IMPROVED ROI THROUGH INTEGRATED ASSET MANAGEMENT

CONTROLLING COSTS

Managing a group of assets, whether far-flung, nearby, mobile or stationary, is a complex endeavor involving a myriad of factors and variables that ultimately impact on ROI. For all assets, theft is a major concern, while the cost of fuel can be the determining factor for profitability with mobile assets.

Since construction sites are often unprotected and unsupervised during non-working hours, leading factors in asset theft are poor security of both the equipment and the site, along with a low risk of detection and arrest. The theft can be as large as a piece of heavy machinery, or as simple as a tank of fuel.

"Fuel theft cost the United States trucking industry $8 billion in 2008, with $2.1 billion of that attributed to just employee theft."[1]

- RFID Switchboard

Theft can also be temporary, such as when construction equipment is used for personal purposes during a weekend. While the equipment may be returned after the illicit use, the uncompensated wear and tear will eventually affect the owner's ROI.

One of the biggest challenges faced by a fleet manager is the expense of high fuel usage. One underlying cause of this problem can be mechanical issues. Neglected mechanical maintenance of the asset, for example, can lead to an unnecessary increase in fuel consumption.

Another source of excessive fuel usage is often inefficient or aggressive driving behavior. Whether deliberate or unintentional, incorrect driver behavior is a major contributor to a significant increase in fuel costs. Factors such as speed, acceleration style, idling and number of stops can decidedly affect fuel economy.

ASSET THEFT

Heavy-equipment has an unfortunately high level of theft. This is due primarily to:

- poor security for the equipment and the work site
- its value (the average estimated value of a stolen piece of equipment is $17,400)
- low risk of detection and arrest

"Only 20 percent of stolen equipment was recovered in 2012."[2]

- 2012 Equipment Theft Report", National Equipment Register

1. "Fuel theft in the USA reaches $8 Billion in 2008 : RFID Switchboard". Downloaded from http://www.rfidsb.com/tm/2008/04/24/fuel-theft-in-the-usa-reaches-8-billion-in-2008/

2. "2012 Equipment Theft Report", National Equipment Register. Downloaded from http://www.ner.net/annual_theft_reports/NER2012TheftReport/files/assets/downloads/publication.pdf)

POOR SECURITY

Not surprisingly, newer equipment is the primary target of thieves because it is just as easy to steal as older, less valuable equipment. This is in direct contrast to the realm of automobile/vehicle theft, in which the older models are more often stolen because they do not have the latest antitheft technology. For heavy-equipment, however, productivity is valued more than security. Thus, since multiple operators are a necessity, antitheft technology is usually not utilized. This resulted, for example, in many heavy-equipment manufacturers installing as few security features on 2012 models as they did on 1980 models.[1]

LOCATION, LOCATION, LOCATION

Are assets safer from theft in more sparsely populated areas? A common sight in rural locations is a group of heavy-equipment construction assets left during non-working hours at an unsupervised work site. Due to the lack of installed antitheft technology, however, thieves have an easy time of it. In 2012, regions with a population under 100,000 had more thefts occur per person than in the larger metropolitan areas. This makes it clear that security and equipment theft are even bigger issues in areas with smaller populations.[1]

CAN YOU RECOVER?

The recovery rate of stolen heavy-equipment is a disheartening 20 percent. Some of the reasons for this are:

- Delays in discovery and reporting of theft (a theft on Friday evening might not be discovered until Monday morning).
- Inaccurate or nonexistent owner records (documentation is often a low priority in many businesses).
- Limited law enforcement resources dedicated to equipment investigations[1] (businesses are pretty much on their own).

The theft of heavy-equipment and vehicle assets is clearly not a trivial issue. Estimates stemming from the data in the 2012 Theft Report of the National Equipment Register place the value of stolen equipment in that year at nearly $300 million. That amount is solely for the assets themselves; it does not incorporate the additional impact on ROI such as wasted personnel time, work stoppage, the cost of replacement rentals, and project-delay penalties.

Based on how often theft occurs, it is the largest issue of all types of equipment risk, making it a critical component of managing ROI.

FUEL USAGE

THE COST OF NEGLECT

When neglected, several areas of mechanical maintenance of the asset can lead to higher fuel consumption. For example:

- Proper Tire Inflation – when tires are inflated correctly they have a longer life span and increase fuel economy. According to the Alternative Fuels Data Center, every decrease in pressure by 1 pound per square inch for four tires can decrease fuel economy by 0.3%.[3]
- Recommended Motor Oil - fuel economy can be improved 1% to 2% by ensuring that the manufacturer's recommended grade of motor oil is used.[3]
- Engine Tune-Ups – performing a much-needed tune-up on a vehicle can increase fuel economy by up to 4%. If a more serious problem, such as a faulty oxygen sensor, is fixed, fuel economy can improve by 40%.[3]

1. "Fuel theft in the USA reaches $8 Billion in 2008 : RFID Switchboard". Downloaded from http://www.rfidsb.com/tm/2008/04/24/fuel-theft-in-the-usa-reaches-8-billion-in-2008/

3. "Strategies to Conserve Fuel, Alternative Fuels Data Center". Downloaded from http://www.afdc.energy.gov/conserve

ARE YOUR DRIVERS BEHAVING?

