



STEP's Maintenance Department helps to reduce non-productive time (NPT) by focusing on predictive and preventative maintenance techniques and utilizing root cause and post failure strategies.

PREDICTIVE AND PREVENTATIVE MAINTENANCE:

To maintain the quality of a fleet of equipment, constant observation and study of the assets must be conducted. This is called predictive maintenance (PdM). PdM includes using thermal imaging, vibration analyses or oil sampling to check trends and habits. Preventative maintenance (PM) is when you replace, lubricate or adjust items to keep them performing, or remove them before failure (example - regular oil and filter changes).

By using a predictive versus reactive maintenance approach, STEP's non-productive time (NPT) is kept to a minimum and as such, clients are not affected by equipment downtimes. STEP's PM program is based on a pre-emptive philosophy with a heavy focus on predictive testing. The program is built to capture new or learned maintenance concerns and encourages maintenance professionals to diagnose problems, not just continuously replace parts and expect a different result.

Below is a comparison of industry standards versus STEP in relation to the number of oil changes and barrels of oil used (or saved) on a selection of twin pumper CAT engines, twin pumper tractor engines and coiled tubing units. At STEP, oil sample reports are examined to gauge the *need* to replace the oil. The industry standard replaces the oil at 250 hours, regardless of whether the oil really needs to be changed.

SUMMARY	BASED ON THE INDUSTRY	ACTUAL AT STEP*
Oil changes	1,747	136
Liters used	69,867	5,440
US Gallons used	18,457	1,437
Barrels	340	22
Cost**	\$244,534 CDN / 178,308 USD	\$19,040 CDN / \$13,883 USD

*Based on sample of STEP fleet including 67 engines.

**Costs calculated using 15W40 engine oil at \$3.50 CDN per liter and US exchange rate as of Feb-16.

"One of STEP's major advantages over the competition is the maintenance department. The maintenance team has an excellent response time and is always available when needed. Even when things are going smoothly, they make regular site visits to see how the equipment is running and do regular predictive maintenance tests. The team's root cause analysis procedure is like nothing else I've seen in the industry."

- STEP Site Manager

WHAT PEOPLE ARE SAYING:

"Our relationship with STEP has forced us to bring a greater standard of service and reliability in to our business. In partnership with STEP, new solutions and out-of-the-box thinking has increased our level of service and dependability and all our customers have benefited from it. We've brought to the table state-of-the-art fluid power designs and services and STEP has taught us how to make them work."

- Robert McQuinn, Wajax Industrial Components

CBVL Robotics' Take on STEP's Core Values:

Strategic and Safe: STEP places an emphasis on design, not cost conscious corner cutting. Safety is always paramount.

Team and Trust: STEP builds relationships with key vendors and works with all stakeholders to insure "best in industry" technology.

Exploration and Engagement: STEP diligently reviews root cause of all failures and ensures buy-in from top management to field personnel.

Progressive and Prevention: STEP embraces new technologies and implements PM programs to keep equipment reliable and operational.

- Jamie Leitch, CBVL Robotics

WHY WE'RE DIFFERENT:



Our Culture

Other companies cannot compete in this type of predictive environment because their culture does not support it. STEP's culture empowers maintenance professionals to dig deeper and ask "why did this happen?" to help mitigate future problems. Many of our competitors perform maintenance tasks or programs because "it's the way its always been done"; STEP's maintenance professionals are encouraged to study and understand a potential negative outcome and implement measures to mitigate that result.

Our Philosophy

STEP's focus has always been on predictive maintenance (PdM) – the look, listen, feel and measure of equipment. PdM is about watching for the random failures, which account for 80 per cent of all equipment failures. The person closest to the asset, generally the field professional, is the first to pick up on these signs. This is why inspections are completed every shift and weekly on the majority of STEP's critical equipment.

Further measurements that take more time and attention such as oil samples and thermal imagery are done exclusively by maintenance professionals. Traditionally in the industry, predicative measurements are not taken until *after* a device has failed, and replacing the faulty component with a new part is generally the solution – but nothing could be more wrong. A new part does not guarantee a successful machine; rather it's the ongoing PdM program that will bring attention to the root of the problem.

The competition's equipment gets older and wears out; STEP's gets better. Although natural attrition is inevitable when it comes to the fleet, STEP's maintenance team is proud of the fact that the equipment actually gets better as it ages, as they discover root causes for failure and use what they learn to their advantage. STEP's maintenance team works with the Original Equipment Manufacturer (OEM) to improve the reliability of the equipment. Through collaborative efforts, STEP and the OEM continue to adjust and add elements necessary to perform regular predictive and preventative maintenance checks. Examples include, but are not limited to, added site glass which allows for easy viewing of the oil without having to crawl under the unit; gauges have been installed so predictive measures can be taken to ensure the pumps are working and oil pressure is adequate; and lights have been added to the COMMAND CENTER to indicate heat, oil levels and pressure. This continuous sharing of information not only improves the reliability of STEP's equipment, but the service industry as a whole.

Our Language

STEP uses the correct terminology and distinguishes when equipment is down for failures, repairs or upgrades, compared to saying equipment is simply down for maintenance. This terminology is very different from what is generally seen in the industry. Typically, when equipment in the industry is shut down, it spans several days to catch up on overdue preventative maintenance such as oil and filter changes, and other broken items (repairs). STEP does not view repair and maintenance as one in the same; rather it is divided into distinct categories so the focus can be on keeping an asset producing to the expected potential.

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