

CAT[®] EMSOLUTIONS



UNDERSTANDING WHAT'S POSSIBLE
WITH EQUIPMENT DATA



DON'T LET THE TERM 'DATA' SCARE YOU

Data-driven decision making is nothing new for equipment users. Just think of how the visual “data”—aka information—you get from a daily inspection influences your choices. Are there rubbing or loose wires? How's the coolant level? Do you detect puddles under the machine or a crack in the windshield?

In principle, the information you get from built-in equipment hardware isn't any different ... it allows you to “see” things you otherwise wouldn't. Because you're not manning the controls. Because you're not staked out at the jobsite to thwart would-be thieves. Because there's no way you're getting inside the engine to know if it's over-speeding.

Nope. The way you “see” this stuff is through reports and visualization software, which securely receive the info transmitted from the machine itself. That combo—sense it; see it—is what the construction industry has come to understand as the term “telematics.”



As you use data to improve operations, keep in mind that even a small gain can pay big returns. A 1% improvement in a factor like productivity can help your bottom line:

1% CHANGE	IMPACT ON PROFIT
PRODUCTIVITY	2.5 - 4.5%
AVAILABILITY	1.75 - 3.5%
OPERATING COSTS	1.5 - 3.5%
UTILIZATION	1.5 - 2.75%
PURCHASE PRICE	0.5 - 0.85%

NOTHING VENTURED, NOTHING GAINED.

But compared with other industries like utilities and transportation, construction is behind the curve. A 2014 survey by the Association of Equipment Manufacturers found:

- **62%** of U.S. construction companies have no plans to implement telematics anytime soon.
- **15%** aren't sure.

That's too bad. A few years back, the *Harvard Business Review* dedicated a whole issue to data-driven decision making and the gains it can offer:

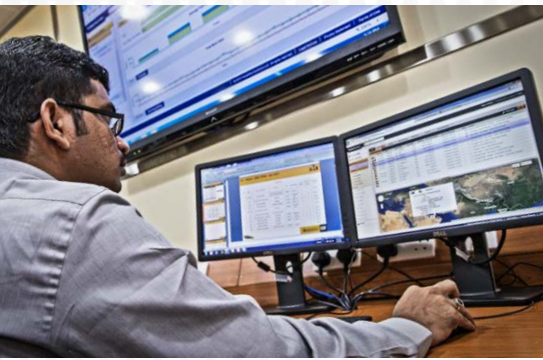
Big data could transform the way companies do business, delivering the kind of performance gains last seen in the 1990s, when organizations redesigned their core processes. As data-driven strategies take hold, they will become an increasingly important point of competitive differentiation.

*According to research by Andrew McAfee and Erik Brynjolfsson, of MIT, companies that inject big data and analytics into their operations show productivity rates and profitability that are 5% to 6% higher than those of their peers.**

* Source: "Making Advanced Analytics Work for You," *Harvard Business Review*, October 2012.
<https://hbr.org/2012/10/making-advanced-analytics-work-for-you>

8 QUESTIONS YOU SHOULD BE ASKING RIGHT NOW.

KNOW YOUR FLEET. TAKE THE QUIZ. ►



SHIFTING GEARS AND ATTITUDES

Even though our industry isn't breaking land-speed records to tap telematics systems for all they're worth, we have advantages that others don't.

NEW STANDARDS WOULD ELIMINATE MULTIPLE REPORTS FOR MIXED FLEETS

One hurdle to telematics adoption is the challenge of aggregating data across mixed fleets. In the past, if fleet managers wanted to get a complete picture, they had to use different dashboards for each brand and switch back and forth between reports.

The Association of Equipment Managers (AEM) and Association of Equipment Management Professionals (AEMP) have recommended a standard to help systems from different manufacturers all speak the same language—so information can be rolled up into a total fleet point of view.

Proposed standard data points include:

- Ambient air temperature
- Average load factor
- Distance traveled
- Engine running status
- Fault codes
- Fuel consumption
- Hours
- Idle time
- Location
- Max speed
- Payload totals
- Power take-off (PTO) hours

To download the AEM/AEMP Draft Telematics API (Application Programming Interface) Standard, visit www.AEMP.org.

