ARE YOUR MAINTENANCE COSTS IN LINE?

Comparing costs across the industry can help a business know where it stands.

By Preston Ingalls

When Thomas Edison was working to develop a practical light bulb filament, he made nearly 5,000 attempts at identifying the proper material and conditions. Often this anecdote is used to demonstrate the perseverance of 4,999 failures to one success. However, Edison probably would have eagerly bypassed the struggle if he were given the proper filament material and understood the need for a vacuum. After all, his greatest claim to fame was not his inventive genius, but his ability to commercialize his inventions. His perseverance through trial and error netted him enormous financial returns and fame.

With modern-day contractors' taxing schedules, constant buzzing Blackberrys and days that fly by like traffic on the Autobahn, there is no time for 4,999 trials. It pays to find out how others have been successful in reducing the costs of maintaining their equipment.

Why is an efficient maintenance system important? After all, operational costs are far greater than maintenance costs, making maintenance a lower priority when looking at opportunities to reduce expenses. However, hidden costs can often be avoided with proper maintenance.

What may seem like searching for pennies on a beach can be more like finding gold in an underground mine. The latter is a bit hidden away and requires a little effort, but the returns can be extremely abundant.

UNDERSTANDING COSTS TO REDUCE THEM

When looking at fleet or plant facility costs, there are two big buckets: operating expenses (OPEX) and capital expenses (CAPEX). OPEX focuses more on the expenses to keep the equipment in a functional condition, while CAPEX focuses on the replacement or addition of equipment.

A contractor could start cutting costs by reducing head count, delaying preventive maintenance and so forth. However, with that approach the contractor cannot be sure of the extent of the final damage or the length of time it will take to recover. The one thing that is certain is that there will be damage.

Most managers are not very clear as to how much they should be spending to maintain their assets. After all, how does one determine if maintenance costs are too high or too low? Fortunately, there are benchmarks that can answer that question.

When examining maintenance costs, contractors should exclude fuel (a production consumable) and depreciation (a feature of taxation, not upkeep). They should also look at all maintenance costs (overtime included), contractor costs (in support of equipment care), and materials and parts. They need to add on any overhead costs (shop expense, management salaries and benefits, etc.).

Once the entire costs have been calculated (not including capital costs, such as new equipment or facility additions, which would fall under CAPEX), a company can compare its costs to that of others with similar operations.

BENCHMARKS FOR MAINTENANCE COSTS

The most common tool for this is the maintenance cost as a percent of estimated replacement value (ERV). ERV is a standard metric across most industries to calibrate a company's maintenance cost against a common reference point—asset value. The goal is to examine what it would cost to replace equipment at today's prices—not depreciated value or original investment value.

If something catastrophic happened to the equipment, what would it cost to replace it, in kind, at this year's price? If the company is insured, that is a good starting place. It is important to remember that the depreciated value of a D6 dozer or a portable crusher may not be the same as the market value to purchase one.

Table 1 illustrates a good comparison based on fleet replacement value (FRV). It shows costs across the industry (heavy construction equipment); those of Best in Class in that industry; and those that are World Class, across many industries.

For an example that relates Table 1 to actual costs, consider a company that has an FRV of $20 million. Others in the industry would be spending, on average, about $2.6 million a year on maintenance (13.6 percent of ERV). However, if the company has been running a fairly efficient operation and is closer to Best in Class, it is spending closer to $1 million a year, netting a savings of $1.6 million to the bottom line compared to the others in the industry. Even better, if it has been successful at implementing World Class maintenance practices, it should be spending no more than $500,000 per year maintaining that $20-million fleet, a net savings of more than $2 million per year, straight to the bottom line.

ABOUT the AUTHOR

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Table 1

BENCHMARK DATA

➤ Maintenance Cost	% ERV	% ERV	% ERV
FRV > $25 million	11.6%		
FRV $1.1–$25 mil	13.1%	5.0%	< 2.5%
FRV < $1.1 million	9.3%		

Industry averages are from a survey conducted by "Construction Equipment" magazine and Construction Financial Managers Association (CFMA) in April 2005. Best in Class and World Class numbers are from TBR Strategies LLC Industry Maintenance Benchmark Database (IMBD).

Another common benchmark metric is the maintenance cost as a percent of revenue. This is a good reference, but is not as solid as the ERV number. There is more variation in this metric due to those things that affect revenue, but it still can serve as a reference number for calibrating costs.

Table 2 shows that $20-million fleet would cost about 5 percent of the company's revenue, as an industry average, which should be somewhere around $50 million (in revenue) if the company was spending relative to the ERV number given above ($2.6 million). But, if it was Best in Class, the actual maintenance costs would be closer to $500,000 (the same as the ERV metric).

Table 2

BENCHMARK DATA

➤ Maintenance Cost	% of Revenue	% of Revenue	% of Revenue
FRV > $25 million	8.4%		
FRV $1.1–$25 mil	5.0%	1.0%	< 3.0%
FRV < $1.1 million	2.0%		

Industry averages are from a survey conducted by "Construction Equipment" magazine and Construction Financial Managers Association (CFMA) in April 2005. Best in Class and World Class numbers are from TBR Strategies LLC Industry Maintenance Benchmark Database (IMBD).

