

## **Cool water savings on a plate**

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How Now Gippy Cow, February 2009

Dairy Australia's Saving Water in Dairies information sheets advise that substantial amounts of water are used on farms to pre-cool milk.

Older plate cooler systems generally operate at a ratio of 3:1 of water to milk, while industrial size plate coolers only use 1.5 to 2 times milk volume.

This means that for a farm producing 5,000 litres of milk per milking, up to 15,000 litres of water will be needed to cool milk (for an older industrial plate cooler). That's a lot of water, if it's not recycled!

The biggest water saving opportunity with plate cooler water is to recycle it. Plate cooler water can be continually re-used if the heat is effectively removed such as via a cooling tower. It can also be redirected for other uses, such as warm water for teat washing, into the hot water storage system, or for yard washing.

If recycling of plate cooler water is not an option, it can be used for yard washing, rather than using additional fresh water for yard washing.

The quality of the water passing through the plate cooler is also important to consider. For example, bore water with high levels of aluminium may deposit the aluminium onto the plate cooler surface area, thus reducing the efficiency of the heat exchange in the cooler.

To cool milk effectively a small temperature difference (within 2°C) between incoming water and out flowing milk is necessary. This may mean storing the water used for plate cooling in an underground well, or storage tank to minimise temperature fluctuations.

Another water saving idea is the use of a solenoid (an electronically controlled device) to operate a butterfly valve on the plate cooler's water supply line that turns off water flow when milk is not flowing through the plate cooler. This reduces the amount of water required. It is important to have the right size plate cooler for the milk flow.

Bernie and Bettine Dijs from Binginwarri, have recently faced these challenges and looked for innovative features to help improve water, energy and labour efficiencies.

Bernie explained that changing from a 32 unit herringbone shed, which can take up to three and a half hours per milking at peak, to a new shed, means that they will be reducing the time in the shed, and also water needed for the plate cooler to cool the milk

“The new dairy will also have a two staged plate cooler. The first stage uses bore water and the second stage uses a chilled water-glycol mix. Two stage pre cooling allows the milk to be chilled to six degrees by the time it enters the vat. This process helps with chilling, so the vat will only need a smaller compressor.” said Bernie.

For more information on cooling milk and saving water in the dairy go to [www.dairyaustralia.com.au](http://www.dairyaustralia.com.au).

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Reprinted from: How Now Gippy Cow, February 2009