



# AT THE TRUCK WASH

CLEAN WATER PROTECTS A ROLLING INVESTMENT



SPECIAL to CONTRACTOR



◀ The chemical injections system for gantry chemical application.

A tractor trailer is more than just a large piece of on-road equipment. It's a major investment, foundation to a livelihood and a home away from home. Collectively, big rigs are the engine that keeps industries and economies in motion.

But none of that comes cheap. A new truck and trailer can cost well over a quarter-million dollars, and that's not including a lot of chrome and after-market equipment so often added to personalize vehicles. After all, plenty of truckers find ways to make their million-mile rolling office as comfortable as possible.

The miles are a given, so long as the truck is properly maintained, and clean. The challenge of removing snow, ice, mud and salt gave rise to the modern, roadside truck wash. Washing big rigs — from over-the-highway trucks to off-road energy industry trucks — is infinitely more involved than washing cars. They're bigger, sure, but they also come in a wide variety of sizes and shapes.

## Water, the lifeblood of everything

"Whether you're washing an oil field truck covered in 5,000 pounds of mud or you're cleaning a

chromed-out road truck, water is a huge consideration," said Jyrki Koro, president of Truck Wash Technologies, Inc., in Sault Ste. Marie, Ontario. "It takes a lot of water, and it needs to be processed accordingly."

With 21 years in the truck wash industry, Koro started the company in 1999, with a vision to develop the commercial, for-profit truck wash that has eluded other manufacturers to date. Designing superior automation and water treatment technology that can adapt to a very diverse trucking industry was key, but equally important is minimizing capital costs related to building and land, and developing a service and operational standard, which allows the business model to work.

"Until recently, little has changed in the truck wash industry in the past 40 years or so," said Koro. "We aim to provide a fast and affordable public wash that offers value and consistency while delivering what every owner wants: a clean and shiny truck."

Their unique, innovative wash system provides an automated cleaning rivalled only by a long, labor-intensive manual wash, but utilizing advanced technology that delivers high wash quality with minimal





▼ The equipment for a two-bay truck wash.



▼ The master control panel for the wash.



▼ The top "profiler" and two side washers.



◀ The side of the gantry features both high-volume/high-pressure spray heads and low pressure spray heads.

labor costs.

For the portion of the wash when cleaning chemicals are used and also on the final, spot-free rinse, conditioned fresh water is used. For all other facets of the washing process, large amounts of recycled water are used.

"During the design of our truck wash systems, we researched the trucking industry to determine the needs of the end user and tailored a system using innovative designs and vendors to complement the application with quality components," said Koro. Though he's been designing truck wash systems for 16 years, the current model has been seven years in the making.

"The one key supplier we kept coming back to in the design phase was Watts. The company not only offered multiple systems that we needed, but they make equipment that can handle the volume of water we need," added Koro.

The fresh water portion of the system includes filtration, scale prevention and reverse osmosis for uncompromising purity.

## Two types of fresh water

As fresh water comes into the facility from a well or municipal supplies, it's treated for scale prevention either by TAC (template-assisted crystallization) technology or traditional water softener with brine tank. Using both technologies provides a more cost-effective approach to treating all incoming water to a degree that suits its application in the wash process.

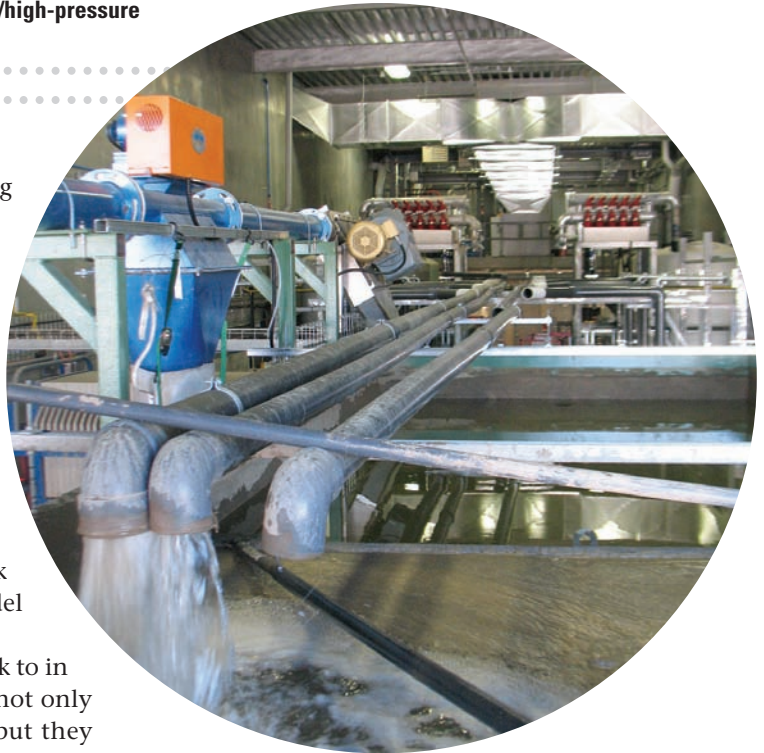
If used for high-pressure rinsing applications, water first goes through a 100 GPM Watts OneFlow anti-scale system to treat water before entering a large storage tank for use.

