



Table of Contents

Introduction	4
Know What You Own	5
Monitor How Often Your Machines Are Used	6
Properly Maintain Your Machines	7
Schedule the Assets You Need When You Need Them	8
Monitor Your Fuel Consumption	9
Know How Much Your Assets Are Earning	10
Inspect Your Equipment Before Use for Safe Performance	11
Conclusion	12



As construction equipment is one of a contractor's highest cost centers, being cost conscious on your owning and operating costs is critical for equipment owners and managers. All contractors calculate the total cost of ownership (TCO) a little bit differently, with various expenses to consider.

This paper covers how certain features in a Construction Equipment Management software can help gauge and then optimize your TCO.

We observed historical cost data from one contractor over a three-year period to back into an average TCO for a fleet worth roughly \$15 million. This was done as part of this contractor's investigation on how to create goals and establish KPIs integrating a construction equipment management system into their equipment fleet management processes. This customer's average TCO for the period studied turned out to be \$8.7M, which is more than half the value of their entire fleet.

We then analyzed how leveraging the features and functionalities within an equipment fleet management software could directly impact a variety of the cost centers that this contractor uses when calculating their TCO. The following are some examples of how certain equipment management software insights and features directly tie to their TCO and can likely relate to yours.

Know What You Own

Knowing what you have saves you an incredible amount of time and money.

It allows you stay on top of the assets you already own, to be able to produce the right asset for your job, to better utilize, and to get the real value out of your assets that you've already purchased. Being able to do this successfully with an equipment fleet management software helps

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you optimize your assets for the real reasons you added them to your fleet in the first place; helps you improve productivity for your team which contributes to a labor cost savings; and helps you save on rental costs. Typically, the cost to rent a piece of equipment is \$40-\$60 per \$1,000 that the item costs. That means that renting a \$5,000 tool averages about \$200 or \$300 each month, and a \$100,000 machine could cost as much as \$6,000 a month. By utilizing an asset you already have, you can eliminate these unnecessary rental costs.

The subject contractor spent a total of \$8.1M on equipment rentals over a three-year period studied on equipment rentals (an average of \$2.7M per year), and that's already on top of a \$15M fleet of owned equipment. They are using an equipment management system to better identify and utilize their owned assets. Working more efficiently with insights from their software, over the next few years this **can save them at least \$270,000 a year.**

TCO Takeaway: Although some contractors strategically choose to rent rather than own necessary equipment, for the companies that do own and maintain the bulk of the assets needed for building their projects, knowing what you have, where it is and when it is available will help you to better utilize and recognize an ROI on your existing assets, while minimizing your unnecessary rental costs.

Related Features: Asset Library, Sites, Geofences, Resource Management

Monitor How Often Your Machines Are Used

It's important to know the anticipated life of your machines so you can maximize their useful life while you own them.

When you integrate an equipment fleet management system with telematics into your equipment tracking and management process, you can use the real telematic data from your machines to check your utilization and measure against benchmarks that you set for each piece of equipment.

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When machines are underutilized but being hoarded on a jobsite, you can increase their uptime by relocating them to another jobsite where they are needed a scheduling tool aids in this visibility and efficiency – see the Scheduling section below.

By monitoring utilization, you can determine whether a project team truly needs another machine onsite or if the resources they have are sufficient to complete their required scopes. Our subject contractor had a Superintendent ask for another 100,000-pound excavator for an operation, which would be their fourth similar machine onsite. By looking at the utilization of the current excavators on the project, it was determined that they were underutilized and the project plan was able to be adjusted to more efficiently move the existing machines around site as necessary. **The estimated savings for using the available resources vs. outsourcing a rental excavator is \$12,000 per month.**

When machines are underutilized and truly not needed, it is more cost effective to get them out of your fleet and off your balance sheet. Eliminating just 5% of the underutilized assets in our subject contractor's fleet could **save them \$750k in carrying costs.** That savings comes off your TCO and bottom line and could be reinvested back into the fleet with a more efficient model of a machine they actually need.

TCO Takeaway: Knowing your accurate utilization can help you better estimate utilization benchmarks and thresholds for other machines and new machines you add to your fleet to help maximize their useful life and earn you an ROI based on your ownership and operating costs. Knowing your true utilization helps you maintain the size of your fleet appropriate to your operational needs.

Related Features: Utilization, Resource Management, Asset Library

Properly Maintain Your Machines

It's obvious that repairs and routine maintenance amount to a high percentage of your owning and operating costs.

