

# Commercial Pig Unit Energy Monitoring Project

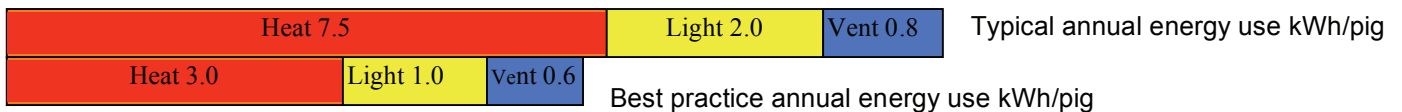
Rising energy costs will soak up any increased returns from improved performance

**A reduction of 0.5p/kg dwt in production costs, achieved through lower fuel bills is worth in excess of £3 million to the sector.**

It has been estimated that around 1.5 p per kg dead weight can be saved through improved energy usage on pig farms. Unnecessary energy consumption can be avoided through obvious changes in habit, such as turning lights and office equipment off when not needed, but improvements in the efficiency of energy use per kg of meat produced requires a more in depth understanding and monitoring of energy input as each stage of production. Such monitoring can identify opportunities where energy input can be reduced without compromising performance or indeed losses through mortality, growth rate and feed conversion associated with inadequate or improper usage of energy.

BPEX have recently commissioned a 2-year project with Farmex Ltd to monitor electrical energy consumption of commercial pig farms, so that the industry can improve its efficiency of energy use per kg of pig meat produced and in turn reduce cost of production by 1.5 p/kg dead weight.

## Weaner house energy consumption: typical and best practice compared



Source ECG089, Energy Consumption Guide, Energy Use in Pig Farming, The Carbon Trust 2005, HMSO

## The Study:

The study involves monitoring the energy that each piece of equipment uses, when it is used, and most importantly the interaction with building and pig performance. Where it is believed that improvements can be made, these are to be implemented and monitored, assessing the impact in a systematic manner.

Detailed on-farm information is being collected at 15-minute intervals, with the aim of:

- Providing target levels of energy use – “Benchmarks”
- Demonstrating achievable wins in the commercial environment
- Reporting these to producers

**Farmex** have a proven track record in the real-time monitoring of pig buildings and environmental systems, and combined with their knowledge base and experience, they are an ideal partner for this extensive energy-monitoring project. Additional expertise is being brought to the project by **FEC Services** of Stoneleigh (formerly the Farm Energy Centre).

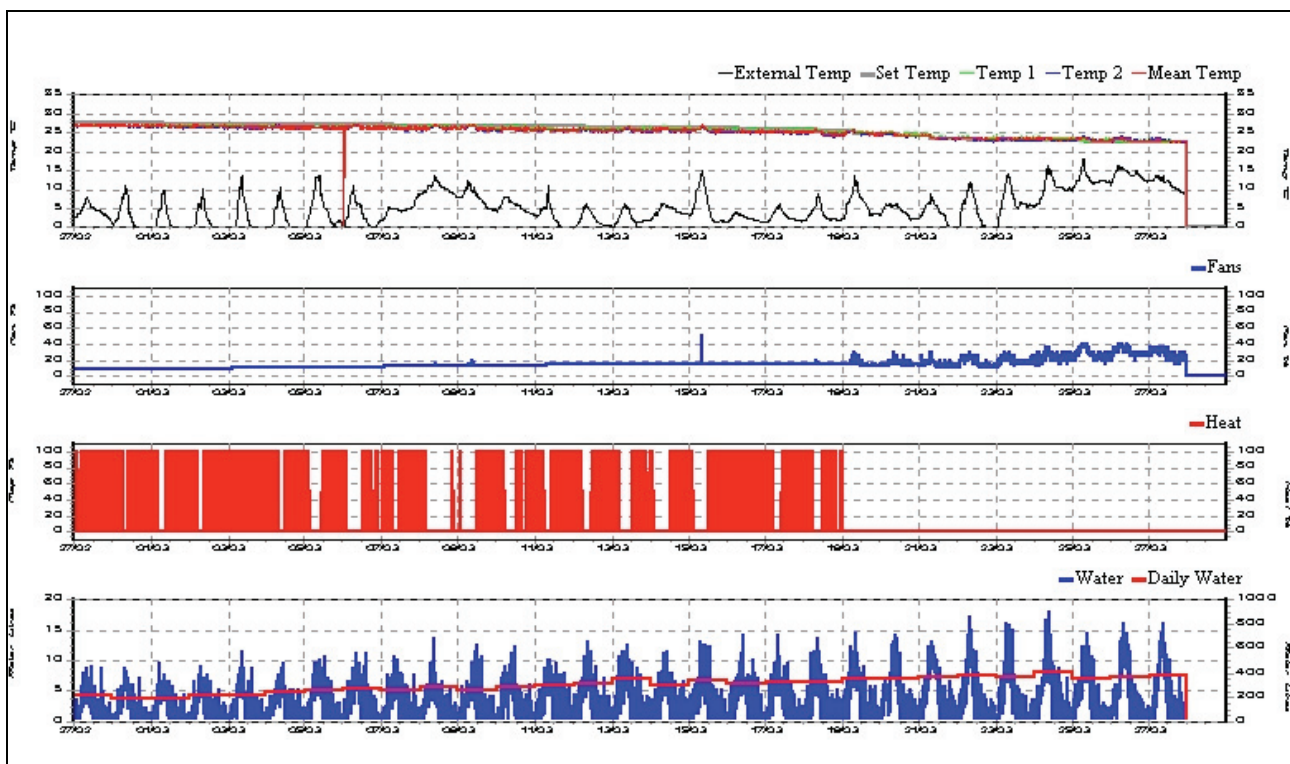
A range of farm and building types across England have been selected to enable comparisons to be made between different production systems. Additional electrical meters have been installed on participating farms to enable power consumption and

operating time to be linked; temperature, heater operation, ventilation control, lighting and feed systems are all included.

**Real-time monitoring: The application of remote monitoring technology to track, in real time, pig and building activity. It offers the industry opportunities to make more efficient use of inputs and improve performance.**

The graphs below show examples of real-time monitoring from Stotfold PDU; they indicate that the ventilation system, heaters and water supply was working effectively:

- Room temperature follows set curve (graph 1)
- Minimum ventilation rate follows set curve (graph 2)
- Heat input was only provided when necessary (graph 3)
- Heat was not supplied when fans were operating above the minimum setting (graphs 2 and 3)
- Graphs clearly indicate when sensible heat from pigs was sufficient to maintain room temperature, and when the ventilation rate needed to increase (graphs 2 and 3)
- Water consumption graph shows regular drinking patterns, indicating a good supply, with no leaks or periods of shortage. Consumption increases with pig age (graph 4)
- No significant change at weekends was apparent



These patterns look satisfactory, but can we do better? Benchmarking can help by providing goals to aim for, and electricity metering will show kWh/pig produced.

- Can we make cost effective improvements to reduce heat input?
- Can fan and ventilation inlet/outlet efficiency be improved?

Observing information recorded over longer time-periods can reveal recurring patterns that are not readily accounted for; these areas need further investigation, for example by

checking settings, testing heaters and calibrating equipment. Failure to take corrective action could have a significant negative effect on the pigs and of the overall business.

Regular project progress reports will be produced together with advice on improving energy efficiency.

Contact MLC's Pig Technologist, **Nigel Penlington**, for further information: 01908-844734