OFF THE FENCE

CORRY BRENNAN EXPLAINS HOW SATELLITE-ENABLED ASSET TRACKING IS HELPING THE OIL AND GAS INDUSTRY TO HARNESS THE POWER OF THE INTERNET OF THINGS

Whether you call it machine to machine (M2M) or Internet of Things (IoT), organisations everywhere have woken up to what's possible when you can track and monitor your mobile and fixed assets. We have seen a dramatic uptake of application-specific satellite-enabled solutions that can monitor assets ranging from cargo to trucks, oil pipelines, reservoirs, rail tank cars, even livestock and some of the world's most endangered species.

Because of their ubiquity and availability, even in extreme environmental conditions, tracking solutions with satellite connectivity allow oil and gas organisations to reach deep into remote and hostile locations, gathering and levering geospatial data, while mitigating against land and mobile network outages and overloading.

Mobile coverage is often non-existent in geographies where oil and gas operations take place, particularly North Africa, the Nordic region and the Eurasian landmass. To stay connected from anywhere in these thousands of hectares of terrain, as well as at sea, satellite communications is the only option.

Companies in the oil and gas industry have been particularly progressive in how they have put IoT and geospatial positioning to work. IoT has already proven to be an effective way to optimise the remote management of oil and gas pipelines and can reduce or eliminate the need to send a crew to an inhospitable location.

For example, IoT is a game-changer when it comes to fault localisation. Engineers have a powerful tool to swiftly zero in on a problem that needs to be fixed, rather than expensively searching across kilometres of pipeline, effectively hunting a needle in a haystack.

As well as reducing operating costs, data-rich satellite transmissions enable partners in the oil and gas supply chain to collaborate using near-real time data for better, faster, decision-making.

These same systems can also play a valuable role in protecting staff. For example, oil industry companies operating in Africa have deployed satellite-enabled asset monitoring solutions that help manage assets and which also deliver critical safety support for staff and site visitors.

Early last year, Tunisian civil works contractor Kilani Enterprise for Public Works deployed the Integrated Vehicle Monitoring System (iMVS), developed by Globalstar's Tunisia-based partner VMD, to track its fleet of 4x4 vehicles, with the goal of achieving better fleet security. But the system also helps monitor driver behaviour. iVMS gives Kilani Entreprise the precise location of its fleet while transmitting engine data which indicates driver performance such as sudden braking or

unexpected acceleration. Kilani Entreprise was already familiar with the usefulness of satellite communications because it has been using Globalstar's SPOT handheld devices since 2013 as its only means of safeguarding staff carrying out operations in southern Tunisia's vast desert. A Ukrainian oil services company also uses this system to help its exploration and production customers monitor the location of vehicle fleets and safeguard staff in the same region.

Another local support company is using iVMS to track transporters and containers carrying mechanical and oil rig equipment used in petroleum production and refining.

VMD customised these deployments by adding a one-touch SOS button to the vehicles' dashboards. If the driver or any passenger is in danger or requires emergency medical help or if the intervention of security forces is needed, a single press of the button alerts security teams and first responders who instantly know the precise location where help is needed.

A key benefit of iVMS is that the system seamlessly switches from GSM to satellite as soon as it detects weakening GSM signal. Harmonious use of these two types of network yields maximum cost efficiency, while delivering reliable, ubiquitous connectivity.

Geo-fencing

When the devices are being configured, GPS coordinates are used to create a notional fence. This is geo-fencing — or building a virtual fence without the need to build a physical one.

The ability to create a geo-fence is a particularly valuable application in security scenarios. For instance, the user can create a geo-fence which maps where any asset is moving. If the item moves outside of its typical patch, or beyond the virtual fence which has been set up, the user can get an alert or alarm.

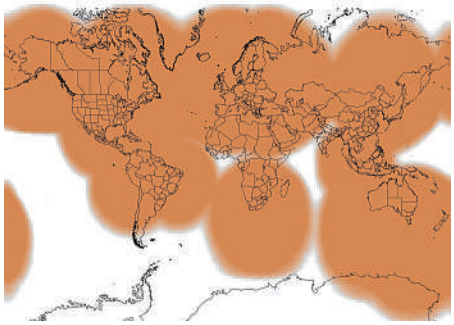
The devices in vehicles also monitor driver behaviour – the sensors pick up erratic movement, an engine over-revving, and they can prove themselves very useful if a driver or passenger is having a medical emergency. A message can be sent to the user or security team alerting him/her when the asset has moved beyond the authorised range.

The device signals the asset's position at pre-set intervals. However, if the asset is taken past the virtual fence you can 'ask' the device to send out alerts with new GPS co-ordinates every few minutes until the asset is located.

iVMS messages typically contain a GPS position, taken from the in-built GPS chip. The data includes the time-stamped latitude and longitude of each asset and the remaining battery life of the unit. With some enhancements to the system, the signal can also convey additional environmental information such as temperature.

We expect that tracking using both GSM and satellite will prove to be valuable in developing regions such as Africa where infrastructure can be patchy or even non-existent.

IoT is now widely recognised as an area where satellite solutions can deliver dramatic operational efficiencies by enabling the monitoring and tracking of assets. Using devices containing IoT tracking chipsets, oil industry support companies can remotely monitor the status of their assets, even across vast deserts.



Globalstar's simplex network is configured to deliver coverage for satellite IoT tracking wherever it's required

SOS button in VMD's asset-tracking deployments

THE ABILITY TO CREATE A GEO-FENCE IS A PARTICULARLY VALUABLE APPLICATION IN SECURITY SCENARIOS

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Globalstar second generation satellite (© Thales Alenia Space)