



Three Ways to Power Asset Tracking

A BlackBerry Radar® Article

One of the biggest challenges when choosing a telematics solution for your non-powered assets is making sure it comes with a reliable and energy-rich power source. The power source is arguably the most critical component in a telematics device because without it the device would not be able to perform its key functions: the collection and transmission of data.

Monitor and understand your:



Since trailers, containers, chassis and some equipment do not have a built-in power source, tracking solutions for these assets must rely on the power source technology that is integrated into the telematics device. The power source determines how often and how much data can be transmitted, as well as how much computation, such as used by GPS or sensor processing, can be performed by the device. If these factors are not taken into consideration, visibility to the status of assets may not be reliable.

There are three types of power sources available for tracking trailers today and two for other non-powered assets. This article examines each one and the key considerations when selecting one that maximizes ROI.

Wired Device

Only an option for powering trailer or chassis telematics solutions, wired devices are connected to the wiring harness that receives power from the truck or tractor. When connected, wired devices can send frequent or even real-time updates. Receiving real-time updates enables real-time decision making.

When not connected to the wiring harness the telematics device relies on the rechargeable battery. Typically, these rechargeable batteries are smaller and can operate between 30–120 days before requiring a recharge. The time before recharging is required depends on the frequency of the data transmitted, the amount of data, the computations the device makes to understand the data, the temperature (worse when cold) and the condition of the rechargeable battery (its life).

The connection quality of the wiring harness and proper installation of the device are essential to this system working well. An issue to consider is that all physical connections are a point of failure: the wiring harness is no exception. The connector may get damaged, become brittle over time or in harsh environmental conditions, and be susceptible to water damage and rust.

These devices also require professional installers, adding to the expense of the system as well as the complexity or delay of deployment.

Solar-Powered Battery Device

Solar-powered battery devices have life-time specifications of 5-10 years; these devices are powered by sunlight falling on solar cells that charge a battery in the device. Solar-powered devices, while innovative, are accompanied by concerns regarding longevity and durability. For instance, lack of sunlight, angle of sunlight hitting the solar panels (time of day, seasons and geography), dust, debris, snow or any damage to the solar panel can impact the battery recharge capacity and even render the device completely useless. For assets like chassis, which see limited sunlight when loaded, solar-powered devices are not an option.

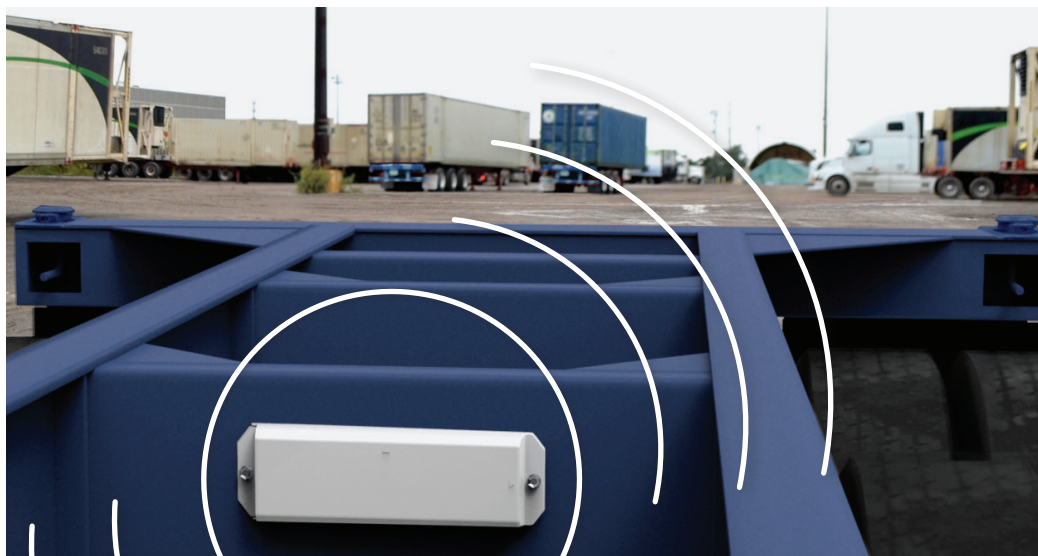
When a battery is low on charge, data updates are typically batched to conserve remaining battery life. This means that even in the case of key events, such as a door opening or closing, you might only find out about the event hours after it has happened. Similarly, when the battery is low on “juice” and the device wants to send data when far away from a cell tower, it may not have the power to communicate.

One approach to manage this for trailers is the option to connect the solar module into the 7-way trailer power connector, which can enable real-time reporting. However, this defeats the purpose of a non-wired system since it has the same maintenance and installation drawbacks as previously outlined for the wired devices.

