Green Cleaning™ Systems

low temperature • re-use • energy efficient

Fact Sheet #1. What are Green Cleaning™ systems?

Green Cleaning™ systems are milking machine wash systems that operate at low temperatures, re-use the cleaning solutions and are energy efficient.

They comprise an automated cleaning unit that is capable of capturing, storing and re-using the wash solutions.

They use chemicals that are specifically designed for re-use and to work at lower temperatures (less than 50°C).

Heating of the wash solutions utilises energy from renewable sources such as solar & heat recovery. The storage tanks are well insulated to minimise any heat losses.

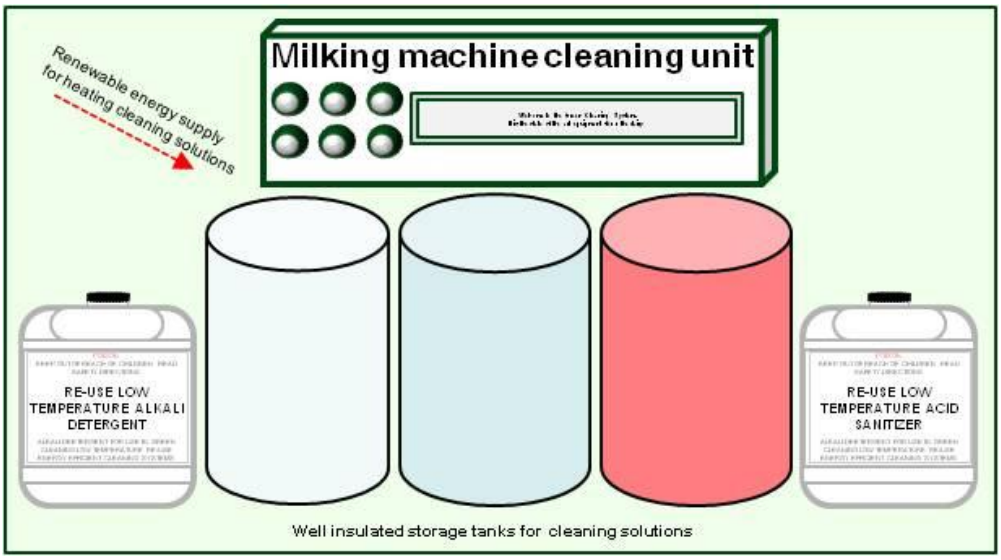

Figure 1: Components of a Green Cleaning™ system

How do they differ from conventional wash systems?

For over 30 years the conventional way of cleaning milking machines in Australia has been a three step process – a first rinse with warm or cold water, a hot detergent wash and final hot sanitising rinse. Although there are some variations between farms, the detergent wash and sanitizing rinse are usually at about 85°C. At the end of each cycle the cleaning solutions are discharged to waste.

Green Cleaning™ systems do not rely on high temperatures for effective cleaning. They re-use the cleaning solutions and utilise renewable energy for heating. The table below highlights some of the differences between conventional and Green Cleaning™ systems.

	Conventional Cleaning System	Green Cleaning™ System
Temperature of cleaning solutions	High	Low
Uses hot water to sanitize	Yes	No
Uses chemicals to sanitize	Sometimes	Yes
Reuse wash solutions	No	Yes
Water use	High	Low
Chemical wash cycles am/pm	Alternating alkali/ acid at each wash	Usually alkali & acid used at every wash or Alternating alkali/acid at each wash
Heat losses	High	Low
Electricity use	High	Low
Detergents used	Conventional	Designed for low temperature, re-use

Why have a Green Cleaning™ system?

A 15-month trial of a Green Cleaning™ system during 2009-2010 showed that huge savings in water and energy could be achieved when compared to the conventional cleaning system.

Some of the results from the trial were:

- Greater than 75% reduction in electricity used for heating water for cleaning milking machines;
- Greater than 65% reduction in electricity costs associated with heating water for cleaning milking machines;
- Around a 60% reduction in water used in cleaning milking machines; and
- A 10-30% reduction in chemical use.

Similar results have since been confirmed in a number of commercial trial sites in 2011-12, using the newer low temperature chemical regimes.

Green Cleaning™ systems deliver consistent cleaning and so maintain good plant hygiene during normal operation. But like any system, they need to be checked to ensure the chemicals and temperatures are within operational limits. Most systems have automated monitoring and alarm systems to make this task easy.

Farms currently using large volumes of hot water to clean their plant will achieve the largest savings in energy, water and chemicals. Medium sized farms (dairies with 25 or more units) could reduce operating costs for cleaning the milking plant by between $3,000 and $7,000 per year.

In addition to operating cost savings, a Green Cleaning™ system is better for the environment. Compared to the conventional wash system, the Green Cleaning™ system reduced emissions of greenhouse gases by 46.6 tCO_2-e annually on the original trial farm alone. That's equivalent to taking around ten cars off Victorian roads each year!

Who supplies Green Cleaning™ systems?

A number of Australia's largest dairy equipment and chemical suppliers have commercialised the technology and are marketing Green Cleaning™ systems in Victoria. Different brands will vary in the way they operate and the features and benefits they offer. Contact your dairy equipment or dairy detergent supplier for more information, or see the list of manufacturers on the Green Cleaning website.

Further information

Contact your local milking machine equipment or dairy detergent supplier for more information. Also refer to the following fact sheets about Green Cleaning™.

Green Cleaning™ Fact Sheet #2. Green Cleaning™ systems – a closer look
Green Cleaning™ Fact Sheet #3. Frequently asked questions
Green Cleaning™ Fact Sheet #4. Economics of Green Cleaning™ systems
Green Cleaning™ Fact Sheet #5. Summary report – On farm trial
Green Cleaning™ Fact Sheet #6. The total costs of milking machine cleaning

More information is available at www.agvetprojects.com.au/greencleaning.