» **Much of the equipment we buy** (including most Cat® equipment) is telematics

ready, right off the lot. All we have to do is activate the built-in capabilities.

» **We have professional allies** who can advise us, based on our comfort level and

individual needs. Your Cat dealer can do more than provide you with machines and parts. He or she can help you solve your burning business challenges.

"Contractors run their operations a certain way. So just giving them access to all this data won't necessarily help them if doesn't relate well to how they run their business," explains Dave Augustine, Caterpillar Commercial Manager, Connected Services.

"That's why we're always thinking about telematics in terms of 'What are the benefits? What can you do with this data? What's possible?' A lot of education needs to happen to drive adoption. And we are here to help."

A shift in mind-set is taking place now as younger team members join construction firms. Contractors are realizing that their dealers can do more than hook them up with the right, reliable piece of equipment—they offer services to help you get the most mileage out of that equipment, too.

Remember: Telematics is just another component of good equipment management.

"A means to an end," Augustine says. (Sort of how S-O-SSM Services helps you extend component life by detecting things in oil and coolant that you cannot see with the naked eye.)

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HOW ARE YOU USING DATA TO BOOST YOUR BOTTOM LINE?

When *Construction Equipment* magazine asked a group of contractors if they were using machine data in their business, those who said “yes” explained how they’re putting it to work:



44%

RECORD HOURS,
FUEL & OTHER
OPERATING COSTS



25%

MEASURE
UTILIZATION



39%

SCHEDULE
PREVENTIVE
MAINTENANCE



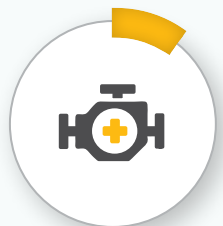
12%

USE COSTS IN
RATE SETTING



35%

TRACK FAULT CODES
& MACHINE HEALTH



4%

MONITOR
EMISSIONS



29%

IDENTIFY LOCATION,
USE GEO-FENCING

Source: *Construction Equipment*, <http://www.constructionequipment.com/implementing-telematics-save-money-and-more-0>

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REAL EXAMPLES OF DATA-DRIVEN DECISIONS

Whether you capture a little information or a lot, your data can be extremely powerful when it's applied effectively. Here's a sample of how telematics users are getting high mileage out of critical equipment information.

TO CONTROL COSTS

Reduce fuel costs. A mid-size construction company in Germany uses telematics to manage and monitor multiple fleets working in several locations. Data captured from machine systems has been used to cut idle time, improve maintenance scheduling and reduce operating costs, specifically in the area of fuel consumption. The CEO says the percentage of cost savings is “almost in double-digits.”

Improve bidding accuracy and competitiveness. A U.S. construction company is submitting tighter, more competitive bids thanks in large part to fuel data being captured from on-board systems. A project manager says it was routine practice to pad the fuel numbers in the past—just in case. But now he says, “We can go in and look and know exactly how many gallons per hour (the equipment) burns. It helps us get our bids closer and be more competitive.”

Increase availability and reduce unit costs. A North American quarry using telematics on off-highway trucks says availability is up 2% and unit costs are down 2% since the technology was deployed. Higher availability means more tons from the fleet, and since every ton is being produced at a lower cost, profits are rising.

Maximize resale value. Consider two 10,000-hour machines, one with an idle rate of 35%, the other 15%. If they're both priced comparably in the secondary market—as 10,000-hour units—the owner of the first machine essentially sells an asset with 6,500 working hours for the same price as the asset with 8,500 hours. Using telematics data to track and reduce idle time would have put both owners, especially the first one, in a better position to recover higher resale value.



TO MANAGE PEOPLE

Identify potential safety issues. Reports from one construction firm's telematics system revealed a steep spot in a haul road where some truck operators weren't using their retarders effectively. A focused training initiative was launched, reducing the risk of accidents and injuries and saving the company about \$12,000.

Correct abusive practices. Using abuse event data, one contractor was able to precisely identify problems with operator technique, then structure training to address those issues. As a result, operator abuse events have been reduced by 75%.

