Automated Car Wash Systems

# Introduction to automated car wash systems

With the average person’s busy schedule, finding time to hand wash a car isn’t easy. Hand washing wastes more water on average and getting a thorough clean can be difficult, it’s also very time intensive. Automated car wash systems are more water efficient, clean more effectively, and take far less time than hand washing.

## History

The first car wash started in 1914 in Detroit, America. It was a tunnel with different stations that the car would be pushed through where workers would hand wash each car. In 1946 Thomas Simpson introduced semiautomatic car washes, with overhead sprinklers and an air blower to dry the vehicle. Only 5 years later the first fully automated system was developed which included machine powered soaping, scrubbing, rinsing, and drying. Today, car washes are fully automated using PLC technology. Motors, gantries, pumps, and sensors to fully automate the process.

* 1. **Needs and Usefulness**

Automatic car washes have several important benefits over hand washing. Hand washing is water inefficient, careful control over the amount used is difficult when washing by hand. Automated car washes use solenoid valves and pumps to carefully control the amount of detergent and water used for each wash. The runoff is recycled through in-floor drains, reducing the amount of fresh water being consumed. A heavy emphasis is placed on water usage in the development of car wash systems.

Automatic car washes can clean more thoroughly than hand washing. Brushes are driven by brushless DC motors, the depth and speed of these brushes are controlled by a PLC to thoroughly clean caked on dirt. Combined with the careful control of soap and water the system can thoroughly clean a car in minutes as opposed to hand washing which can take upwards of half an hour. Car washes also use specialised detergent that increase the resilience of the paint on the car.

A major benefit of the automatic system is that it takes no human input or effort to operate. This is especially useful for people who are unable to clean their car without assistance, people with disabilities or the elderly may struggle or be unable to clean their car. Automatic car wash systems enable anyone regardless of ability or experience to perform key maintenance on their car.

# Operating Principle

## Overview

Automated car washes have 4 main stages. First the car is loaded into the bay or onto the conveyor

## Roll Over Systems

## Conveyor Systems

## Touchless Systems

# Companies and Market Survey

# Challenges and Improvements

## Ecological Impact

A major concern with car wash systems

## Water Shortages

## Maintenance

# The future of the System