



Project Number & Title: Project 4C-116 Bioenergy support program (BSP) - DAF transition.

Project Leader: Alan Skerman, DAF, Toowoomba, Queensland.

Project Participants: Dr Stephan Tait, AWMC, University of Queensland.

Aims and Objectives:

1. To effectively extend the outcomes from research Projects 4C-104, 4C-109, 4C-111 and 4C-113 across the pork industry and contribute to meeting Pork CRC Milestones 4.5.2, 4.5.3, 4.5.5, 4.5.6, 4.5.7.
2. To continue to promote adoption of biogas by offering technical support to early adopter producers, and keep Pork CRC biogas-related extension materials up-to-date as an information resource to support biogas adoption.
3. To provide the Pork CRC with up-to-date information about on-going activities and adoption of new technologies at the Pork CRC biogas demonstration sites.

Key Findings:

Biogas systems are currently operating at 21 piggery units across Australia. Effluent from approximately 15% of the total Australian pig herd is currently directed to biogas systems which include 14 covered ponds (CAPs), 4 hybrid mixed/heated CAPs and 3 engineered vessel digesters. This is equivalent to 29% of the national herd housed in accommodation currently considered 'suitable' for biogas capture (exclude deep litter housing, outdoor production and smaller piggery units). Producers who have adopted biogas systems have reported significant financial benefits from energy cost savings, sale of surplus electricity to the grid, and returns from the sale of carbon credits and renewable energy certificates (RECs). In several cases, farm energy costs for the supply of electricity, LPG and diesel have been eliminated and capital expenditure payback periods less than three years have been reported. However, the majority of piggeries currently benefiting from biogas systems have capacities greater than 10,000 SPU (1000 sows farrow to finish), highlighting a need for continued development of biogas options for smaller piggeries, so they can also benefit. During the project term, the BSP assisted many producers, industry service providers and consultants with enquiries regarding piggery biogas system feasibility, planning, design, and even construction, commissioning and operation of biogas systems. The publications produced by the BSP have contributed substantially to reference/extension material available to support the ongoing safe and technically sound development of on-farm biogas systems. Scientific publications also evidenced the rigor of Pork CRC research in biogas. A national biogas survey indicated there were a substantial number of smaller producers interested in biogas and needing further information to assist adoption. The greatest concerns identified by producers with existing biogas systems were depleted biogas production, red tape, sludge management in CAPs, lack of industry support personnel and suppliers, and expensive generator maintenance.

Application to Industry:

Based on the project findings, the following future needs/opportunities are worthy of further exploration to enhance biogas benefits to industry and individual producers:

- Apparent market failure of service providers to cost-effectively deliver the whole range of services required by producers.
- The viability of co-digestion of piggery effluent with various off-farm waste or by-products supplied by nearby industries to maximise returns from biogas systems.
- Smart electricity grid monitoring, spot price checks on grid electricity, and negotiations with grid owners, could enable sale of biogas-derived electricity during higher demand/spot price periods to increase the financial gains from biogas.
- Onerous and inconsistent gas safety standards and legislation should be addressed, as these are discouraging biogas adoption.
- Biogas safety risks should be reinforced, and employees should be well informed at piggeries that capture and use biogas.