Beef property fridge review cuts electricity costs

Background

Proprietors of a black Angus breeding and fattening operation on a small, pastoral property northwest of Roma, Queensland, were using dated refrigeration units to cool and store beef as well as other household perishable goods.

An officer from Queensland Murray-Darling Committee's (QMDC) Energy Efficiency Information Grant project was engaged to conduct an audit of the property's energy use to ascertain whether savings could be achieved.

Recommendation

QMDC inspected the property's existing refrigeration system and discovered the operators were using three, dated refrigeration units with the annual running costs amounting to almost $900.

The recommendation was to retire the units (two of which are pictured below) and replace them with a single, new, energy efficient freezer unit.

Implementation

The three refrigeration units being used to cool and freeze meat, as well as household food and beverage items were over 20 years old and highly inefficient in regard to their energy use.

QMDC installed energy monitors on each of the appliances and determined that the electricity being used accounted for almost 40 per cent of the property's energy consumption at a cost of $896 annually – see table below for the specifics.

- A chest freezer 500 litre >25 years was using 1315kw of electricity at a cost of $394
- An upright freezer 280litre >20 years was using 1200kw of electricity at a cost of $360
- An upright fridge/freezer 380litre >40 years was using 1475kw of electricity at a cost of $442
- **Total annual kw usage for all units = 3990kw**
- **Total annual cost for all units = $896**

Outcome

It was found that the existing units were rarely filled to capacity and one large fridge component of a combined unit was not required at all. Based on this capacity demand, the decision was made to replace all three refrigeration units with one energy efficient upright freezer of an appropriate capacity.

"This Activity received funding from the Department of Industry as part of the Energy Efficiency Information Grants Program. The views expressed herein are not necessarily the views of the Commonwealth of Australia, and the Commonwealth does not accept responsibility for any information or advice contained herein."

Specifications and annual running costs of the replacement upright freezer:

- Star rating 2 ½
- Purchase price of $1707
- Volume - 718 litres
- Energy consumption - 659 kWh/annum
- Payback time of the freezer based on the purchase price and energy saving costs would be 3.07 years.

A comparison was also done between an upright freezer and a chest freezer unit.

It was found that the upright freezer model had a higher star rating, lower purchase price, greater volume and used less energy than a comparable chest freezer.

Other practical advantages of an upright freezer

- Opens like a normal fridge and is easier to load and unload
- Shelves or drawers allow the easy organisation of frozen goods, and
- Most models are frost-free - negating the need to defrost.

Published 1 July 2014

"This Activity received funding from the Department of Industry as part of the Energy Efficiency Information Grants Program. The views expressed herein are not necessarily the views of the Commonwealth of Australia, and the Commonwealth does not accept responsibility for any information or advice contained herein."

Australian Government
Department of Industry
QUEENSLAND MURRAY-DARLING COMMITTEE
TOOWOOMBA SOLAR CENTRE more than just solar