards separating breeding and rearing activity.

Since then, this trend has become even more common. Generous long-term contracts of ever-more sophistication have proved very popular with farmers and, incidentally, banks. An added benefit has been the arable sector's reintroduction to the value of natural fertilisers.

So successful has the model proved that, at times, demand has outstripped the building suppliers' capacity to supply, and lead times have lengthened accordingly. No prudent supplier is tempted to expand against a background of an increasingly efficient, but, ultimately, contracting, national herd.

ENVIRONMENTAL CONTROL

More positively, it is still true that well-designed, environmentally-controlled buildings have the ability to let the pig realise its full performance potential, despite year-on-year improvements in its genetic capabilities.

There are, of course, different types and levels of environmental control. On overall performance alone, fan extraction, coupled to mechanically controlled inlets, has proved to be the most successful.

Skov, our ventilation supplier, boasting a very large R&D department, is not changing these fundamental principles. It is concentrating on improving the efficiency of each ventilation element and incorporating more and more management features into basic controls.

In addition, linking the ventilation to high-pressure cooling inside fully-insulated building shells maintains year-round performance against an increasingly problematic climate background.

REARING AND FINISHING HOUSES

Given that the rearing and finishing houses are where profits are most influenced, they deserve a commensurate amount of attention. Environmental control is the same at both stages, the difference being the larger group sizes in rearing requiring some initial supplementary heat.

Quality Meat Scotland publishes reliable performance figures for its rearing and finishing herds, which illustrate the rewards available for success. These figures compare the top-third performers against the average.

From a similar 8kg entry weight, the top-third are slaughtered 15 days earlier and 9kg liveweight heavier, with an overall feed conversion rate some three points less.

What does this have to do with buildings? You are paid for pigmeat produced. What you are paid is usually outside your control. Likewise, you cannot control the cost of many of your inputs, but you can and must use them as efficiently as possible.

Every decision made and system adopted should be done with efficiency in mind. It has always surprised me how much improvement is shown by monitor farms and units where benchmarking has been taken seriously.

A good environment for the pig is vital and if you monetise the best to worst performance statistics, you can quickly see the staggering sums involved. The high cost of buildings and equipment rapidly pales against the true cost of lost potential.

Pigs' basic requirements are simple – a temperate, fresh environment, fresh food with its changing nutrient needs catered for and fresh water – although providing them is, apparently, often not. Some decisions are less obvious.

Some years ago, when bacon pigs were finished at 90kg liveweight, we had the opportunity to compare two finisher buildings on the same farm – same size, same pigs, same feed and management, one fan-ventilated and the other automatically controlled natural ventilation (ACNV).

The fans finished the pigs 10 days quicker, a difference of more than £6/pig on feed alone. The number of times I was told that ACNV was cheaper to run as it uses less electricity than fans makes the point.

On a second run, we recorded temperatures in both buildings and, although both kept the pigs comfortable, the Skov, unlike the ACNV, produced no discernable temperature fluctuations. I would, therefore, suggest that a significant part of the difference in performance tables is down to differing conditions within buildings.

A Crystal Spring feeder in action

A unit with a large slurry store – the added value from finishing pigs, according to Nick MacIvor

The freshness of food is another issue. The way food is presented is a complex subject and one that also has a direct effect on pig performance.

Too many hopper feeders are difficult to adjust, so they aren't, and they also waste feed or retain it where it spoils both feed and the pigs' appetite. Having carefully researched the optimum number of pigs per feed space, do you ever wonder what happens in the hopper when draw-off reduces the number of pigs in the pen?

The choice of feed hopper can be an expensive one to get wrong. Wastage from hoppers varies, with trials showing 4-10%. Post weaning, this equates to 9-22kg of non-productive food per pig. A solid area in front of the hopper reduces this, but still equates to a considerable financial loss. Our standard Crystal Springs stainless steel feed hopper wastage is just 4%.

WATER SUPPLY

AHDB's guide to water supply and maintenance of quality shows what a fraught subject this can be, yet its fundamental importance does not get the attention it deserves on many farms.

It starts with system design, but requires ongoing maintenance and attention. The guide is a highly-recommended if sobering read for both designer and operator. Often overlooked, water is not only necessary, but a cheap feed additive.

High-pressure cooling, introducing a fine mist of water into incoming air, physically lowers the temperature of the building's interior. This means that in hot weather the pigs' appetite is not suppressed and growth rates are maintained.

It seems likely that the changing climate will make cooling advantageous in most, if not all, pig buildings going forward. High levels of insulation stops structural heat gain and high-pressure cooling reduces sensible heat gain.

The use of technology to inform has gained traction. As labour gets scarcer, units become larger and businesses more complex, an ever-increasing range of meters and sensors inform management of progress and problems.

Farm–on-line, the system from Skov, provides real-time and historical oversight to drive both performance and efficiency. Measuring variations in water intake gives early warning of health problems, and algorithms can even measure a pig's stress levels from its grunt.

The technology exists to monitor pigs individually, but with artificial intelligence on the horizon it will become simpler in time and, therefore, more adoptable.

There is no doubt that our industry is changing shape. For years we have looked elsewhere to study the effects of scale and the benefits of vertical integration. It is now happening closer to home. Time will tell if this leads to stagnation or an increase in the size of the national herd.

FARROWING FOCUS

The change of government seems to have triggered a change of emphasis at Defra. Farrowing is back in focus, with entire tails gone, but not forgotten.

In the absence of any central guidance Europe continues with a country-by-country approach to farrowing standards.

We have a chance, it is hoped, to adopt standards based on genuine practicality and workability, not the government's or NGOs' misguided ignorance. I do not mean to be confrontational in any way, but we have been asked for practical advice.

We now have sufficient experience with early adopters to know what works to serve the best interests of sow, piglets and staff. All our installations are 5.75-6.5sq m, with the usable and useful space for sows and piglets the same across the range. Problems only occur in our layout when the limits, at both ends, are exceeded.

So ends contribution number 12. Who knows what will be in number 13, but rest assured, Warkup will be there after another year of twists, turns and opportunities for our industry.

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