Driving Reliability in Vehicle Manufacturing

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The scale of India's automotive challenge

India is one of the world's fastest-growing automotive markets. The country produced more than 6 million vehicles in 2024[1], up from 5.8 million the previous year[2], according to the OICA, and ranks third in global sales, behind only China and the United States.

Commercial vehicles accounted for over one million of these units, with a handful of manufacturers driving much of this growth. And Wanner's seal-less pump technology is helping one of India's largest producers of buses and trucks improve production efficiency at a site where thousands of precision components are processed every day.

In high-volume environments, efficiency is critical. Even the smallest disruption can ripple through production lines, causing significant delays and revenue losses. A 2024 Siemens report, *The True Cost of Downtime*, estimates that automotive manufacturers can lose as much as US$2.3 million for every hour of unplanned downtime[3]. With margins under pressure and global competition intensifying, reliability is essential.

Why component washing is critical

Cleanliness is vital in automotive manufacturing. Before painting, coating or assembly, machined, cast, and stamped components must be free from oils, residues and microscopic dust. Even minute traces of silica or sludge can compromise coatings, adhesives and surface finishes leading to corrosion and reduced product life.

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[1] OICA, Production Statistics 2024
[2] OICA, Production Statistics 2023
[3] Siemens, SENSEYE PREDICTIVE MAINTENANCE, The True Cost of Downtime 2024

At the heart of this process are pumps, which deliver cleaning solutions at a consistent pressure to remove contaminants. When pumps fail, wash quality declines, parts may need reworking or scrapping and downstream operations are disrupted. For manufacturers producing thousands of components each day, pump reliability is inseparable from overall production reliability.

The challenge: abrasive liquids at high temperatures

This plant's component washing line uses a water-based detergent (Houghto-Clean 130T), commonly used in metalworking applications, and circulated at 121°C. Over time, the liquid becomes highly abrasive, carrying coarse sand, fine silica and sludge. The system requires pumps to deliver 50 litres per minute at 100 bar – demanding conditions that placed extreme stress on the plunger pumps originally installed in the Craftsman Automation cleaning machine.

The previous plunger pumps struggled to cope with the abrasive, high-temperature fluid. Seal failure was the recurring weak point. Every three months or so, dynamic seals would wear out, causing leakage, pressure loss and unplanned stoppages.

Engineers were diverted from higher-value work, production schedules were threatened, and quality was compromised. Each replacement cycle – including seals and maintenance visits – cost around USD 900, not to mention the cost of downtime and lost production affecting overall productivity.

The cumulative impact of these recurring issues became both operationally disruptive and commercially unsustainable. In addition, the leaking pumps posed a health and safety risk for operatives by creating potential slip hazards.

For commercial vehicle manufacturers operating in a highly competitive market, reputation rests on reliability, performance, and the highest safety standards, so this production disruption could not continue.

Rethinking the approach: eliminating seals entirely

Most conventional pump designs depend on dynamic seals to contain liquid under pressure. Yet industry studies show that seal failures account for up to 70% of pump failures[4]. Once seals deteriorate, leaks develop, efficiency drops, and maintenance demands escalate.

[4] Mordor Intelligence, Mechanical Seals Market Size & Share Analysis - Growth Trends and Forecast (2025-2030)

Our customer recognised that the vulnerability lay not in maintenance practice but in the seals themselves. By moving to a seal-less design, the company could eliminate its single most frequent point of failure. That principle underpins the Wanner® technology.

We recommended installing a Wanner Hydra-Cell Pro® G15 pump configured to deliver 50 litres per minute at 100 bar. Instead of seals, the pumped liquid is contained by hydraulically balanced diaphragms, enabling the pump to handle abrasive fines, sludge and high-temperature fluid without wearing through sealing surfaces.

This decision was shaped not only by the need for durability but also by wider operational goals. The Wanner G15 offers consistent, pulse-free pressure at 100 bar, ensuring stable wash quality, while reduced power consumption supports the company's sustainability targets.

Its seal-less design eliminates leakage, protecting both equipment and shop floors, and its quiet operation improved conditions for operators. Just as importantly, it needs minimal maintenance, breaking the cycle of repetitive failures and costly downtime.

Tangible results

Since its installation in April 2023, the Wanner Hydra-Cell Pro pump has ended the recurring seal failures that plagued the plant's washing process. Seal-related downtime has been eliminated, maintenance interventions dramatically reduced, and leakage stopped.

The benefits extend beyond the pump room. With reliable high-pressure washing, contamination risk has been reduced, parts flow more smoothly into assembly and production stability has improved. Freed from reactive repair work, technicians can now focus on higher-value activities, supporting efficiency across the plant.

Broader lessons for industry

Many industrial processes rely on pumps operating in harsh conditions, and seals often represent the weakest point. According to the 2024 Siemens report, the world's top 500 companies face an estimated USD1.4 trillion in annual losses from unplanned downtime, around 11% of total revenues[5], with equipment failure

[5] Siemens, SENSEYE PREDICTIVE MAINTENANCE, The True Cost of Downtime 2024

accounting for 37% of those incidents[6]. Pumps are frequently among the top contributors.

By adopting technologies designed to eliminate common points of failure, manufacturers can strengthen resilience, protect production schedules and reduce safety risks.

These lessons extend beyond the automotive industry to sectors such as aerospace, food and beverage, metal finishing, power generation, mining and wastewater treatment – industries where abrasive or contaminated fluids must be pumped reliably under pressure.

A balanced view: reliability and sustainability

For suppliers, the aim is not just to deliver equipment, but to support customers in achieving stability and sustainability across operations. That means considering lifecycle factors such as maintenance demands, energy use and safety risks, not just upfront specification.

Seal-less pumping technology is one proven way of addressing recurring vulnerabilities, but the broader message is about challenging assumptions. Rather than accepting breakdowns as inevitable, manufacturers should rethink design choices to support efficiency, safety and long-term resilience.

Looking ahead

As India and other fast-growing markets continue to thrive, demand for reliable, high-volume vehicle production will only intensify. At the same time, sustainability and energy efficiency are reshaping priorities worldwide.

In this instance, the decision to move away from conventional sealed pumps has already delivered measurable benefits. For the wider manufacturing industry, it demonstrates how tackling vulnerabilities at their source can transform not just one process step, but the reliability of an entire production line.

For more information visit https://wannerpumps.com.

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[6] ZipDo, Manufacturing Downtime Statistics 2025

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