

TTConnect Cloud Service and IoT solutions

Connect your mobile machinery with TTControl's cloud

Connect and manage your mobile machinery with TTConnect Cloud Service

TTConnect Cloud Service and IoT solutions offer a connectivity technology enabling manufacturers of mobile machinery to monitor and manage all their vehicles around the world at any time with any web-enabled device – with only one off-the-shelf solution. The offering includes a hardware unit named TTConnect Wave (IoT gateway), a M2M SIM card, as well as a cloud service platform and a web portal.



IoT in the off-highway market

Today, the increasing requirements regarding control, productivity and efficiency demand new solutions in the off-highway market. The Internet of Things (IoT) and related mobile machinery telematic systems allow manufacturers of mobile machinery and fleet owners as well as vehicle rental companies to utilize their machinery and equipment more efficiently. They gain a better understanding of how their vehicles are used by the operator and benefit from continuous system monitoring and diagnostics. TTControl's connectivity offering is designed to combine all these advantages.

Key Features of TTConnect Cloud Service

- ✓ Over-the-air updates of complete machine software
- ✓ Fleet management and maintenance
- ✓ Collecting and analyzing machine data in real-time
- ✓ Simple and intuitive configurable web portal
- ✓ Creation and configuration of alarms
- ✓ Unparalleled machine integration with TTControl controllers and displays

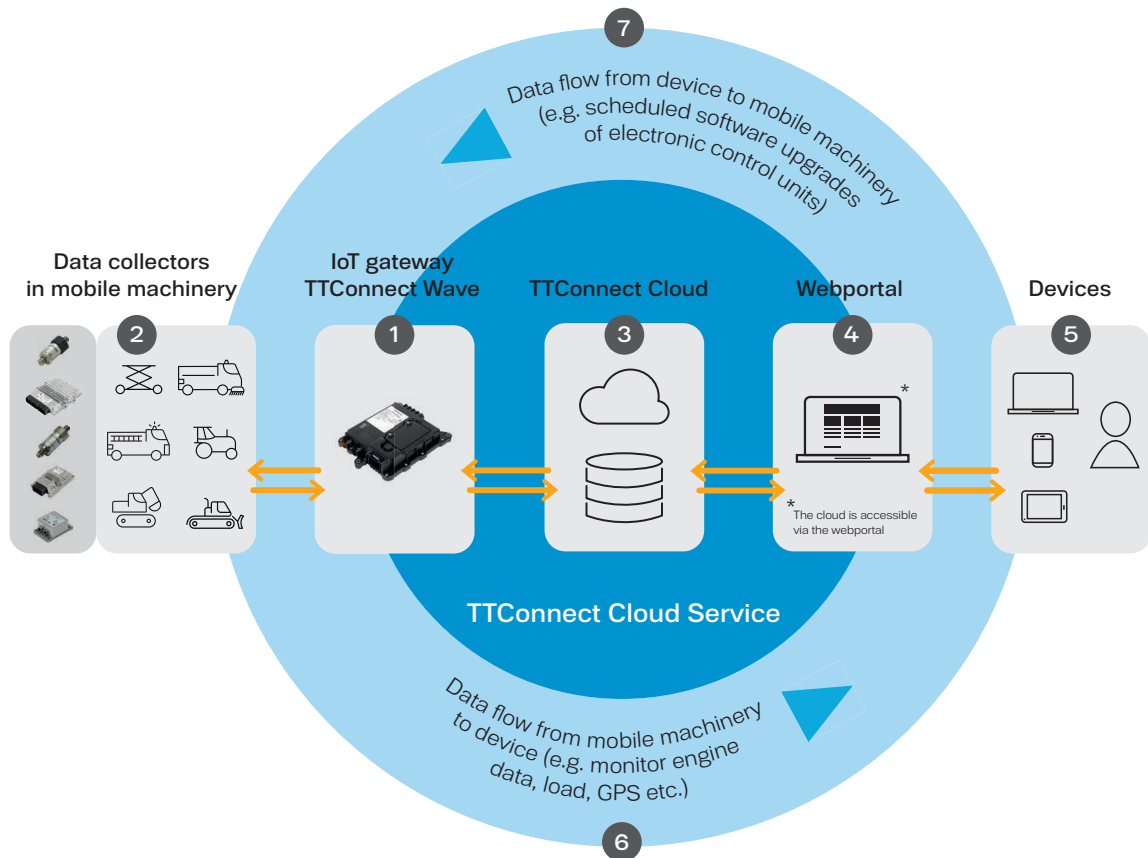
Create more value by analyzing your data

Our connectivity solution TTConnect Cloud Service including our ruggedized IoT gateway TTConnect Wave **1** can be integrated seamlessly into existing electronic architectures of mobile machines, enabling remote access to all data available on the vehicle's CAN busses. **2**

The gateway collects data and redirects them to the TTConnect Cloud **3**. The TTConnect Cloud can be accessed via the web portal **4** from any web-enabled device **5**, allowing the user to visualize and analyze all collected data.

