



Bosch is digitalizing construction sites Interconnected sensors enhance efficiency and utilization rates of vehicle fleets

August 24, 2018

PI 10718 BBM IEh/af

- ▶ The IoT solution Bosch TRACI locates vehicles on construction sites and farms
- ▶ Wait, search, and transportation times are kept to a minimum
- ▶ Data transmitted by the sensors helps improve processes, decision making, and machinery utilization
- ▶ Energy-saving communication via the LoRaWAN network

Stuttgart, Germany – It is a real headache, as well as a potential cause of delay, when vehicles such as excavators or dump trucks cannot be located on huge construction sites. Where exactly are my vehicles? And how many hours have they been in operation? It is questions like these that fleet operators in the construction industry and agricultural sector have to be able to answer if they want to deploy their vehicles as efficiently as possible. This is where the Bosch asset tracing solution – or Bosch TRACI for short – comes into its own. The robust, IoT-based connectivity solution can be easily retrofitted to existing vehicles. “Bosch TRACI provides all the relevant data needed to enhance the efficiency and utilization rate of any vehicle fleet,” says Jan Philipp Büchner, the product manager responsible for Bosch TRACI. “It helps keep wait, search, and transportation times to a minimum.” The Bosch solution comprises a sensor box, cloud-based evaluation software, and a wide array of digital services.

Improvements through tracking

Productivity growth is substantially lower in the construction industry than elsewhere, and the reasons for this include the growing difficulty of keeping track of all pieces of machinery on increasingly larger and more complex building projects. Bosch TRACI helps improve how much the machinery is used, while speeding up the process of materials distribution. Every vehicle is first equipped with a Bosch TRACI tag, a compact sensor box with its own power supply that captures the vehicle’s position, state of motion, as well as a lot of other data.

The data is encrypted and transmitted via a LoRaWAN network to the Bosch IoT cloud, where it is decrypted. Customers and users can then access the sensor data, integrating it into their existing software systems for logistics, scheduling, and operations planning. Of course, the data can also be visualized directly on a smartphone app or in a web browser.

Keeping tabs on vehicle fleets and machinery

In agricultural scenarios, Bosch's asset tracing solution dovetails with existing agricultural machinery systems as well as with the sensor-based monitoring solutions provided by the Bosch startup Deepfield. It can also be used to record the operating hours of coupled machines (such as seeding machines without an independent power supply) and to determine when the operators should be reminded of important maintenance work. That can substantially lower the risk of breakdowns and expensive repairs. Bosch's Connected Agriculture platform ensures an easy exchange of data and trouble-free interaction with existing Bosch solutions.

Robust, long-lasting, versatile

During Bosch TRACI's development, special emphasis was placed not only on data security and ease of integration, but also on the need to withstand rough ambient conditions on construction sites and farm fields. Bosch TRACI tags are tested to meet such stringent tightness requirements that the machines on which they are installed can be cleaned with high-pressure jets of steam. The tags are also especially resistant to shock and liquids.

In typical applications, the service life of a sensor is three to six years. That can be extended to ten years if the measurement and transmission intervals for sensor data are reduced. The sensor's clever software algorithms achieve this, for example, by limiting the capture of positional data to situations in which the sensor is moved. High levels of robustness and a long service life also point to potential use cases in other markets. Deployed in smart-city scenarios, for instance, the sensors can make the management of local-government vehicles and technology easier. They can capture movements in infrastructure such as power pylons, enabling fatigue and damage to be detected in good time. In open-cut mines, they can serve to check the condition of machinery and conveyor belts so that maintenance work can be performed as needed.

LoRaWAN – a cost-efficient, energy-saving network

Bosch TRACI uses the LoRaWAN (long-range wide-area network) IoT wireless network. The development of this standard is being promoted by the LoRa Alliance. The standard allows users to set up their own networks, in similar fashion to a wi-fi network at home. Unlike wi-fi, a LoRa network has a range of several kilometers, but with lower bandwidths. Nonetheless, these bandwidths are more than adequate for the data the Bosch TRACI tag transmits. There are also publicly accessible LoRaWAN networks run by commercial operators. Like existing mobile networks, these collect and transmit data from LoRa sensors. Virtually seamless LoRaWAN networks are already in place in France, Switzerland, and the Benelux countries, and a public one is under construction in Germany. Bosch is already working together with several providers in these countries, and can offer its customers the option of using such public networks for its TRACI solution. Bosch TRACI can also be utilized in The Things Network, an open, community-based initiative that invites everyone to form part of a global IoT network and make use of it themselves. As of early 2018, there were over 3,400 LoRa stations in operation in more than 80 countries.

Press photos: #1453317, #1453318, #1453319

Contact person for press inquiries:

Inga Ehret

Phone: +49 711 811-16476

Twitter: @BoschPresse

Mobility Solutions is the largest Bosch Group business sector. In 2017, its sales came to 47.4 billion euros, or 61 percent of total group sales. This makes the Bosch Group one of the leading automotive suppliers. The Mobility Solutions business sector pursues a vision of mobility that is accident-free, emissions-free, and stress-free, and combines the group's expertise in the domains of automation, electrification, and connectivity. For its customers, the outcome is integrated mobility solutions. The business sector's main areas of activity are injection technology and powertrain peripherals for internal-combustion engines, diverse solutions for powertrain electrification, vehicle safety systems, driver-assistance and automated functions, technology for user-friendly infotainment as well as vehicle-to-vehicle and vehicle-to-infrastructure communication, repair-shop concepts, and technology and services for the automotive aftermarket. Bosch is synonymous with important automotive innovations, such as electronic engine management, the ESP anti-skid system, and common-rail diesel technology.

The Bosch Group is a leading global supplier of technology and services. It employs roughly 402,000 associates worldwide (as of December 31, 2017). The company generated sales of 78.1 billion euros in 2017. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT company, Bosch offers innovative solutions for smart homes, smart cities, connected mobility, and connected manufacturing. It uses its expertise in sensor technology, software, and services, as well as its own IoT cloud, to offer its customers connected, cross-domain solutions from a single source. The Bosch Group's strategic objective is to deliver innovations for a connected life. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is "Invented for life." The Bosch Group comprises Robert Bosch GmbH and its roughly 440 subsidiary and regional companies in 60 countries. Including sales and service partners, Bosch's global manufacturing, engineering, and sales network covers nearly every country in the world. The basis for the company's future growth is its innovative strength. At 125 locations across the globe, Bosch employs some 64,500 associates in research and development.

To learn more, please visit www.bosch.com, iot.bosch.com, www.bosch-presse.de, twitter.com/BoschPresse.