


Fleet Tracking **Optimizes** **Operations,** Improves Safety in Hazardous Regions



In this rapidly changing world, there are few constants. But since well before the industrial revolution and for longer than anyone can foresee, people will have ever-increasing demands for energy consumption. With that in mind, energy companies are forced to seek out new sources of this diminishing commodity as well as provide these resources to expanding parts of the globe.

Perilous regions previously considered off limits to energy production and distribution due to circumstances such as geography, weather, conflict, instability, remoteness and other severe hazards are increasingly as much a part of the global energy infrastructure as the local power plant or corner gas station.

This translates to increased domestic energy security as well as globally improved living standards. For example, energy resources help provide clean water and lighting for schools and homes in remote world populations that previously never could have hoped for such “luxuries.”

Of course, all of this comes at a high price. In addition to the fundamental logistics nightmare that such production and distribution networks bring to energy companies, concerns over safety and security for workers, equipment and the commodities themselves are at the forefront.

But two American companies partnered to create a solution that enabled a Latin American energy firm to overcome these obstacles while increasing its profit margin and creating an energy distribution system that serves as a competitive advantage over others in the industry.

How Fleet Tracking Works

Small mobile tracking modules provide a wealth of vehicle-telematics data for remote resource management by continuously reporting a vehicle's location, direction and speed in addition to vehicle performance data such as engine temperature, oil pressure, fuel consumption, etc. These modules are satellite modems with GPS capability that can deliver communications worldwide.

Firmware is loaded into the modems to give them local intelligence and event-driven operation. Satellite airtime is efficiently used by allowing fleet supervisors to program each vehicle device to provide the most important information needed at any given time.

In addition to the tracking module and antenna, an emergency button can be installed in a hidden area or under the dashboard, where it can be activated by a driver in case of danger such as a hijacking or act of terrorism. Activating these emergency systems sends an e-mail or text message to designated parties who can respond as needed. Additional hardware such as an onboard message terminal can deliver two-way text communications and be pre-programmed with short messages, such as "Send Help!"

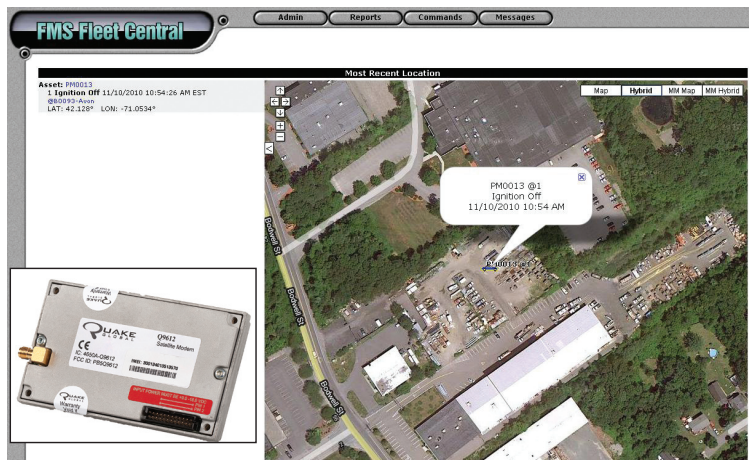
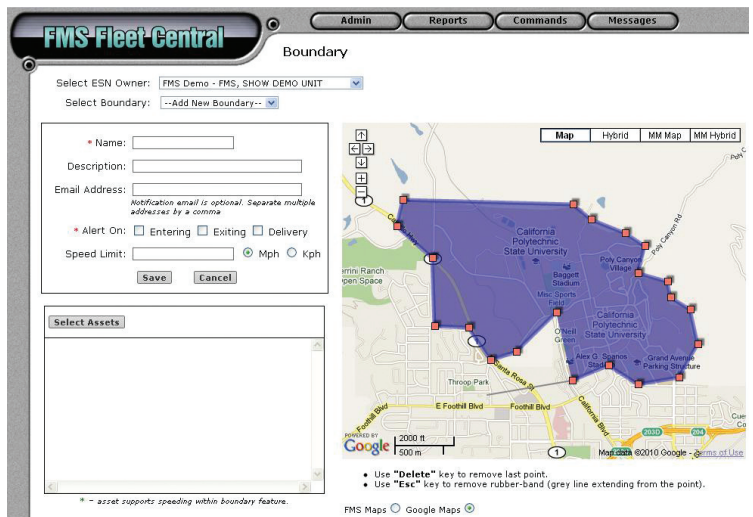
Satellite data communication delivers the event-driven data to the Web application and provides alerts to the fleet manager when potentially dangerous situations occur, such as speeding or unauthorized use after hours. Messages are delivered to the appropriate person who can take action and respond to a situation. This real-time communication can make the difference between being saved and not surviving treacherous driving situations such as bad weather or a vehicle rollover.

Security is maintained through standard Internet practices, allowing only authorized customers with correct user names and passwords to view asset information for their own fleet or sub-fleet. A designated administrator should be in place to control user lists and security as well as be able to authorize or delete users from the network.

