

**Title:** Evaluation of Energy Usage and Ventilation Performance of Tunnel Ventilated Layer Sheds

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**Authors:** E.J. McGahan, R.J. Davis, B.R. Warren & A. Ni Cheallaigh

### *Summary*

The Australian egg industry currently faces a number of key challenges including increasing competition, pressures on operating margins and increasing costs of business inputs. To remain competitive and meet the demand for eggs, the industry recognises the need for it to continue to make significant gains in areas of technical and cost efficiency. As cage egg production represents the majority of egg production in Australia, it is important to consider the cost efficiency of cage egg sheds in Australia. Energy cost pressure and increasing regulation affects feed production efficiency, breeding, rearing, egg production, grading and transportation – increasing production costs and seriously impacting the economic sustainability of the industry.

This study investigated the energy usage and ventilation performance of a modern tunnel ventilated layer production system. Both short and long-term energy monitoring was conducted on key farm activities including feed preparation, individual sheds, ventilation performance and total farm energy use. The performance of the ventilation under cold (minimum ventilation conditions) and hot (maximum ventilation conditions) was also assessed.

The report suggests that the energy use of key components (ventilation fans, manure belts, lighting and cooling system) needs to be measured in addition to just whole site energy use. As a result the contribution of each electrical energy process for ventilation fan performance was analysed and the following methods for reducing fan operating costs were identified:

- General maintenance of pulleys and belts
- Regularly cleaning fan blades, motors and shutters
- Replace burnt-out motors with energy efficient motors
- Maintain and clean cool pads to ensure airflow is not restricted
- Investment in more capital (e.g. energy efficient fans and cowlings)
- Ensuring shed ventilation (fan performance) is meeting manufacturer requirements
- Choose energy efficient fans
- Reducing the fan speed with a variable frequency drive (VFD)

Optimising electricity usage is important factor in improving the bottom line of egg production systems. Some methods of reducing electricity usage are more effective than others, however the key is to concentrate on areas of the system that will not have an adverse effect on bird performance.

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