



Car wash equipment upgrade cuts energy costs

Background

Mr Magic Car Wash is a car wash and detailing service operating in Roma, Queensland.

The Queensland Murray-Darling Committee (QMDC), through its Energy Efficiency Information Grant Project, was given the opportunity to observe and detail an energy efficient retrofit of the car washing operation after the business changed ownership.

In 2014 the car wash business was sold with the new proprietor opting to replace the automatic car wash with a Hurricane system.

The car wash now offers customers one auto car wash, three manual self-washing bays and three self-service vacuum systems.

The original automatic car wash system was six-years-old and powered by one large motor which ran constantly at a set speed throughout the entire washing process.

This resulted in a high level of energy consumption - regardless of the wash cycle selected.

In the near future, an old air compressor which operates the equipment for the manual bays will also be replaced and lighting will be upgraded.

The business is currently operated by a manager with the assistance of one casual worker.



Implementation

The Hurricane automatic, drive-through wheel wash and chassis wash is controlled by a complex computer management system.

Twelve high pressure jets of water, set at varying angles, are fitted in the Hurricane's lower boom and four jets are set in each of the side booms to ensure complete coverage.



All jets oscillate automatically 40 times a minute through an angle of 90 degrees to give maximum cutting effect. The computer management

system determines which sleep and standby solenoids are activated depending on the wash cycles selected.

For example, on the basic \$16 wash the computer only activates the soap, water jets and spot-free rinse motors.

"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



Implementation...cont'd

Motor driven systems consume approximately 80 per cent of car wash energy. The Hurricane system uses four small, individual, high-efficiency Variable Frequency Drive (VFD) motors which cut in and out at different stages of the wash. VFDs vary the speed of an AC motor by varying the frequency to the motor.

This offers considerable energy saving opportunities by running the system on a slightly slower frequency. For example, reducing a fan's speed by only 10 per cent with a VFD can reduce energy consumption by almost 25 per cent.



Typically, energy savings from VFDs can be sufficient enough to pay back the capitalised cost in a matter of two years depending on the size and run time of the motors.

The business aims to save at least 20 per cent to 30 per cent per year on its energy costs as a result of installing the new equipment and implementing improvements to the existing equipment.

No energy accounts were available from the previous owner so a retrospective energy audit could not be undertaken.

QMDC will complete an audit of the business with its new equipment, in the near future.

Other energy and cost saving improvements implemented include:

- A water storage tank was raised to a higher level so water used for the spot free wash is now being gravity fed from the tank - negating the need for a motor.



- Blow drying equipment was adjusted to use air at the current ambient temperature thereby removing the need for a heating element – a high energy user.
- The hot water system was removed and water pipes were installed under the premises' iron roof. Water for the car wash is now heated naturally by the sun as daytime temperatures in the Roma district range from 20 degrees Celsius in winter to 40 degrees Celsius in summer.

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."