The behavior of the driver is instrumental to reducing the amount spent on fuel. Research by the National Renewable Energy Laboratory shows that improving driving behaviors can reduce vehicle fuel use by 10%.[4]

"Savings of up to 20% are possible when aggressive driving behavior is improved."[4]

- the National Renewable Energy Laboratory

Zoom-zoom

There are several aspects of acceleration that affect fuel economy. Some fuel savings can be achieved through acceleration rate reduction; the harsh acceleration of "jack rabbit" starts consumes more fuel than a gentle touch on the pedal. It is also interesting to note that avoiding unnecessary accelerations and decelerations will result in even greater fuel economy, especially in city-type driving with significant stop- or slow-and-go driving.

Studies suggest that driving style improvements should focus on reducing the number of stops in high mileage trips, and not just the rate of accelerating out of a stop.[4]

- the National Renewable Energy Laboratory

Idling the fuel away

How much fuel does an idling engine consume? At what point is it better to stop/restart the engine to avoid idling? The delivery company UPS reports that idling for 30 seconds uses more fuel than restarting the engine.

"Idling for 10 minutes a day wastes an average of 24.6 gallons of gas per year."

- UPS[5]

In terms of ROI, it is also important to factor in that reducing or avoiding idling not only optimizes performance but also extends vehicle life.

Speed kills more than your MPG

The cost impact of driver speeding on ROI is twofold. In addition to higher fuel consumption, there is a notable increase in the possibility of a crash. It has been found that the risk of a casualty crash increases steeply as a function of how much a driver exceeds the speed limit, approximately doubling for each additional 3 mph.[6]

Data have shown that speed increases lead to increases in the:

- risk of crashing
- risk of serious injury, if a crash occurs
- risk of death, if a serious injury occurs.[6]

Aside from the human toll of crashes, the cost of injuries, repairs, insurance, and possible litigation can skyrocket. Speed must therefore be regarded as the most important element of driver behavior that should be addressed in improvement efforts.

4. "Final Report on the Fuel Saving Effectiveness of Various Driver Feedback Approaches", National Renewable Energy Laboratory. Downloaded from http://www.nrel.gov/vehiclesandfuels/vsa/pdfs/50836.pdf

5. "Saving Fuel: The Benefits of No Idling", Pressroom, UPS. Downloaded from http://pressroom.ups.com/Fact+Sheets/Saving+Fuel%3A+The+Benefits+of+No+Idling

6. Evans, Leonard,Traffic Safety. Bloomfield Hills, MI; Science Serving Society; 2004

THE TELEMATICS SOLUTION

Faced with these multiple challenges, most fleet managers are acutely aware that they need an integrated approach to effectively manage all components of their fleet.

With the ultimate goal of a healthy Return on Investment, successful fleet management calls for a telematics system.

Telematics encompasses telecommunications, vehicular technologies, road transportation, road safety, electrical engineering (sensors, instrumentation, wireless communications, etc.), and computer science (multimedia, Internet, etc.)".[7]

THE VALUE OF FEEDBACK

Implementing telematics involves the installation in fleet vehicles of devices such as smart modems that can track fuel usage, maintenance requirements, and overall asset performance in order to help fleet managers track fuel consumption and improve fuel economy. These devices might also have GPS and satellite capability and can monitor miles driven, idle time, and the path taken, which can assist in tracking engine use and various factors of driver behavior. These features can help fleet managers identify opportunities for improvement, and implement the appropriate training.

"Even the most experienced drivers can benefit from training that teaches how fuel economy is reduced by idling, speeding, shifting frequently or improperly, accelerating or braking aggressively or frequently, and taking circuitous routes."[3]

- the Alternative Fuels Data Center

ADDITIONAL CONSIDERATIONS

While theft and excessive fuel usage are major impediments to achieving a healthy ROI, there are also other factors that should be considered.

- **Expensive repairs** - In addition to potentially causing higher fuel consumption, neglected maintenance can also result in expensive repairs to the asset. If initial problems are not caught right away, one small issue can eventually develop into a much larger, multi-faceted problem.
- **Driver/asset downtime** – When the asset is stolen or damaged, the expense of the resulting downtime of both the asset and the driver can grow quickly.
- **Driver/asset safety** – A lack of emphasis on safety for both the driver and the asset will create a lurking threat to ROI that is guaranteed to ultimately become reality.