Rechargeable batteries, as used with solar-powered or wired devices, lose charge over time with repeated charge/discharge cycles. Moreover, performance can be significantly impacted by temperature extremes. As such, while these batteries are great to start off with, they have problems as they age.

Pictured: BlackBerry Radar H2 installed on a chassis.

Self-contained telematics devices that have no external wires or power-sources have fewer possible failure points and can have more installation location options.



Self-Contained Battery-Operated Device

A self-contained battery-operated device is one which has a built-in non-rechargeable battery, which makes them ideal for tracking non-powered assets such as containers, chassis or trailers. These devices are very easy to install because there is no external wiring. For instance, such a device could be installed on a container, chassis or trailer in 10-minutes or less. While installation of a wired device on a chassis would require that the container be removed, self-contained battery-operated devices could be installed with the chassis loaded.

Most self-contained battery-operated devices on the market today specify a life span of three to seven years, depending on the frequency of updates. Typical update frequency used to vary between one and four hours. Fleet operators and their customers often need more frequent data updates on their assets' locations and movements to make business decisions.

More recently, high capacity batteries have entered the market. These batteries have advanced chemistries and are built to withstand harsher temperature conditions compared to rechargeable batteries. The high energy capacity allows for more data, more frequently, to be sent to help fleet operators get granular insight into their operations.

For example, BlackBerry Radar, which uses a high-capacity battery with chemistry that is ideal for temperatures from -40°C to 80°C (-40°F to 185°F), collects sensor data as well as GPS readings every five minutes while the asset is in motion. Users can customize their data updates so that this information is delivered to the cloud-based analytics platform at intervals of 15 minutes or more as well as when key events occur. As a result, battery life can be extended based on frequency of data transmission (pings). These batteries can last six to eight years depending on how the device is configured.

Maximizing ROI

While a telematics device for non-powered assets may claim a long life, this does not necessarily mean that it will be reliably powered for that stated length of time. Choosing a solution which provides reliable visibility to your assets will enable you to optimize your operations using data to inform decisions.

As discussed, the power source has implications on installation and maintenance which affect the solution's true total cost of ownership and the ability to recoup a strong ROI. For instance, wired devices often require paid professional installers and can take upwards of 40 minutes per device to install, while self-contained devices can be installed in 10 minutes by almost anyone. Similarly, the cost of replacing wiring or maintaining solar panels, for instance, can add incremental costs in addition to the lost opportunity cost of removing your asset from utilization.

Choosing an asset tracking solution for your operations that has a power-source which meets your requirements for visibility while taking into account reliability as well as installation and maintenance costs will drive the overall results of the solution. The power source makes the difference between a successful and satisfying experience or an unproductive, frustrating and increasingly expensive one. Understanding the pros and cons of available options is essential to choosing the solution to track your non-powered assets from trailers and chassis to containers and other equipment.



BATTERY TYPE	ASSETS	UPDATES	LIFE & CHARGE	MAINTENANCE	INSTALLATION
Wired	<ul style="list-style-type: none">TrailersChassis	<ul style="list-style-type: none">When connected to power source, updates can be in real-time	<ul style="list-style-type: none">30–120 days when not connectedAbility to hold charge worsens over time and in extreme temperatures	<ul style="list-style-type: none">Connection and wiring are possible failure points	<ul style="list-style-type: none">Professional installersTime intensive
Solar	<ul style="list-style-type: none">TrailersContainersEquipment	<ul style="list-style-type: none">Near real-timeBatched, when low on power	<ul style="list-style-type: none">Up to 5-10 years of lifeAbility to hold charge worsens over time and in extreme temperatures	<ul style="list-style-type: none">Panel reliability and maintenance	<ul style="list-style-type: none">Professional installers
Self-Contained High Capacity	<ul style="list-style-type: none">TrailersChassisContainersEquipment	<ul style="list-style-type: none">Near real-time	<ul style="list-style-type: none">Up to 6-8 years of lifeCannot rechargePerformance not effected between -40 and 85C	<ul style="list-style-type: none">Minimal – no external wiring	<ul style="list-style-type: none">Easy installation by anyone

BlackBerry Radar® asset monitoring for non-powered assets was developed using 20+ years of experience delivering secure, mission-critical products. The solution provides deep visibility into the status of chassis, trailers, containers, and equipment, to help improve operations and utilization. It includes: ruggedized low maintenance devices that can be installed in less than 10 minutes; long lasting self-contained batteries, proprietary algorithms for enhanced information accuracy, and encryption, for reliable visibility you can trust; and a Web-based portal and tools for powerful and actionable analytics.

Contact BlackBerry Radar for more information on tracking your non-powered assets at 1.844.239.4572

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