



TE TARI TIAKI PŪNGAO
ENERGY EFFICIENCY & CONSERVATION AUTHORITY

Energy Efficiency Checklist

Poultry

Cost-saving measures, productivity enhancements, and optimisation opportunities

November 2024



The Energy Efficiency Checklist for Poultry is a practical guide with options to reduce cost and optimise your energy use.

There are ten categories within the checklist focusing on:

1. Measure Energy Usage
2. Energy Management
3. Environmental control system maintenance
4. House insulation
5. House tightness
6. Minimum ventilation (using interval timers)
7. Air inlets ventilation
8. Circulation fan system
9. Heating system
10. Lights

TASK	DETAIL	COMPLETE?
Measure Energy Usage	Monitor energy consumption (electricity, diesel, gas) on a flock basis. Energy readings must be taken at the beginning and ending of each flock.	
	Consider installing power data monitoring in each house. Connecting to the poultry houses' controller and/or internet enables power usage to be monitored on a continuous basis (15-minute intervals).	
	Compare annual flock energy consumption data during similar weather to identify trends (i.e., increasing/decreasing energy consumption).	
Energy Management	Choose the best power tariff that suits the electricity load profiles of your poultry house.	
	Turn off lights, heaters, and other electrical equipment when not in use.	
	Use a thermal imaging camera to check for overloaded circuits.	
Environmental control system maintenance	Implement appropriate scheduling to regularly perform basic maintenance of heating and ventilation system: <ul style="list-style-type: none"> Exhaust fan speed should be monitored for signs of worn belts and/or pulleys. Fan shutters should open and close easily. Fan shutters and screens should be free of dust. When fan motors are replaced, they should be of the same efficiency as those initially installed. Air inlets should open evenly along the entire length of the house. Air inlet screens should be free of dust and debris. 	
	Check and calibrate environmental controller temperature sensors regularly.	
House insulation	Thermal imaging camera should be used to evaluate integrity of ceiling, side wall, and end wall insulation.	
	Utilise a comprehensive rodent/insect management program to prevent damage to building insulation.	
House tightness	Check there are no visible holes in walls, doors, curtains and ceiling.	
	Measure poultry house tightness by conducting a simple static pressure test. <ul style="list-style-type: none"> In a static pressure test all the inlets and doors are closed and one or two exhaust fans are turned on. The higher the static pressure obtained during the test the tighter the house will be. The Poultry411 app should be used to determine the relative leakage area. The relative leakage area should be 0.5 square meters per 1,000 square meters of floor space or lower. 	
	Consider smoke testing the poultry house to determine areas of excess leakage. <ul style="list-style-type: none"> Turn Fan(s) on and ensure everything is closed tight to obtain a pressure of approximately 20 Pa. Conduct an exterior walk around of the building with the smoke gun. Whilst inside note where the smoke is entering the house. Test around door seals and ensure gaskets are present to seal doors and gaskets are +5cm tall. Test around exhaust fan shutters ensuring they are close completely. Test around exhaust fans ensuring they fit tightly against the side wall. 	

TASK	DETAIL	COMPLETE?
	<p>Check curtain straps hold the curtains tight against the side of the house.</p> <ul style="list-style-type: none"> • Ensure at least a curtain overlap of +0.7m. • Installing curtain pockets at the top of the curtain opening will ensure curtains seal properly. • Check the bottom of the curtain opening is stripped correctly to ensure the curtain seals tightly. • Check shavings are not preventing curtains from shutting completely. 	
	Consider installing 'caps' or 'socks' to minimise tunnel fan leakage.	
	Use insulated panels to cover fans that will not likely be used during a flock.	
Minimum ventilation (using interval timers)	Use five-minute timers to control minimum ventilation fan(s).	
	During brooding fans minimum ventilation speed should be a maximum 20 cmh per square meter of house floor space. Check interval timers are set to maintain a relative humidity of between 40 – 60%.	
	For older birds check the air moving capacity of the minimum ventilation fans controlled by an interval timer are less than 40 cmh per square meter of house floor space.	
Air inlets ventilation	Check that when the inlets open during minimum ventilation a static pressure of between 19.9 Pa (0.08”) and 29.9 Pa (0.12”) can be maintained.	
	Use survey tape hung from the ceiling to check ventilation. Aim for 1.5m from the peak of the ceiling to lightly flicker at minimum ventilation.	
	During partial house brooding, check air inlets are closed in the non-brooding areas of the house. Leaving the inlets open will reduce the amount of fresh air provided by the fans to the chicks in the brooding area.	
Circulation fan system	Check that the circulation fan system is capable of moving at least 20% of a house's volume each minute.	
	Best practice is to install circulation fans along the centre line of the house as close as possible to the ceiling.	
	Circulation fans are most efficient when installed so they blow air parallel to the ceiling and toward the end walls of the house.	
	Ensure circulation fans are max 45 to 60 cm in diameter and installed 12 to 18 metres on centre.	
Heating system	Explore the use of radiant tube heaters to improve floor heating and reduced energy usage.	
	Explore the use of zone heating where each heater is controlled by a nearby sensor to increase energy efficiency.	
	Review best position for temperature sensors, ideally within: <ul style="list-style-type: none"> • 1.5-3m from the side walls. • 0.3m from end walls/brood curtains. • 2.5m from heating systems or 4.5m radiant tubes. 	
	Heating system offset from set temperature should increase with bird age.	
	Check heating system plumbing and fittings for leakage.	
	Ensure heating system is monitored for Carbon Monoxide production regularly.	

