



ARABLE FARMING

Energy Efficiency Guide



EFFICIENT SYSTEMS. LOWER COSTS. HEALTHIER HERDS AND PLANET.

OVERVIEW

Livestock farms operate year-round with high demands for heating, ventilation, cleaning, and feed processing - all of which require energy. With input costs rising and climate expectations growing, improving energy efficiency and circularity isn't just good practice - it's critical for resilience, animal welfare, and profitability.

This guide helps livestock farms:

- Reduce operational energy costs
- Use land and waste more effectively
- Decarbonise gradually using on-site renewables
- Embed a culture of smart energy management.

Function	Description
Heating and ventilation	Pig/Poultry sheds, lambing areas, youngstock housing
Water Heating	For cleaning milking parlours, pig farrowing, poultry feeders
Milking Parlour Systems	Pumps, milk cooling, compressors, vacuum systems
Feed Systems	Powered augers, mixers, distribution systems
Lighting	Extended lighting for photoperiod control or safety
Manure Handling	Scrapers, pumps, agitators

In many livestock farms, up to 70% of total energy is tied to heating, water and mechanical processes.

SHORT TERM WINS

- **Switch to LED Lighting**

- In sheds, corridors, parlours — especially long-duration or overnight areas
- Add timers and sensors in non-essential zones
- Immediate 50–70% energy reduction vs halogens/fluoros

- **Insulate Hot Water Tanks and Pipes**

- Wrap cylinders and lag key pipe runs to reduce standby losses
- Cuts heating energy by up to 15%

- **Install Plug Timers**

- Use for lighting, feed systems, fans that don't need 24/7 run time
- Ensure systems switch off after last milking or feeding round

- **Fix Drafts and Door Seals**

- Especially in heated youngstock or poultry sheds
- Reduces heater runtime and stabilises internal temps

- **Service and Clean Equipment**

- Milk coolers, ventilation fans, augers, and water heaters all benefit
- Clean fans = more airflow for less power

Most farms can cut 5–10% off annual bills with basic maintenance and controls

LAND USE FOR ENERGY PRODUCTION

SOLAR PV ON SHED ROOFS

- Ideal fit for south-facing, pitched roofs (milking parlours, machinery sheds)
- Power daytime loads like milking systems, lighting, office areas
- Store excess with battery systems or power EVs if used on-site

SOLAR CANOPIES OR RAISED PANELS

- Install over yards, slurry stores or vehicle bays
- Dual-use: generate energy + reduce weather exposure

WIND TURBINES (SITE DEPENDENT)

- Use on open, elevated farms with consistent wind data
- Best value when combined with on-site battery use or consistent load



DECARBONISATION & RENEWABLE ENERGY UTILISATION

Heat Recovery from Milking Systems

- Capture waste heat from compressors/chillers
- Use to pre-heat water for cleaning or animal washing

Biomass Heating (Where Viable)

- Burn woodchip or crop residues in DEFRA-approved units
- Particularly useful for piglet, poultry or calf house heating

Solar Thermal

- Pre-heat water for cleaning systems – low maintenance, great return in summer

Electrify Small Plant or Vehicles

- Convert quads or UTVs to electric
- Switch petrol-powered pressure washers or pumps to electric (if supply allows)

Smart Monitoring

- Sub-meter parlours, sheds, and heating circuits
- Use data to compare usage per head or per litre for benchmarking

CIRCULAR PRACTICES IN AGRICULTURE

Anaerobic Digestion

- Use manure + crop waste to produce biogas for CHP or grid injection
- Digestate = nutrient-rich slurry substitute

Water Recirculation

- Collect and reuse parlour wash-down water for yard cleaning or irrigation

Composting of Bedding

- Convert straw/manure mix into stable compost for fields or sale
- Reduces muck heap size and improves nutrient control

Feed Waste Minimisation

- Use accurate dispensing systems, check calibrations
- Reduce wastage that increases energy-to-feed ratios

Staff Behaviour & Culture

The day-to-day decisions made by staff have a huge impact on farm energy use. Empowering teams is essential for any technical investment to stick.

- Daily shutdown routines – heating off, lights off, pumps checked
- Assign energy champions by area or system (parlour, feed, sheds)
- Train staff to spot energy waste – leaking valves, noisy motors, overheating
- Post visual reminders: “After milking – lights and heaters off”
- Share feedback monthly: “Last month’s savings = 1,200 kWh = £500 saved”

SUMMARY ACTIONS

Area	Action	Benefit
Heating & Hot Water	Insulate tanks, recover heat from chillers	Cuts boiler use, improves efficiency
Lighting	LED conversion + timers in sheds	Big savings with long runtimes
Equipment Maintenance	Clean fans, fix leaks, check augers	Prevents energy drift and breakdowns
Solar PV	Use on shed roofs or yards	Self-supply for daytime loads
Biomass / Solar Thermal	Low-carbon heating in animal housing	Cleaner, cost-effective heat
Circularity	Anaerobic Digestion, composting, water reuse	Turns waste into inputs
Staff Engagement	Daily checks, visual prompts, training	Locks in savings & keeps standards up
Monitoring	Sub-meter key systems for insight	Drives decisions with data



Need Support? Let's Talk

Want to decarbonise your livestock operation?

At PE, we support farmers with audits, system upgrades, grant advice, and practical plans that reduce energy, improve welfare, and protect margins.

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