Effective maintenance extends your asset's lifespan, improves performance and reliability, increases your ROI on your owned assets and helps reduce or slow depreciation. Automated maintenance customized for your specific fleet by your team using your equipment management system keeps preventive maintenance automated based on your defined triggers, so maintenance needs are always visible

and scheduled for your mechanics. With efficient maintenance, repairs caused by poor maintenance and/or neglect are reduced, lowering unnecessary costs. It also helps av oid unplanned downtime which has direct impacts on your jobs – when your jobs lose money because of a machine, you eat at your margins. The more maintenance your machines need because of

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inefficient use or excessive wear and tear, or frequent use outside of "normal working conditions" the higher your parts and labor costs will be. Our contractor paid an average of \$3.4M in parts, supplies and labor over the three-year analysis. This included an average of \$1.1M for outside labor needed for specialty repairs.

Drilling down further into this number, it cost \$9,800 to replace the rubber tracks on a John Deere 470G Excavator (including the rubber track parts and associated labor). Replacing tracks on heavy machines such as excavators, dozers, cranes, etc. also requires the replacement of the rollers, slack adjusters and other components of the complete undercarriage. It cost this contractor \$22,000 total for the total track replacement on this single machine.

Based on this contractor's numbers, **leveraging an equipment management system** to improve their equipment maintenance can cut an easy \$100,000+ from their ownership costs, as efficient maintenance reduces external repair costs. It is also more cost effective to perform in-house maintenance routinely at appropriate intervals while using your own labor rates and leveraging the staff mechanics already on your payroll.

In addition, record keeping of your maintenance activity history in an equipment management system helps improve your equipment's resale value – just by having these records, or a report you can produce with this data, you can prove that the machine was well maintained and in good working condition when its time to sell.

TCO Takeaway: Staying on top of your preventive maintenance can drastically improve your equipment functionality and extend the useful life of each machine while minimizing excessive repair costs which weigh down your TCO.

Related Features: Maintenance

Schedule the Assets You Need When You Need Them

Seeing how frequently some machines are requested more than others by your jobsites can help make sure you always have the right machines for the job in your fleet.

This helps to ensure that your machines are getting adequate uptime, are being scheduled for maintenance when appropriate, and aren't being hoarded and hidden on projects instead of being better utilized elsewhere.

Revisiting the rental cost example discussed within the Know What You Own section, with better visibility, scheduling and coordination of owned resources between jobsites, much of our

subject contractor's \$2M rental spend could have been reduced. Using the average \$6,000/month cost for a \$100,000 machine, they could **save \$18,000 by using an existing asset from their fleet for a 3-month operation** on one of their projects in the future.

For example, this contractor had a case where a project needed a 3-wheel sweeper onsite and the Superintendent was unaware one was sitting idle on a nearby project. This Superintendent contacted a local rental house they had a relationship with; when the Equipment Department realized the rental sweeper was reserved, they were able to cancel the order and move the company-owned machine to the project, **saving \$1,500/month and improving utilization** on the owned asset and bringing income to the Equipment Division.

Additionally, recalling the cost examples within the Monitor How Often your Machines are Used section, having visibility into which assets are being requested and utilized more than others may shed light on opportunities to eliminate assets from your fleet instead of continuing to pay carrying costs on machines you aren't using or aren't earning you anything.

TCO Takeaway: Knowing what you have available and maximizing the utilization of your owned assets impacts excessive rental costs and helps you optimally use the assets you are already carrying on your balance sheet.

Related Features: Resource Management, Sites and Geofences, Utilization

Monitor Your Fuel Consumption

All your engine-operated assets need fuel to run.

Fuel is costly to begin with based on industry prices and your level of use, but it can also be more costly than necessary based on operating behaviors.

Recognizing your idling behaviors using telematics data from your machines interpreted by your equipment fleet management software and curbing this practice in the field can help get a handle on operating costs and increase resale value. If you stop burning unnecessary hours on your machines, you'll naturally also stop spending excessive amounts in fuel costs.

Our subject contractor spent over \$1M a year (based on the three-year average) on fuel costs. A 10% reduction in fuel spend thanks to monitoring their idling with a telematics system could save them \$100,000 a year just in fuel!

Reducing your idling costs additionally helps lower your maintenance costs. Reducing the amount of idling on a machine directly reduces the amount of maintenance needed on it instead of inflating the number of operating hours racked up by idling. The more hours you rack up on a machine, the more frequently maintenance is needed. If you have two machines that run for 1,000 hours and 500 hours respectively for the year, and Machine A idles at 50% while Machine B idles at 25%, Machine A will rack up 25% more hours than Machine B. Over a three-year period at these same idling levels, Machine A's fuel costs and maintenance costs will be exponentially higher than Machine B's – resulting in significantly higher ownership costs for Machine A overall in addition to a reduced resale value – all because of idling.

Excessive idling can also cost your company in wasted warranty dollars. If you are running newer equipment with a factory warranty remaining or an extended warranty contract, excessive idling can waste valuable coverage and be a cause for a manufacturer to deny warranty coverage for potential repair costs.

