IoT Transformation

For the Off-Road Equipment Industry

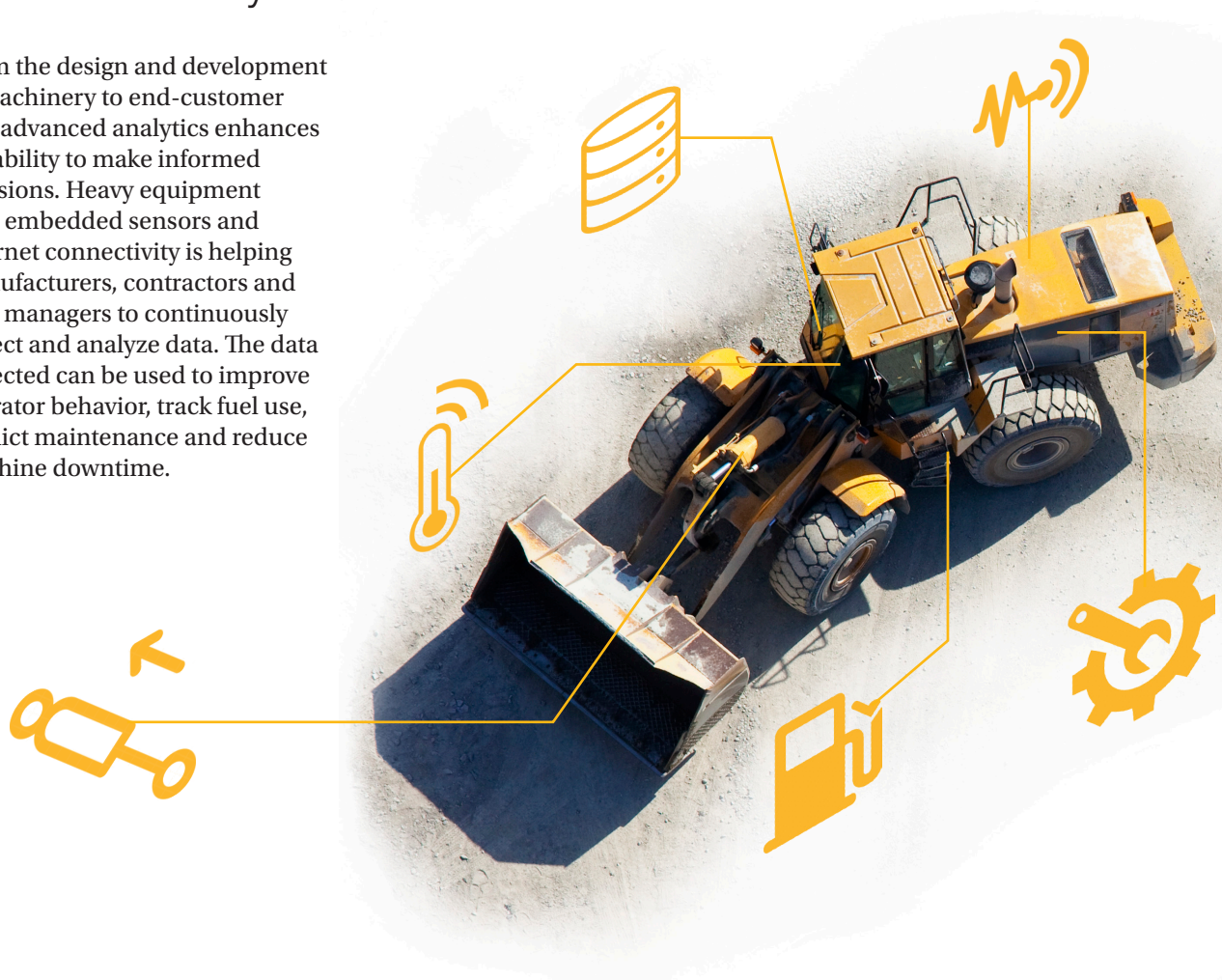
Parker

ENGINEERING YOUR SUCCESS.

IoT Transformation for the Off-Road Equipment Industry

Advanced analytics enhances informed decisions.

From the design and development of machinery to end-customer use, advanced analytics enhances the ability to make informed decisions. Heavy equipment with embedded sensors and Internet connectivity is helping manufacturers, contractors and fleet managers to continuously collect and analyze data. The data collected can be used to improve operator behavior, track fuel use, predict maintenance and reduce machine downtime.



Moving Beyond Simple Location Tracking

Today business leaders are turning to IoT solutions, such as Parker's Mobile IoT, to improve operational visibility, address regulatory and compliance requirements, and respond to competitive pressures. Most equipment manufacturers offer connected equipment with built-in telematics sensors, however, IoT solutions take it a step further with customized data to show recommendations to business operations on how to maximize performance and longevity.

