

Environmental Case Study

We are committed to operating in an innovative and environmentally friendly way. As such, we're always looking for new ways to improve our cleaning methods with the aim to reduce both our environmental impact and our waste footprint.

Specifically, we are looking for ways to conserve energy, decrease our use of water resources, and minimize our waste through reduced use of cleaning agents and finding solutions that have less impact on the environment than other contemporary cleaning agents.

Over the past ten years, we have transitioned and successfully substituted the Hot Water Extraction method (HWE), more commonly known as 'steam cleaning' for Low Moisture Cleaning (LMC) using encapsulation cleaning agents.

What is Hot Water Extraction (HWE)?

HWE, often called 'steam cleaning' is a method of carpet and upholstery cleaning. Hot water and cleaning agents are injected to the fibres of a carpet at high pressure and soil is removed with a powerful vacuum. The water is required to be heated anywhere between 50 to 100 degrees Celsius.

The first stage of the process is to apply a pre-spray cleaning agent to the carpet. The cleaning agent is then agitated to activate it. Following this the pre-spray is extracted by the vacuum containing a cleaning agent to restore the pH levels of the carpet with a cleaning wand. In the final stage fans are often used to dry the cleaned area as there is considerably amounts of water left behind.

What is a Low Moisture Cleaning (LMC)?

There are a variety of LMC methods that allow for thorough cleaning of the carpets and leave fibres to dry in two hours or less. We utilise counter rotating brush machines & rotary scrubbers in conjunction with an encapsulation cleaning agent.

How encapsulation works is basically summarised by using counter rotating brush or rotary scrubber machines to agitate an encapsulation cleaning agent into carpet fibres to dissolve soil, the chemical then surrounds each soil particle and crystallizes. The encapsulated soil is released from the fibre and once dry they are easily extracted with routine vacuuming.

As encapsulation chemicals crystallise they do not leave a sticky residue which results in carpet remaining cleaner for longer. Additionally, this method drastically decreases the amount of water used while cleaning, resulting in drying times often between 20 – 60 minutes.

Summary of Low Moisture Cleaning advantages

- Encapsulation method results in a 76% decrease in water usage
- A decrease in power usage and noise pollution
- Increased productivity due to ease and use of machinery
- Decrease of OH&S issues due to less back injuries
- Dry after 20 minutes
- No downtime for the client

Premrest

Environmental benefit for 833CSM:

197,600m² of carpet is cleaned at 833CSD per year.

Table 1. Summary of environmental impact and environmental benefit comparing HWE vs LMC

	Water usage per annum	Waste water disposed per annum	Energy consumed to heat water per annum	Energy consumed to power the cleaning unit per annum	Total energy consumed per annum
LMC	23,712 litres	0 litres	0kW	3,161kW	3,161kW
HWE	98,800 litres	59,280 litres	6,955kW	9,485kW	16,440kW

In summary the encapsulation method used at 833CSM leads to a reduction of:

- Saving of 75,088 litres of fresh water usage per annum
- Saving of 59,280 litres of waste water disposed per annum
- Saving of 13,279kW energy consumed per annum

ANZ Bank 833CSM – Estimated 5 Year environmental and sustainability benefits:

- **Water saving of 375,440 litres**
- **Waste water saving of 296,400 litres**
- **Energy saving of 66,395kW**

Calculations made:

Estimated Water usage per m²:

HWE method water utilized: 50L / 100m² = 0.5L per m²

HWE method waste water disposed: 30L / 100m² = 0.3L per m²

LMC method water utilized: 12L / 100m² = 0.12L per m²

Energy needed to heat water:

Calculation: (Volume in L x 4 x temperature rise in degrees centigrade / 3412)

e.g. 100 litres of water, to be heated 30° degrees (20° to 50°)

$$100L \times 4 \times 30^\circ / 3412 = 3.52kW$$

Energy usage per m²:

Hot Water energy usage: 3.52kW / 100L = 0.0352kW per m²

HWE energy usage: 2.4kW / 50m² hr = 0.048kW per m²

LMC energy usage: 1.12kW / 70m² hr = 0.016kW per m²