Leverage idling data from your equipment trackers to improve your idling behaviors in the field – your analysis of this data could reveal that idling is specific to certain operator assignees or could be a result of not using the right machine(s) for the job.

Using fuel consumption data from your equipment trackers and integrating your fueling processes with a fuel card system that monitors fuel consumption and costs at the pump can also highlight instances of fuel theft which is an unfortunate reality in construction and is an area of fuel cost creep.

TCO Takeaway: Whatever the cause of it, curbing your idling will cut your ownership costs. Leveraging telematics data to get a handle on your idling behaviors and curbing fuel theft can have a tremendous impact on your TCO.

Related Features: Fuel, Maintenance

Know How Much Your Assets Are Earning

Knowing how much your assets are earning for you both internally on your jobsites and outside of your organization helps to offset your ownership and operating costs.

Using an equipment management system to aid in effective project planning can help determine what equipment is available for project needs and what owned machines can be utilized to bring income to the Equipment Division vs. paying cash to an outside company for a rental. Further, choosing to leverage an RPO option on an

external rental based on knowing what is already reserved in your fleet and what machines may be needed long term helps make smart financial decisions when acquiring a needed asset.

As an additional benefit, having your financial information available at the asset level can help you keep the big picture of your equipment finances visible to you. With this visibility, complete with full data integrated with your ERP systems, you can make sure you are staying on track and making smart financial decisions to stay in line with your budgets or savings and cost control goals.

Visibility across current loan balances, interest rates and terms for all loaned or leased assets can help make decisions on which machines to pay off sooner than later if its costing more per month or year than another machine or package of equipment.

Our contractor paid an average of \$301,000 on interest over a three-year period for their \$15M fleet. A savings of just 10% due to effective negotiating or alternative financing could **save them \$30,000 a year.**

TCO Takeaway: Having your cost and earnings information automated and available can help you identify when costs are being exceeded or find opportunities for cost cutting or earnings to balance out your TCO.

Related Features: Asset Revenue, Finance Tools

Inspect Your Equipment Before Use for Safe Performance

Even with perfect maintenance, the construction environment is rough on equipment and damage is sometimes unavoidable.

Equipment inspections help identify when something is amiss with a vehicle or machine and can keep the focus on safe and optimal performance. When an issue is discovered during an inspection, a fix can be identified and taken care of quickly, before the issue or condition becomes worse or results in a costly and avoidable safety incident.

Equipment inspections may also sometimes shed light on operator misuse which can become very costly in terms of machine maintenance and repairs (repairs can cost thousands of dollars and eliminating them can save hundreds of thousands). For example, our subject contractor experienced stick damage to a CAT 305 caused by an operator not removing a socket from the bolt on a manual quick coupler. Because the socket was stuck and unable to be removed, the contractor incurred a \$400 hit to repair the damage, as well as two lost days of rent at \$323.04. In addition, productivity was impacted and the crew needed to be moved into new operations during the repair downtime.

Properly inspecting this machine prior to operation would have avoided this incident. By more consciously operating equipment safely, you can reduce the amount of wear and tear, but especially costly repairs that are needed.

In addition, by integrating an equipment tracking and management system into your business with documented safety and maintenance inspections, you may be able to reduce your insurance premiums. Insurance companies need to trust that you are operating and maintaining your equipment safely to provide cost-appropriate coverage for your business.

Our contractor spent a combined total of \$2.1M in vehicle and equipment insurance over the three-year period studied (an average of \$716k for each year). Having a proven equipment tracking program complete with inspection and maintenance monitoring, tracking and recording can lower your insurance premiums by providing documented evidence of proper asset use and care which provides insurance agencies with trust and confidence. A 10% impact on your premiums can reduce our customer's total cost of ownership in terms of insurance by an average of \$71k annually.

TCO Takeaway: Lowering your risk of malfunction and safety issues while lowering your insurance premiums is a double cost benefit for your TCO.

Related Features: Safety & Compliance, Inspections, Driver Scorecards

Conclusion

What This Means for Our Contractor

This contractor, who spends an average of over \$8.7M owning and operating their fleet each year (including rental costs caused by operational inefficiencies), could save close to a million dollars a year at a minimum by leveraging the features and functionality in their Tenna account in the ways described herein for just a 10% improvement in efficiency. With a little bit of data accumulation and practice using and leveraging the system over time as it becomes part of their team's daily routines, their savings potential is enormous.

What This Means for You

When you leverage an equipment management system in your fleet, you will also benefit with high savings from efficiencies. What you do with this savings or how you invest it back into your business will be different for each contractor reading this – but know that the savings are real and the costs and effort to actualize them is low in comparison.

Leveraging a construction equipment management system, you can make better buy/move/rent/sell decisions, in addition to improving operating and maintenance efficiencies to help you reduce the owning and operating cost of your fleet.

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