TTConnect Cloud Service offers customers an end-to-end solution allowing for a deep insight into vehicle data such as engine speed, load or GPS positions which are transferred to the cloud and accessed via the web portal. **6**

Thanks to the IoT gateway scheduled software upgrades of electronic control units are configurable in the web portal by grouping vehicles with multiple criteria (i.e. machine type, machine model, geographical area etc.). **7**



Software



Easily access your data in the TTConnect cloud with our web portal

The web portal is accessible from the office, from home or on the road with any web-enabled device and can be customized to your specific needs.

Adapt the web portal to your needs

Store and monitor machinery parameters

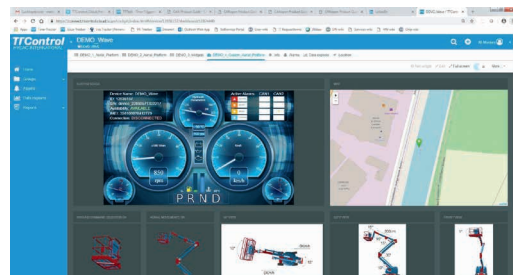
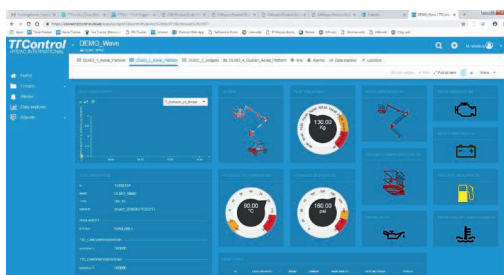
Define and select the data you wish to monitor directly in the portal. This configuration is transmitted to the TTConnect Wave gateway installed on the machine so that it only monitors the selected parameters.

Customize your dashboard

The web portal offers intuitive dashboards and widgets that can be customized, allowing for a fast understanding of any live parameters of the vehicle. User accounts with custom dedicated access rights can be created through the web portal. You can also adapt the portal to your Corporate Identity using your brand colors and logos.

Rely on alerts and alarms

The solution allows for fast reaction to any kind of machinery issue thanks to alarm triggers and alerts that can be transmitted from the TTConnect Cloud Service platform to a mobile device via SMS or e-mail.



Web portal screenshots



Hardware

Robust off-highway hardware built for harsh environments

TtConnect Wave is a high performance, ruggedized IoT gateway designed and manufactured to connect your vehicle or mobile machine to the cloud via wireless or cellular interfaces.

Connected gateway:

- 2x CAN
- WLAN, Ethernet, USB 2.0
- GPS/GLONASS
- Accelerometer & Gyroscope

Mobile communications standards:

- GSM
- EDGE
- UMTS
- HSPA+
- LTE



Feature highlights:

- 32-bit 800 MHz CPU
- 4 GB FLASH
- 802.11 b/g/n/ac
- 10/100 Mbps Ethernet

Harsh environments:

- Operating temperature
- 40°C to + 85°C
- IP67/IP69K rating

Covering a wide range of application fields

TTControl's IoT connectivity solutions are applicable for various use cases in the off-highway sector. Whether you need to analyze sensor data from your harvesters, protect your wheel loader from theft on a construction site or optimize the routes of your garbage truck fleet, you will benefit from TTConnect Cloud Service.

Agriculture



Through access to vehicle data, manufacturers of agricultural vehicles – such as harvesters, balers or sprayers – can troubleshoot any failure in a short time. By analyzing the data collected by sensors via the in-vehicle CAN interfaces, operator needs can be anticipated and considered for the development of upcoming vehicle architectures.

Construction



By regulating the hydraulic systems, TTConnect Cloud Service helps you to avoid over-usage and misuse of your excavators, wheel loaders or rollers and lowers the mechanical stress of valves, pumps or motors. It increases the productivity of your machinery and allows for predictive maintenance.

Municipal



TTConnect Cloud Service allows you to monitor the exact location and positioning of your municipal machinery such as garbage trucks or road sweepers. This provides you with a better understanding of vehicle distribution, improving the optimization phase of route planning and resulting in shorter distances and therefore less fuel consumption.

Material Handling



Setting a specific geofencing zone controls your lifting platforms and prevents your machinery from theft. In case the monitored vehicle leaves the defined geofencing zone, the system automatically generates an alert on the cloud and sends an e-mail or SMS to the vehicle owner.

Increase efficiency and save operational costs

TTConnect Cloud Service unlocks the benefits of digitalization in the off-highway market. Complete machine management and data analysis allow for substantial operational cost savings.

- ▶ Increase overall machine efficiency and productivity
- ▶ Optimize vehicle maintenance costs
- ▶ Reduce fuel consumption of entire fleets
- ▶ Improve machine security by theft protection

The global network of TTControl



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