

Cost-effective housing is paramount

A pig is sired, born, raised and fattened to then be served on our plates – that is one procedure, which will not change in the next 25 years. However, the framework for pork production will become much more challenging in the future. The priorities of goals to be achieved may vary from country to country, but one thing will be evident worldwide: cost-effectiveness will be paramount.

By Magnus Westerkamp, managing director, Big Dutchman Pig Equipment

In order to maintain profitability, hog producing units are becoming bigger and bigger. This is apparent in the European countries where farmers run out of successors. Agriculture is undergoing significant structural changes, and, in addition, major changes in animal welfare legislation and stricter regulations towards product safety make global competition harder. This is also evident in the Russian Federation, where the government displays an unabated strong will to push pig production in order to limit the country's dependence on imports. And also in the Asian 'tiger countries', where agriculturally cultivated areas are scarce and feed costs are hefty, pork production enterprises are growing steadily in size.

Optimising production flow

At the same time the growing importance of product safety and product quality will be reflected in the housing design of tomorrow. The reason for this is the growing concentration of food retailers and the internationalisation of the industry, which not only demands foods in enormous volumes but also of near identical and high quality. Alongside of this, there will be a growing demand from the retail industry for quick traceability of the production process. And not alone from the retail



industry; the consumers themselves, who, being increasingly concerned about food safety and animal welfare, will want thorough information about the contents and the sources of food. If pork producers want their business to run successfully under these circumstances, they will have to plan on further automation of their production procedures in the hog barns. Labour, feed, energy: whether a housing concept is innovative or not will in future be judged by the fact if it is capable of utilising these resources responsibly.

Rise in human population

The predicted increase in world population from currently 6.8 billion to about nine billion people in 2050 speaks for itself: the demand for large quantities of high quality but affordable foods will increase. The trend towards even bigger and more efficient production units will thus also be continuing. Nonetheless, the size is relative. In some countries, breeding farms are presently growing 170 sows compared with 90 sows ten years back - with a rising tendency. And in other countries of the world, sow populations of 5,000 to 10,000 sows in a closed system are not unusual. It may be possible that even these numbers will grow.

A niche stays a niche

But it is the exceptions that prove the rule. In some areas, niche businesses have evolved, that have earned the right to exist in the future as well. But the whole world cannot be nourished with organic food alone, for example.

The crucial advantage of bigger production units is obvious: production is much more cost-efficient. But management is more difficult. Consequently, special know-how and special equipment is required. A good example is the price booster, feed. The more feed which must be purchased, the higher the possible cost savings. However, operating a large number of silos requires a complete and comprehensive management tool in order to check feed deliveries, feed consumption and feed distribution. Clearly laid out PC software is able to register and control up to 60 bin or 'silo' contents.

For equipment companies this means: due to the anticipated growing herds, the industry must develop technologies for housing and feeding, which will enable better automation of production procedures. Thus pork producers must be given easy-to-use tools and technology to produce cost-efficiently.

Turn-key projects

The initial step towards cost-efficient hog production – now and in the future, is careful planning. Those that leave project planning and construction up to a single, experienced contractor will already have saved money before the buildings take on any installation or equipment. The advantages of turnkey solutions are simple project handling and shorter construction times. This is true for lightweight construction as well as for conventional massive construction of barns. Meanwhile, investors can focus on their core competence, being animal production and selecting the



Magnus Westerkamp:
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appropriate equipment for the barns and planned production concepts.

Larger housing companies will be planning to increase cooperation with selected experts of the building industry. It will be quite a challenge, because planning of larger hog production sites is more complex and the development of adequate, sustainable technologies will involve higher risks and costs.

High-tech is the future

No business can do without the most modern information technology. Future cost-efficient housing concepts are expected to enable all technologies employed at one site or at multiple locations to be perfectly networked. The hardware should be kept to a minimum and common standards should enable the users to operate all software and hardware rather intuitively. Furthermore, it is expected that there be full and consistent communication not only inside the farm, but also outwardly, for instance with feed suppliers or slaughterhouses, and that the communication technology should be of modular design to make it expandable at any time. Finally, all essential data should be retrievable from a smartphone or from any independent PC – be it the one at your vacation internet café. ‘Action instead of reaction’: this is actually how the impact of modern information technologies in pig production should be felt in normal daily life. Thus pork producers must be able to identify potential weak spots in the production cycle at a very early stage by regularly checking the evaluations on the monitor. They should be able to quickly

locate sick animals and to retrieve well comprehensible economic data about feed and energy consumption for cost analysis and further planning. Ideally, technicians and veterinarians will be at the scene - in the barn before problems get too complicated to handle. And feed will be purchased, before prices have gone up. Of course, this is only possible, if all locations are networked and if the respective users have access to the same easy-to-use-management software. The trend shows, that farm managers are leaving more of their common daily tasks to be handled by their farm staff while they themselves concentrate on higher management tasks.

Energy efficiency matters

One of the most important matters, for those concerned with animal husbandry is energy management of the barns. No matter whether you are in Germany, Brazil, Siberia or in the USA: energy costs are becoming a serious (expensive) issue all over the world. And the trend is irreversible. Of course, the situation has long influenced the work of equipment companies. A dynamic sensor would allow for multiple savings potentials: the tool controls minimum ventilation based on CO₂-concentration and relative humidity inside the barn. Devices like these can save up to 35% of heating expenses.

Small setscrew

Also in other areas of production, the turn of a small screw can have a powerful result. In countries with a high population density, for example, livestock farmers must be cautious about how to handle emissions from their barns. The reason for this may be stricter legislation, but also a growing environmental concern from neighbours and the general public. Thus with growing herds and production units worldwide, the need for effective, though unfortunately more expensive, means of air purification will become indispensable in many areas of the world. Farms in many regions are already using systems for exhaust air treatment. However, these types of systems may only be applied, if the barns have ventilation with a central exhaust system. This means, that all of the exhaust air must be directed to one

point of the barn, where it is possible to set up the air treatment system in an extension to the building.

Since many hog barns do not have central exhaust ventilation, an exhaust air washer has been developed that can be incorporated into single exhaust air chimneys and thus work locally. This system has worked successfully in various field tests and will be available in 2010. The spiral washers can easily be installed into existing chimneys, making it an inexpensive way to invest into air treatment and can be controlled by a central climate computer. So, the user will also have reliable data on energy input and power consumption. Beyond that, the spiral washer does not require carrier or filter material which further reduces energy costs.

Turning slurry into water and energy

Technological developments for pig production can not only be concerned with what happens inside the barns. Larger production units will be confronted with the problem of what to do with excessive slurry. Slurry is a valuable fertiliser but the large quantities cannot always be used locally. This is in many regions where agricultural waste products considerably contribute to environmental pollution. The long term goal is to convert a residue into a resource. And biogas technology seems to be well on the way to reaching it. In future, large hog farms can be expected to incorporate biogas technology as an important component of the total production process. But biogas alone will not solve the problem of manure concentration. The more so as the competition between biogas and feed is an issue that calls for answers and solutions. Thus it is of utmost importance to develop effective waste management concepts. The various approaches that have been taken so far have not proven to be entirely practical or marketable solutions. Techniques have been developed to separate slurry into a filtrate and solid matter which will then undergo further stages of handling to generate water, nutrient concentrate or fertiliser. Particularly a pelleted form can not only be used as combustible fuel pellets but will also be the origin for sustainable methods of generating electricity. **PP**