The benefits at a glance:

- **Data Insights:** Maintenance recommendations based on machine utilization or health status before equipment fails
- **Remote Diagnostics and Programming:** Detailed information regarding equipment failure without having to send a technician to a jobsite or the ability to send technicians with the right tools and parts on the first trip, which can reduce downtime, labor and travel costs
- **Location and Tracking:** Know where, when and how long every machine is used and set alerts if a vehicle goes past a set boundary to prevent unauthorized use at location or even theft. Know where critical events happened and recommend the closest support to action
- **Automated Reports:** Generate customized reports with specific intervals to save time on fleet administration and work reports
- **Machine Utilization and Usage:** Check the efficiency of operation in real-time, as monitoring everything from tire pressure to seatbelt enforcement ensuring the safety of your employees
- **Frequency and Duration Use:** Know how often and for how long each machine on a jobsite is used can help you allocate equipment resources more effectively as well as manage warranty agreements

Turn Knowledge into Profit

Gain insights necessary for achieving a competitive advantage.

IOT is on the minds of companies across many industries, especially within the mobile equipment industry. Investing in an IoT solution has proven financially beneficial within the first two years.

Driving Innovation and Customer Loyalty for OEMs

In addition to improving engineering and design concepts, OEMs can leverage data from Parker's Mobile IoT solution to create different equipment, with less simulation and modelling required. Using the real data from existing infrastructure, the options for finding new designs or even new uses for equipment can lead to new markets and new product lines for an OEM. This presents a huge opportunity for the OEM to ensure that they stay ahead of the competition.

OEMs realize that connected off-road equipment can help their customers reduce costs, increase productivity, and improve safety. Parker's Mobile IoT solution includes services such as asset health monitoring and automated hydraulic systems. These services not only add value for an OEM customer, they also increase brand loyalty, as other brands of equipment are not integrated with an existing IoT solution. Parker offers customer-centric IoT solutions to meet the specific requirements of OEMs. As a result, OEMs can generate additional revenues not only from its data-driven offerings, but also from its core business through increased equipment sales and aftermarket services.

Delivering Visibility, Reducing Fleet Management Costs

Parker's Mobile IoT solution provides new insights for fleet maintenance, giving managers a fresh view into the mechanical health and utilization of expensive assets such as fuel costs, idle time, accidents, compliance violations and other contributors to fleet management costs. Therefore, fleet managers can be proactively and make equipment repairs before a breakdown happens, thereby avoiding lost revenue.

Parker's Mobile IoT solution can help fleet managers bill for projects and bid on jobs more accurately. Parker's Mobile IoT solution can track equipment use down to the minute and monitor related events such as fuel and maintenance to help fleet managers to better calculate cost, fleet sizing and create more accurate estimates for future projects.

Improve Operations with Data Insight

Parker's Mobile IoT solution for off-road vehicles offers numerous safety improvements are not always obvious and can go a long way to reduce the risk of accidents for both operators and coworkers. The data collected provides coaching opportunities for operators not following company-established rules for job-site behavior, such as exceeding speed limits. Additional safety monitoring and alerts include:

Geofencing
Ensures equipment is in the right location at the right time and performing authorized work

up to **20%** **increase in productivity**

Tire Pressure and Temperature
Reduces the risk of machinery being operated in an unsafe manner

up to **60-75%** **reduction in tire replacements**

Third-Party Axle Load Capacity
Issues alerts if a vehicle is loaded over recommended capacity

up to **20-30%** **reduction in recordable accidents**

Harsh Braking, Hard Acceleration, Excessive Idling, and Seatbelt Usage
Makes sure unsafe operating habits are flagged and tracked

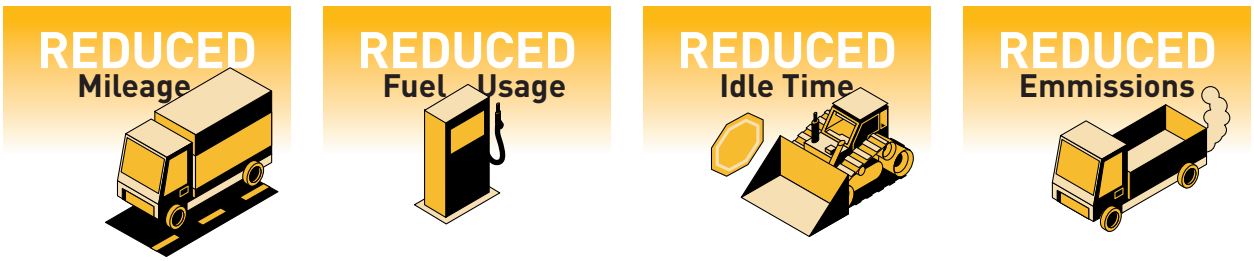
up to **20%** **reduction in fuel consumption** from long-term idling

By using Parker's Mobile IoT solution for off-road equipment as a safety technology, businesses can correct unsafe driving in real-time and receive tools to coach and provide performance feedback to employees. The investment in the technology becomes incredibly worthwhile when considering the cost of an IoT solution versus the cost per accident.