This chemical-free, TAC anti-scale technology bonds calcium ions together so that they're inert, and won't build up on surfaces downstream. It's used chiefly to reduce the negative effects of water hardness (calcium carbonate) in plumbing systems, appliances, valves and other components.

After TAC treatment, water is used in the high-pressure, fresh water rinsing of the vehicle. For fresh water used during the chemical application process, a different anti-scale approach is used.

"Because calcium and magnesium rapidly absorb the cleaning chemicals and render them less effective, we need to be absolutely sure that all minerals are removed from the water stream for chemical application," said Koro. "TAC reduces scale buildup, but the ions are still in the water. So, a commercial Watts water softener conditions the water used in the chemical application. This amounts to roughly 30 gallons per truck wash."

Fresh water supplied to the softener passes first through a large Watts carbon filter that features automatic backwashing. The activated carbon media in the large tank is generally used for dechlorination,



▲ Solids and water enter a hopper.

removal of tastes, odors and as pretreatment for reverse osmosis systems. Chlorine causes destruction of reverse osmosis membranes and polymer based ion exchange resins used in water softeners.

A spot-free, final rinse is the very last phase of a truck wash. For this, water is treated by a large reverse osmosis system. A 4,400 GPD (gallon per day) reverse osmosis system provides ample water volume. The RO removes any remnant of minerals that could otherwise create powdery looking spots on the vehicle surface after drying.

Watts offers this Deluxe Commercial RO system in three sizes for this application, from 2,200 to 6,600 GPD. This all-in one package includes everything from a stand-alone frame and pre-filter to centrifugal pump and monitoring equipment. It's recommended for greenhouses, car washes and as feed-water treatment for large boiler systems.

## Sediment removal

The freshwater purification components of the truck wash system insure we minimize chemical costs and produce a clean truck with no streaks or spotting. Nonetheless, recycled water does the heavy lifting.

Each Truck Wash Technologies system uses recycled water for the bulk of the washing process. Heavily-soiled trucks can require as much as 12,000 gallons of recycled water, but never less than 2,000.

"We have off-road trucks come in with so much mud that it actually reduces the amount of cargo they can legally haul," said Koro. "Needless to say, this cuts into their paycheck."

As the system's moving gantry makes pass after pass over the vehicle, tons of sediment drains into an in-floor catchment system. A series of screens and settlement tanks strain solids from the liquid.

A cluster of high-volume hydro cyclones manufactured by Bailey-Parks Urethane provides a second level of water filtration, spinning fine dirt out of the



Solids are discharged into a sludge bunker to be removed. ▶

stream in a centrifuge. Finally, a liquid polymer is injected into the water. This substance binds any remaining fine solids together so that they settle out more quickly. All sediment is continuously removed from the wash water and dewatered for ease of disposal.

## On down the road

A Truck Wash Technologies installation will service upwards of 1,000

trucks each month. As drivers wait 15 or 20 minutes for their rig to come out sparkling clean, they're oblivious to the hi-tech processes going on in the background.

Truck Wash Technologies currently has two truck washes in Canada, and a third under construction in Tacoma, Washington. The company is slowly watching trends in the industry shift favorably.

"We have the potential to change the truck washing landscape in North America," said Koro. "But being the first mover in a large, untapped market, it's imperative we remain involved in all facets of the truck wash business to maximize the potential for our customers' success. The superior technologies we've developed and assembled speak for themselves." **C**



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