3. "Strategies to Conserve Fuel, Alternative Fuels Data Center". Downloaded from http://www.afdc.energy.gov/conserve
7. "Telematics", wikipaedia.org. Downloaded from http://en.wikipedia.org/wiki/Telematics

THEFT – FIGHTING THE GOOD FIGHT

A well-designed telematics system will feature solutions to both work site and asset security. Since it can be difficult or cost prohibitive to physically secure, for example, an entire work site of construction equipment, each asset can have sensors installed that would detect and report unscheduled use or movement. To stem the tsunami of fuel theft, several factors can be monitored and alerted such as an abnormal fuel level change or an opened/closed fuel door.

Some intelligent telematics devices can also control the asset remotely, making it possible, for example, to shut off the engine of a stolen vehicle or piece of equipment, rendering it immobile and greatly increasing the chances that an immediate alert to law enforcement will result in recovery and arrest.

REDUCE THE GUZZLING

With telematics, asset maintenance becomes part of the monitoring process. The condition and status of the asset's engine and parts can be monitored through alert messages and analytics reporting, thus triggering any necessary maintenance and repairs as soon as a need is apparent. This will result in benefits such as lower downtime and increased safety of both the asset and the driver.

MONITOR + FEEDBACK = RETRAINING BEHAVIOR

Some telematics systems offer detailed monitoring capabilities that make it possible to observe driver behavior. Sensors can detect every instance of poor driving habits such as harsh acceleration, harsh braking, speeding, and excessive idling. In addition, speeding can be tracked by location, number of occurrences, and duration.

To ensure the lowest number of miles is being driven, a deviation from the best/expected route can be tracked and identified; a play-back can demonstrate a reenactment of the route taken.

THE ASSET INTELLIGENCE CENTER FROM QUAKE GLOBAL

The Asset Intelligence Center (AIC) is Quake Global's telematics solution to increasing ROI through intelligent asset tracking. With a superior satellite network, GPS and advanced modem technology, the AIC offers state of the art coverage and response times.

The AIC delivers three major benefits that will have a substantial impact on your ROI:

1. Actionable asset intelligence

Fleet managers are provided with enhanced safety and security which can result in decreased downtime or deterred theft.

- A driver in trouble can rely on near real-time delivery of an emergency message.
- The nearest asset to a given location can be quickly determined, which is useful, for example, when an asset requires replacement and the closest assets need to be found.
- When sensors or status alerts detect that an asset is moving outside of its location or time settings, that asset's ignition can be remotely disabled.
- Fuel access outside predetermined fuel depots can be detected and reported through Alerts and SMS messages.
- Automated reporting - reports can also be delivered to any smart device.

2. Easy identification of operator behavior and driving patterns

The AIC can generate scorecards that compile (using JBus vehicle diagnostics: J1939/J1708) and evaluate the driving behavior of both the individual driver and entire group. This enables comparisons that can reveal trends that impact on fuel usage and safety. Once identified, these behaviors can be quickly retrained.

The driver/group scorecard provides the following information:

- How often do instances (such as speeding/idling/harsh acceleration/braking) occur?
- How severe are the infractions?
- How does one driver compare to another?
- What is the trend over 30, 60, 90 days?

The AIC can also help identify correct route compliance with its route playback capability.

3. Speed of information

The fastest network in the business, the Iridium satellite network, powers the AIC. This assures you:

- Near real-time mapping and vehicle/asset statistics (real-time event monitoring).
- Mission-critical and time sensitive intelligence delivered securely within seconds.
- Guaranteed message, command and data delivery - ensures no dropped messages across communication platforms.

To learn more about how the AIC can help you improve your ROI, visit our website at www.quakeglobal.com or contact a Quake Global representative.

ABOUT QUAKE GLOBAL

Quake Global (QUAKE) is the world's leading provider of industrial asset monitoring and tracking communications systems. QUAKE's systems enable end users to improve daily operations and reduce costs through efficient and cost-effective real-time management of assets anywhere on the planet.

QUAKE is the only provider of network-agnostic M2M communications systems that offer a unified communications protocol for data coverage across multiple global satellite and terrestrial networks from a single device. Its satellite M2M systems offer the highest percentage of satellite in-view time in the industry. QUAKE provides a broad range of specialized GSM communicators and offers the industry's largest selection of highly customizable, fully programmable M2M solutions for rugged industrial applications.

QUAKE continues to work with emerging technologies to find new ways to efficiently leverage the latest advancements in M2M communications and enable more efficient and cost-effective real-time management of assets worldwide. QUAKE's acquisition of Washington D.C.-based ODIN Technologies, Inc., a leading designer of RFID solutions for the healthcare, government, and asset management industries, is part of its continuing commitment to integrate new technologies into its M2M systems.

Quake Global has engineered and manufactured market-leading asset monitoring and tracking communications systems for more than 10 years. Today, trucks, heavy equipment, ships, fishing boats, pipelines, trains, and utility meters around the world are being monitored, tracked and controlled using QUAKE hardware and software — 24 hours a day, seven days a week.