Promote Positive Sustainability

Protecting the environment is extremely important, however, running an environmentally friendly business can be difficult and very expensive, especially if you have a mobile workforce. Parker's Mobile IoT solution can positively impact the environment by providing data that can reduce emissions and idling for off-road equipment.

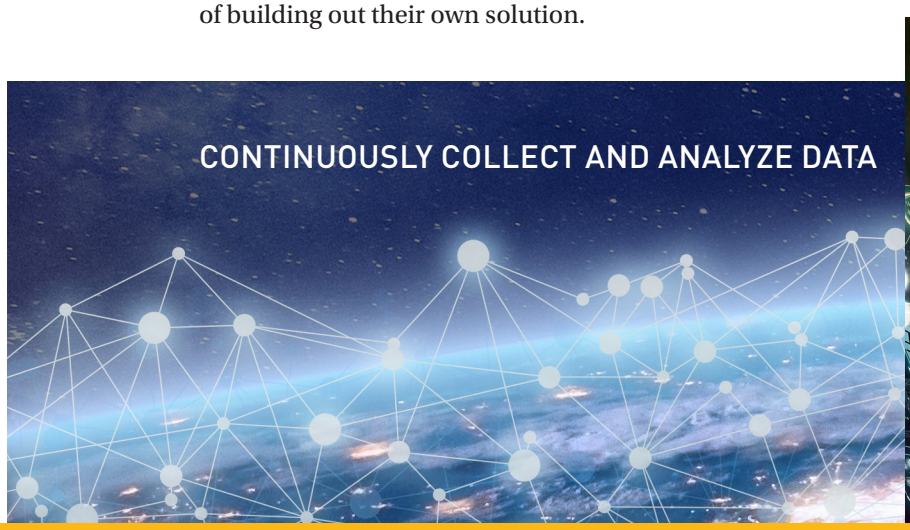
- **Emissions Reduction:** Parker's Mobile IoT solution can help maximize a fleet's routing and travel efficiency. This will result in reduced mileage and time on the road, which subsequently reduces fuel usage and emissions released. Furthermore, if equipment is well maintained, the vehicle will drive more smoothly, use fuel more efficiently, and produce fewer emissions.
- **Idle Reduction:** Parker's Mobile IoT solution allows you to monitor equipment idle time. Idling equipment burns fuel and give off pollutants the same way moving vehicles do. By monitoring idle time, you can identify employees that are prone to leaving their vehicles idling.



Parker's Digital Ecosystem for Mobile Equipment

Building an IoT platform in-house can be costly for an OEM or fleet management company as well as require years of development. Working directly with Parker enables OEMs and fleet managers to benefit from comprehensive technology integration and data analytics expertise to create more valuable machine designs for customers without the cost or risk of building out their own solution.

Parker offers a comprehensive portfolio of solutions that enable a highly secure, scalable and data-driven approach to your business transformation. As the recognized leader in hydraulic motion and control, Parker's Mobile IoT solution integrates Parker's intelligent hydraulic components and electronic control hardware, IQAN Connect, and robust software into one seamless digital ecosystem.



Easy to Integrate End-to-end

When comparing IoT solutions, it is important to recognize that Parker offers the following unique features compared to competitors:

- **Plug and Play Configurability:** Configure and commission Parker's Mobile IoT solution quickly, conveniently and completely free of programming via the integrated browser-based interface - without intervening in the automation logic
- **Enhanced Connectivity:** Connecting real-time data and technology systems, including Parker's IQAN Connect, for remote troubleshooting
- **Flexible, Future-Oriented Framework:** Open interfaces and manufacturer-independent solutions that can continuously evolve and scale with business needs
- **Simple User Interface:** Fast visualization and easy to set up reporting tools
- **Customizable:** Built as an open and flexible platform for easy customization by OEMs
- **Over the Air Updates:** Secure over the air software updates ensures that equipment is always state of the art
- **Implementation Support:** Optimized planning and technical implementation support

Capture rich data on vehicle position, speed, fuel use, idling, and more with Parker's Mobile IoT solutions. Optimize your fleet or improve your product development process with high-performance technology that's scalable, flexible, and can be customized to suit your exact business needs. Parker delivers accurate intelligence for real results.

By delivering a proven, ready for the launch service and releasing additional features via over-the-air (OTA), Parker's Mobile IoT solution seamlessly ensures that an implementation continues to be robust while eliminating the need for any programming throughout the process.

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