TeraHop networks

Case Study

KLB Construction

The Race to Productivity: A New Solution For Construction Asset Management

KLB Selects TeraHop's Portable Asset Monitoring System

Developers and builders face a dilemma that, unsolved, can eat away at business profit. The use of heavy machines is essential for nearly all modern construction sites. But because highly specialized, heavy construction equipment is so expensive to own, operate, and maintain, getting the best, most productive use out of that machinery is every project manager's first priority.

The question is: How can you tell that your fleet is at its most productive? The conflict between the vital need for this expensive equipment and ensuring it's being put to optimal use is increasingly the focus of attention for construction companies around the world. But getting timely, reliable usage data from construction environments has always been an expensive, unreliable, and time-consuming task.

In a challenging economic era when there is increased scrutiny from both public and private customers, more competition in bidding and more accountability required from all parties, construction companies are investigating ways to increase efficiency, cut out waste, and leverage every single competitive edge they can find.

The close monitoring and management of heavy construction assets located on every site would provide them the competitive advantage they need to be successful in the market, while optimizing equipment use and company profitability.

Where are the assets and how are they being used?

KLB Construction is based in Mukilteo, Washington and primarily operates in the state of Washington. In May 2009, KLB began work on a large, 30-acre project in Redmond, Washington, as part of a massive regional project to expand and enhance State Route 520, one of the state's most congested and highly traveled highways.

> **"We chose TeraHop Networks CAMS because it delivers all the features we need and works in any environment we do. We estimate a savings of more than $60,000 a year compared to other solutions. They've solved an important problem for us."**
>
> Bill Grady, CEO, KLB Construction

KLB was charged with the clearing and grubbing of the site, and the construction of retaining walls and draining structures.

"We have a large site in Redmond and keeping control of our assets, as with any large project, is challenging," said J. Richard Glass, technology manager at KLB. "We really have two asset

management problems. First, we need to know the location of our assets, and then we need to know how much, or how efficiently, the assets are being used."

In an economic environment when every dollar matters, precise asset management can save a company a lot of money and be the difference between a project done on time and on budget—and one that is delayed and eating through profits. Glass, working with his executive team, knew they needed a technology solution to bring their asset management to peak efficiency.

Using the TeraHop solution, a site manager can instantly check asset location and usage and make immediate, informed decisions on what actions to take.

It wasn't an easy search. They had looked for years, but had been put off by solutions that required expensive cellular contracts and weren't reliable in remote locations. They needed a technology that positively impacted their bottom line.

Portable Asset Monitoring from TeraHop

KLB chose TeraHop's Construction Asset Monitoring System (CAMS) to monitor and track the company's construction equipment at the job site, because it doesn't require cellular or satellite subscriptions, external power or wired infrastructure. It's rugged and works in remote locations, automatically collecting data without personnel climbing on equipment to read meters or scan barcodes.

TeraHop, based in Seattle and Atlanta, is a technology company focused on the creation and deployment of wireless asset-management systems that help customers reach their goals. The company makes stand-alone systems that are easy to install, work in remote locations and can integrate into existing products and software solutions.

TeraHop's CAMS combines GPS and site monitoring. Portable Data Collectors (PDCs) are easily attached to each piece of construction equipment on a site. A PDC is a self-contained, battery-operated device, about the size of a deck of cards. It acts as a local sensor and wireless network router and each PDC contains radios, antennas, a controller, memory, sensors, and batteries internal to the housing.

The PDCs communicate with other PDCs on the site and directly with TeraHop's Wireless Data Uplink (WDU), stand-alone devices that are equipped with radios to communicate with the outside world. Because PDCs have a range of up to 3,000 feet, KLB places a WDU in a truck and drives through the jobsite wirelessly collecting data. Each WDU includes a standard Ethernet interface capability for wired or point-to-point radio network configurations.

WDUs are also equipped with a GPS receiver, which permits localization of PDCs within its network. From the WDU-generated signal, site-wide information can be viewed from a computer, or smart phone, located at the site or at any other location with a wireless connection. It's that simple.

Asset Optimization

Using the TeraHop system, a site manager can instantly check asset location and usage and make immediate, informed decisions on what actions to take. Greater efficiency, that once-elusive goal, is now a reality, and the result can be greater profitability.

"Right now, we are using TeraHop CAMS at the Redmond site," said Glass. While KLB is in the early stages of using the system to monitor heavy, motorized equipment run-time hours and location, it's already made a difference.

Glass recalled an "ah-ha" moment just a few weeks after deploying TeraHop's CAMS.

"It is essential for us to know exactly how long the machinery is being used," said Glass. "That knowledge allows us to create an accurate record of maintenance requirements."

"Heavy motorized equipment requires strict, regular maintenance," he said. "We can't have this

essential equipment offline. Before TeraHop, we made a reasonable guess at the hours a specific machine was in use, and developed a maintenance schedule that we believed was accurate."

TeraHop's CAMS provided KLB with some eye-opening data.

> **"It's a clear case where this technology saved us a great deal of money and, just as important, time. Thanks to TeraHop, our inventory of machines is kept at an optimum."**
>
> Richard Glass, technology manager, KLB Construction

"We learned we were off base with our maintenance schedule. When we got the actual run times of our equipment from the TeraHop system, we discovered we were overestimating run times by 30 to 40%. We were taking our machines out of service for routine maintenance nearly twice as often as we should have."

Those are numbers that make people stand up and notice. Pulling a piece of equipment off the line is expensive and time-consuming.

"It's a clear case where this technology saved us a great deal of money and, just as important, time," said Glass. "Thanks to TeraHop, our inventory of machines is kept at an optimum."

Glass is also impressed with the durability of the system. "We had a grader roll over one of our PDCs, but it's still working!"

Moving Forward with TeraHop

Glass knows that the TeraHop CAMS can do more and, working with his team at KLB, he hopes to roll out more features in the near future.

TeraHop's PDCs can do more than monitor run-times. Each PDC contains an internal motion sensor, a shock sensor, and a magnetic switch. These internal sensors can be used to detect improper or unexpected motion or handling, and to detect the opening or closing of a door or hatch, important to securing a site against theft or vandalism.

Depending on how a company configures the system, the sensors can be used to trigger alarms and notifications. The PDC can also be plugged into the onboard computer or other on-board sensors, such as temperature or fuel gauges, and sends that information out to the network.

KLB, or any company using TeraHop, can get precise data in real time. And this data can be used to achieve greater asset control and efficiency.
If, for example, data suggests that one piece of equipment is being underutilized in one location, it can be switched to another location or site.

"When we deploy TeraHop business-wide, and have data accessible, we could see usage optimized in a way we haven't seen before," said Glass. He also sees a day when KLB will use TeraHop to monitor the human assets on site as part of the company's time and attendance initiatives.

Gain a Competitive Edge, Save More

Time is money. Everyone knows that. But it has never been truer than it is right now. In these challenging times, construction companies have to be more accurate, more efficient, and more competitive than ever before.

When more accountability is demanded by customers and more scrutiny is focused on every bid, companies must be more precise than ever before.

The only way to do that is to acquire more relevant and timely data, to be more informed about the details that matter. Not long ago, that sort of precision wasn't available and guesswork was the norm. That's no longer the case.

TeraHop delivers data that is actionable and does it in real time. It gives companies an edge in every bid and in the profitable completion of every project. It's just as true now as it's always been, companies that work smarter are the most successful.