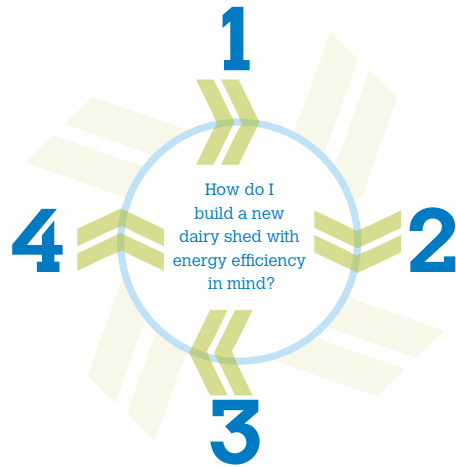


How do I build a new dairy shed with energy efficiency in mind?



1 Plan
to reduce energy use from the start

2 Reduce
the energy needed

3 Pay less
for your energy

4 Offset
the remaining energy needed

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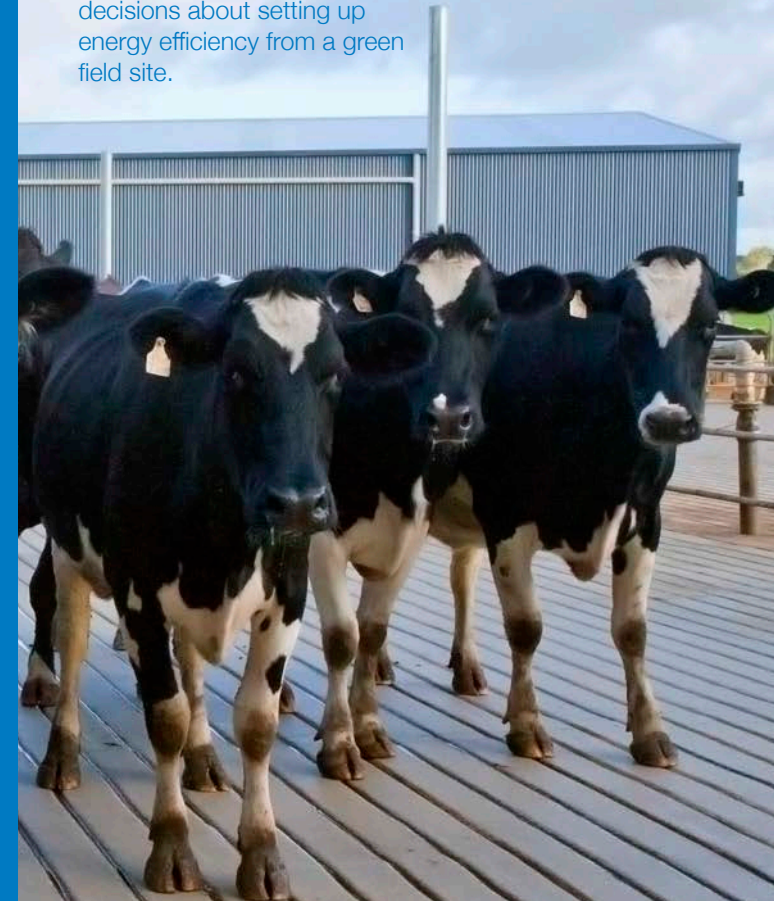
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Dairy Australia Ltd ABN 601 106227
Level 5, IBM Centre
60 City Road Southbank VIC 3006
T + 61 3 9694 3777 F + 61 3 9694 3888
E enquiries@dairyaustralia.com.au
www.dairyaustralia.com.au



How do I build a new dairy shed with energy efficiency in mind?

Helping you to make informed decisions about setting up energy efficiency from a green field site.





There are a number of aspects you need to think about when setting up your dairy to ensure that energy usage is as efficient as possible.

If you set your dairy up with this in mind at the start, you can save a lot of hassle further down the track.

Try to think about immediate energy needs as well as factor in any plans for expansion later on.

Follow the process on the reverse side of this poster to learn how to plan for the optimal energy use in your new dairy.



DairySAT, the environmental self-assessment tool, also has a module on energy use.

Visit: www.dairysat.com.au

How do I build a new dairy shed with energy efficiency in mind?

