

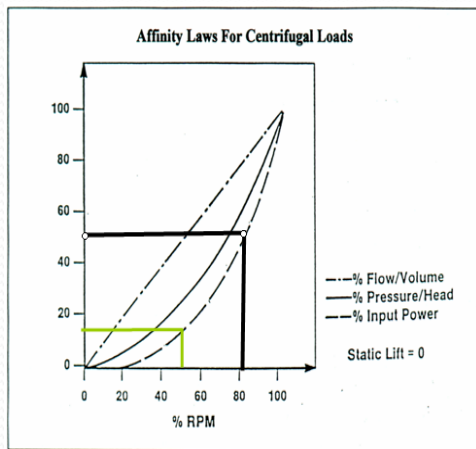
Driving Dramatic Energy Savings

Car Wash Management Integrators (CMI), a System Integrator of Rockwell Automation, dramatically reduces electric bills by implementing automatic speed control for dryers.

The volatile price of energy has changed game for car washing. It is now more important than ever to understand a wash's energy's needs and cut out wasteful energy consumption wherever possible. CMI together with Rockwell Automation has developed a number of solutions that utilize Variable frequency Drives (VFD's) to significantly save energy in today's car wash operation.

Reducing speed a little, reduce Energy a lot!

Energy savings on centrifugal applications (such as dryers), is dictated by *Affinity Laws for Centrifugal loads*.



Simply translated the power required varies as the cube of the speed. Thus a motor running at 80% speed has a 50% energy reduction. A fan running at 50% uses 12.5% of full power.

Additional benefits to Variable Frequency Drives (VFD)

- Reduced voltage starting, less peak demand charges
- Power Factor Alignment to reduce penalties
- Reduced mechanical wear and tear, longer bearing life
- Energy rebates from many local energy companies
- Supports Green initiatives both present and future

VFD Motor Control for Dryers with Auto.Drive™ Saves 30% to 50% in Power Cost Annually

Payback is 24 – 36 months



VFD Motor Control with Auto.Drive™

We control your dryer system with VFDs instead of motor starters. Our Auto.Drive™ VFD control system dynamically changes the dryer motor speed according to user defined settings. We recommend three techniques to alter the speed of the dryer motors to generate dramatic energy savings without degrading quality or customer experience.

SpeedTune™ - Not unlike dialing in your chemicals, speedTune™ dials in the dryers top motor speed to achieve satisfactory drying with the lowest acceptable speed. In most cases, an excellent top package dry is achieved between 83% and 90% motor speed for 25% to 40% electrical savings.

ServiceTune™ - Dryer motor speeds are set to achieve a Good-Better-Best dry to match your wash packages. Common savings range from a nickel per car on the top package to fifteen cents per car on the base package.

TempTune™ - The warmer the temperature, the easier it is to dry the car. We have incorporated a temperature measuring device that automatically adjusts dryer motor speeds based on outside temperature – low temp higher motor speeds, high temp lower motor speeds. We optimize another 3% to 7% savings.

Standard Auto.Drive™ VFD

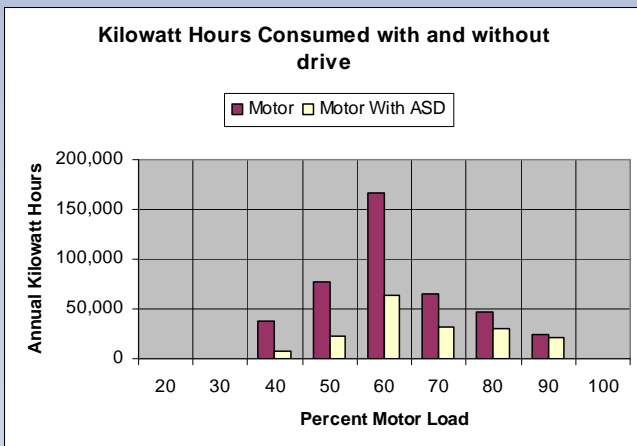
- NEMA 1 Steel enclosure (NEMA 12, 4 and 3R optional)
- Input Circuit Breaker with externally operable handle
- Output Reactor for non-inverter duty motors or longer motor lead lengths and extended motor service life
- Motor Circuit protectors for each dryer motor
- Digital Human Interface module for easy maintenance and trouble shooting
- Designed for both new and retrofit applications

Case Study

Location: Jett Car Wash Dallas Texas

Equipment: 170HP Dryer System, 17 10HP Motors, Single VFD controlling the motors

To demonstrate the energy savings generated utilizing Auto.Drive™, we ran a three day test capturing the power usage profile with a portable power monitor. The dryer setup incorporated a VFD with Speedtune™ only, resulting in an excellent dry at 52.8hz. We then captured data from a three day test using only across the line motor starters to have comparative data. We annualized the data and compared power usage.



Conclusion

Annual usage and a power rate of \$.08 per KWhr

- Without the VFD, the Dryer system used 262,122KW x .08 = \$20,969
- With the VFD and Auto.Drive™ the Dryer system used 164,396KW x .08 = \$13,151
- Savings of \$7,818

As a full-spectrum automation provider, Rockwell automation offers a comprehensive approach to meeting your sustainability objectives in all facets of your operations. Our approach is specifically designed to help you turn sustainability challenges into business advantages.



Car Wash Solutions Built upon World Class Allen Bradley Products

SmartStart with Auto.Drive™ uses Allen Bradley components, the #1 supplier of motor controls in North America. The major components in the Dryer solution are PowerFlex 755 Variable Frequency Drives programmed with Auto.Drive™ to dynamically change motor speeds.

PowerFlex 755

Standard embedded Ethernet, allows for easy connection to remote monitor systems such as WASHMONITOR™

Protective Diagnostics, since the drive has a real time clock, it can be programmed to monitor run times on machine maintenance items to avoid unplanned downtime

DeviceLogix™ embedded control technology that can control drive I/O and manage status onboard the drive.



Dryer VFD s or Complete Motor Control Panel

CMI along with Rockwell Automation can supply all your Car Wash motor control needs. We design custom panels that can include:

- Dryer VFD's - multiple loads on one drive
- Vacuum VFD's - separate enclosure or combined into MCP
- Soft Starters - big loads that do not need VFDs
- Complete Line of Motor Starters - small loads

Benefits of CMI's SmartStart Motor Control Panels

- Lowest Acquisition Cost in the Industry
- Tremendous Energy Savings
- Most Application Experience with VFD for Car Wash
- Lower Installation Cost Bringing Power to One Panel
- Allen Bradley Components and Rockwell Support
- Car Wash Automation Experts

Implementation and Service Network

CMI has developed a network of world class independent Car Wash Consultants across North America that help us identify your needs, develop solutions specifically for you and implement the integration. To find a consultant near you, contact us toll free at 866.868.5312 or by email info@carwashcmi.com