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TO IMPROVE OPERATIONS

Optimize planned maintenance (PM) scheduling. Excessive idling not only increases fuel costs, but it also has an impact on the cost and timing of maintenance. Companies that log too many idle hours often perform maintenance before it's necessary, driving up costs over the life of an asset. Telematics data can be used to develop fact-based anti-idling campaigns and condition-based PM practices, both of which can significantly reduce maintenance costs and downtime.

Pump up utilization. With accurate data about the amount of work machines are doing, it's easier to identify underutilized assets. When possible, this equipment can be put to work on other projects, reducing the need for rental machines. Precise data about machine utilization can be used to determine the best mix of rental and owned assets, forecast future equipment needs, plan capital expenditures and assess the viability of selling underused assets.

Cut service time. A fleet manager for a Florida county says telematics data is very valuable to his in-house service organization. "If there's an intermittent problem, we can go back through the historical record to help diagnose the problem more quickly." And if an equipment dealer needs to get involved, "they can go in and look at (the data) and already know what's wrong, having the same information we do. That can save technician hours as well as downtime." If a dealer has to dispatch a field technician, sending the GPS coordinates from the mapping system saves time and money.

TO REDUCE RISKS

Fight theft. With \$400 million in equipment theft reported in the United States in 2010 alone, loss prevention is becoming a growing priority. Telematics can help with geo-fencing capabilities that alert owners when equipment is moved outside predetermined boundaries. Some systems employ an emergency mode, sending more frequent alerts if power is cut or a machine moves without being turned on. These features help contractors and others recover stolen assets faster, reducing insurance costs and minimizing downtime.

Improve regulatory compliance. In a state like California, which has 35 separate air quality districts, meeting emissions regulations can be especially hard when equipment gets moved from site to site. Some fleet managers overcome the challenge with telematics, using geo-fencing capabilities to make sure machines don't get moved into areas in which they are not compliant. Machine data can also be used to verify that emissions components are in good working order. If early-morning or late-evening noise regulations are a concern, setting a system to deliver alerts if machines run outside a specified time period will help ensure compliance. Historical data can also be used to respond to noise complaints if a firm needs proof that equipment was not operating during mandatory quiet times.

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TIPS YOU CAN APPLY

FOR GETTING STARTED

1 GET CONNECTED

The first step is ensuring you've activated your equipment's built-in capabilities. Your Cat dealer can help you and provide demos and training.

2 KEEP AN EYE ON IDLE TIME

Start simple by monitoring fuel consumption on a few machines. What's the idle rate? Are they running at the right RPM range? This is a perfect place to save money—now and over the long haul—since idle time impacts fuel burn, machine hours and service intervals. If a machine idles 50% of the time, that's 50% of warranty and 50% of service life wasted.

3 TRY BEFORE YOU BUY

Request a complimentary trial or rent a technology-enabled machine. Cat dealers stock their rental fleets with newer models.

4 PICK A PROBLEM & YOUR DEALER'S BRAIN

If you want to control costs, reduce risks, improve your operations and better manage your people, you have an ally. Your dealer can do much more than outfit you with machines and parts; he or she can advise you.

FOR GETTING MORE VALUE

1 EXPAND YOUR HORIZONS

Telematics users sometimes limit data collection to a few key items (like fuel consumption, hours, location and working vs. idle time.) As you get more comfortable, acquire more detailed data, such as fault code alerts. Emails or text messages will tell you when a machine is working outside a predetermined specification range: engine over-speeding, high-speed directional shifts, temperature changes and variances in pressure.

2 CLOSE EFFICIENCY GAPS

Most fleets have areas that can be improved in terms of timeliness or accuracy. This is an easy step because the data being used is very focused, not a flood, and there is little process change involved.

3 SET GOALS & MEASURE PROGRESS

As you improve, chart the savings in time and money. Post the results in the shop and let crew members know. The critical point is to engage everyone in seeing achievements.

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There isn't one way to efficiently manage a fleet. Everyone's needs, budgets and experiences are different. The good news is, everyone can improve. Take a few minutes and take the quiz at KnowYourFleet.com for a quick pulse check—so you can get a report full of tips, thoughts and suggestions relevant to your personal comfort level with technology.

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