1. Plan to reduce energy use from the start

Location - Have you selected the best location for your dairy?

Consider:

- Distance to electrical grid connection and road infrastructure.
- Natural fall away from the site to allow effluent flow to ponds without pumping.
- Take advantage of natural aspects for shade in hotter areas and sun in cooler areas.

Construction - Have you optimised dairy shed design to take advantage of the surrounding environment?

Consider:

- The ability to open up the shed structure for natural ventilation in summer and close up for winter heat retention.
- The use of skylights or skylight wall tops to provide natural light.
- Insulation - especially under the roof.
- Heat reflective cladding in warmer climates.

→ No

More information

Location

Refer to the Reduce Reuse Recycle factsheet "getting started".

Construction

Refer to the Reduce Reuse Recycle factsheets "Construction materials" and "Thermal efficiency".

Yes

2. Reduce the energy needed

Equipment - Have you included future energy savings when selecting equipment?

For milk harvesting consider:

- Variable speed drives:
 - they are highly recommended for vacuum pumps to ensure it only runs at the speed it needs to.
 - for milk pumps they can enhance the plate cooler performance and minimise plate cooler water requirements.
- LED lighting both in the shed and for floodlighting.
- Set up machinery to minimise pipe length to reduce the volume of hot water required for each wash.

For milk cooling consider:

- Water sources-use the coolest water possible to run your primary plate cooler.
- Cooling towers if recycling cooling water.
- If naturally cool water isn't available consider a secondary plate cooler with a closed loop mechanically cooled water system.
- Plate coolers-select a large surface area plate cooler to ensure optimum cooling performance with minimum water flow.
- Refrigeration-select a well-balanced system that uses scroll compressors and large evaporator surface area.
- Condensers-ensure that it is very well ventilated for optimum performance.

For cleaning and pumping consider:

- Use gravity where possible.
- Pump to storage tanks in off peak for use of gravity in peak time.
- Install holding capacity for off peak pumping if settling time is required.

- Select pumps to match load, use pressure switches and variable speed drives to match loads.
- Install settling pits for yard effluent to allow pumping in off peak.
- Design rain water bypass gates for yard run off.

For water heating consider:

- Ensure the main hot water cylinder has more than enough volume to hold a full day's requirements.
- Put the hot water cylinders close to the plant it washes.
- Ensure auto wash system is correctly calibrated to minimise water volumes
- Insulate hot water lines.
- Utilise a dedicated hot water pressure cylinder for vat wash.
- Pre-heating options-either a heat pump, a solar system, or an energy recovery system.

For feed systems consider:

- Design to use minimal auger feeds.
- Install crushed feed bin of adequate size to hold several days feed.
- Run mills on the off peak tariff, automate the process if required.

→ No

More information

Milk harvesting

Refer to the Saving energy on Australian dairy farms booklet and the Reduce Reuse Recycle factsheet "Water heating".

Milk cooling

Refer to the Saving energy on Australian dairy farms booklet and the Reduce Reuse Recycle factsheets "Water in the dairy", "Dairy pump motors".

Water heating

Refer to the Saving energy on Australian dairy farms booklet.

Cleaning and pumping

Refer to the Saving energy on Australian dairy farms booklet and the Reduce Reuse Recycle factsheet "Milk cooling".

Yes

3. Pay less for your energy

When organising energy contracts:

- Shop around for the best deal and contract that matches your usage pattern.
- Make sure you understand the offer including complete costs and charges.
- If unsure engage independent advice.

→ No

More information

Comparing energy plans

See page 2 of the Saving energy on dairy farms booklet.

Yes

→ No

More information

Refer to the fact sheet "is renewable energy right for my farm?"

4. Offset the remaining energy needed

When considering if renewable energy is right for your farm think about:

- Current energy efficiency - Only consider renewable energy when the dairy is running energy efficiently.
- Hot water production can be a good option as it directly turns solar energy into hot water which can be more economical than other renewable options. Examples include heat recovery systems, solar hot water units and heatpumps.
- Match solar power and the size of renewable systems to the energy used in power production time.
- Wind and hydro may be an option if your location is suited.

→ Yes

Remember

Consider all requirements of the shed not just energy efficiency, e.g. walking distance, road infrastructure, future expansion, cow and human comfort and accessibility.