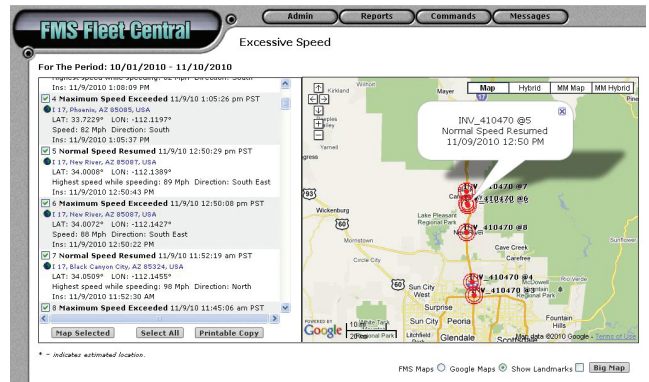
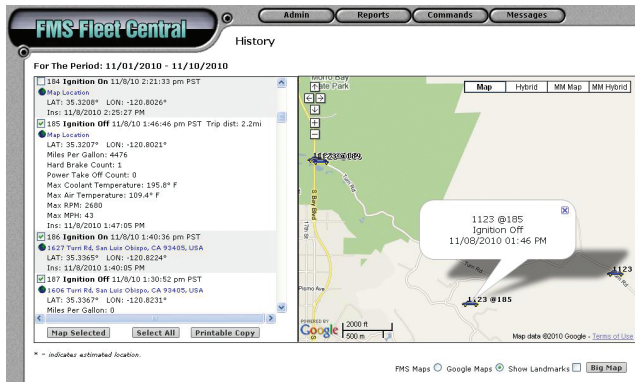
Achievable Gains

Of course, varying circumstances within particular cases and industries as well as desired goals affect how the technology should be implemented. When applied correctly, such solutions provide productivity gains and improved safety for workers and vehicles, including the following:

- An accurate and timely view of all assets, including history.
- Efficient deployment of assets to jobs and customers.
- Improved project and trip-completion rates.
- More accurate time-card submissions for vehicle-based operations.
- Reduced speeding and idle time, lowering overall fuel consumption.



● A Web-based Fleet Central Application enables authorized users to securely access real-time information from specific geographic regions. Data are transmitted from remote assets by the Quake Global Q9612 modem (bottom inset).



● **Satellite tracking systems provide a running history of operations as they're occurring in real time, including location and events, helping to improve operational safety and productivity.**

- Reduced risk of asset theft and improved recovery rates.
- Increased driver accountability with fewer incidents.
- More timely maintenance, perhaps saving a vehicle from destruction.
- Reduction in unauthorized use.
- Reduced insurance premiums.

Optimizing fleet-tracking operations through information intelligence and achieving returns on investment, however, can only be realized if the data are reliably delivered to the right place at the right time.

To achieve this, the enterprise must have access to a global satellite network and GPS to ensure data coverage in all parts of the globe where it operates. This ensures that the data get through, because cellular networks may be unavailable, unreliable or overstressed.

Satellite and terrestrial networks have varying coverage, cost, latency and throughput. Understanding which network fits the given profile is vital.

Some customers may require the flexibility of dual-mode satellite/terrestrial operation and the ability to communicate across multiple satellite networks. In these scenarios, the hardware modem must be able to support the given networks and provide a flexible platform for software applications that permit dynamic network usage and selection. A few modems are sophisticated enough to enable system integrators and value-added resellers to develop applications for a single communication protocol that then can be seamlessly extended for any network protocol, reducing development time and problems.

Robust and reliable modem operation ensures connectivity with the remote devices, even when operating in harsh environments. Recent enhancements in modem functionality, performance and form factor—coupled with significant cost reductions—have made installing such devices on fixed and remote assets viable and cost effective for a wide range of fleet-management operations.

And customers in any industry require a powerful Web application with strong backend support and uptime perspective. The Web application must provide users with relevant tracking and monitoring information in a user-friendly interface.

Also, the provider should have a strong track record in delivering solutions relevant to a customer's particular requirements and within relative industries. Historical reliability of operation and strong product/customer support are essential.

In addition to ensuring maximum productivity and uptime of specific equipment, companies can keep tabs on other important aspects of operations. Such access to information as it occurs is critical for supervisors who must make adjustments with minimal operational impact.

Oil at the Equator

Petroproduccion is a subsidiary of state-owned PetroEcuador in the South American country of Ecuador. Production, maintenance and engineering teams travel throughout remote and hazardous regions to service and support production and distribution facilities, so worker protection and immediate emergency-alert capabilities are essential.


Recognizing the potential benefits of monitoring its remote assets and personnel, Petroproduccion hired Fleet Management Solutions Inc. (FMS), which used global satellite two-way data communications to set up an asset-tracking system that monitors more than 100 Petroproduccion vehicles.

Each vehicle is equipped with an FMS system that includes a rugged Quake Global (QUAKE) satellite-tracking modem, a dual-mode GPS/satellite antenna, and, in some cases, an emergency button and two-way text-message terminal. FMS loads its event-driven software into the QUAKE modem to make the satellite communications as efficient and optimal as possible.

Data from the vehicles are transmitted through a satellite network to a ground station, which relays the data to the FMS Network Operations Center. Authorized users can securely access this information anytime, anywhere via the Fleet Central Web Application.

Since installing the FMS system, Petroproduccion rectified many issues while enhancing other aspects of its fleet management, including the ability to account for all of its assets. Specific driver-to-asset allocation monitors situations such as speeding, boundary violations and excessive idling through incident reports e-mailed directly to Petroproduccion management.

Data from the vehicles are transmitted through a satellite network to a ground station, which relays the data to the FMS Network Operations Center.

In addition, the company improved its competitiveness and bottom line through better equipment allocation and faster job completion. Operating expenses decreased across the board, but more specifically in reduced repairs, maintenance, fuel, insurance and asset replacement associated with theft and loss. 

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GeoDirectory www.geoplace.com/directory	7
GeoPlace.com www.geoplace.com	29
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