The Best in Class numbers are actually lower than the World Class numbers because various companies in the construction industry have achieved these numbers after a few years of effort. Think of it like this: They dug deeper in the mines than the others would and found the hidden veins of gold.

The important thing is to plot a course, knowing both where the company is going and how to get there. It pays—sometimes more than expected—to learn from others how to effectively reduce maintenance costs. ◆

CLEAN UP YOUR ACT:
8 WAYS TO CONTROL FUEL-SYSTEM CONTAMINATION

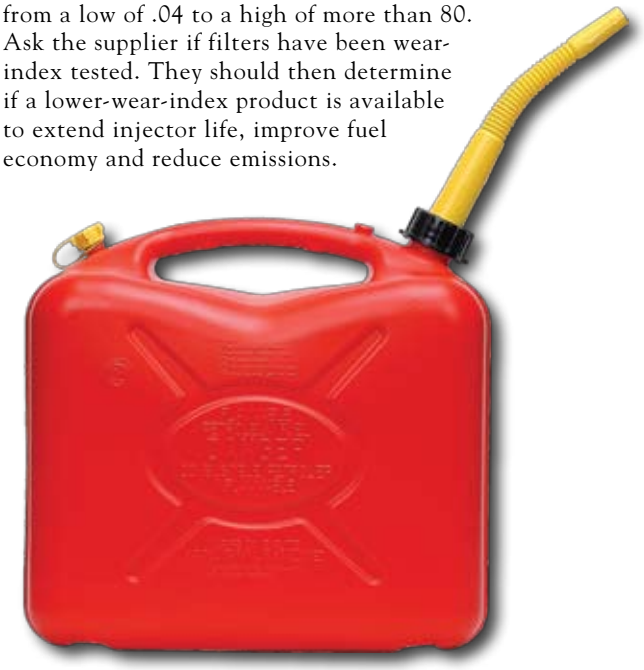
Fuel-system contamination can cause serious problems in any diesel engine. But today's high-performance, low-emissions models—with their high injection pressures and extremely tight tolerances—are especially vulnerable to contaminants. It is in a contractor's best interest to control fuel-system contamination. Here are eight things that will help clean up your act:

- **Know the numbers.** Contaminants are measured in units called microns. One micron is equivalent to one-millionth of a meter. A grain of salt is about 100 microns in diameter, and a human hair is around 80. Even a 5-micron particle can damage a fuel system.

  Most fuel filters are designed to trap particles ranging in size from 4 to 15 microns. For maximum protection, select a filter that is effective against an absolute rating of 4-micron and larger particles.
- **Beware of ambiguous micron ratings.** Some filter manufacturers give their products "nominal" and "absolute" micron ratings. These ratings are normally based on a laboratory analysis called the multipass test. In multipass testing, a concentrated stream of artificial contaminants is added to an oil sample that flows through a testing unit at a constant rate. The oil moves through a filter, which is progressively loaded until a specified pressure drop is reached. During the test, particles entering and exiting the filter are sized and counted. Then two metrics—called Beta ratios—are calculated. The first Beta ratio compares the number of particles 5 microns and larger upstream of the filter, versus the number downstream. The second compares particles 15 microns and larger. Some manufacturers use these ratios to define their products' so-called nominal and absolute ratings.

  The truth is, ratings based on multipass test data are not very meaningful. That's because the test, though useful for product development, is not an ideal performance evaluation tool. It uses oil instead of fuel. It does not simulate real-world conditions, such as vibration and fuel-pump pulsation. And it reports average filter efficiency, downplaying the impact that even a few contaminants can have on fuel-system components.

  Given the limitations of multipass testing, it is a mistake to place too much emphasis on micron ratings. When comparing filters, don't be misled by the rating system. Focus instead on product features, structural integrity and consistency of quality.
- **Find out about the wear index.** A better filter testing process called wear indexing was developed several years ago by an independent testing company at the request of a filter industry consortium. Wear indexing uses low-sulfur fuel as a test fluid. It also incorporates vibration and pulsation into the analysis, so it provides results that are more credible than those obtained through multipass testing. A filter's wear index is based on a correlation between the amount of physical damage observed on the injectors and the number of 6-, 10- and 14-micron particles present in the fuel. A filter with a higher wear index provides less protection than one with a lower number. Independent researchers have tested a variety of filtration products to measure their wear indices. Results vary widely from a low of .04 to a high of more than 80. Ask the supplier if filters have been wear-index tested. They should then determine if a lower-wear-index product is available to extend injector life, improve fuel economy and reduce emissions.



- **Invest in premium quality filtration products.** There are dozens of fuel filters on the market in a variety of price ranges. It pays to take the time to compare filters on a feature-by-feature basis. Look for one with high-efficiency media, excellent pleat stability and spacing, a minimum amount of metallic components, exceptional sealing capabilities, and overall structural integrity. The water separator, like the fuel filter, should be designed for