smartAlpha™ Condition Monitoring for Railway Applications

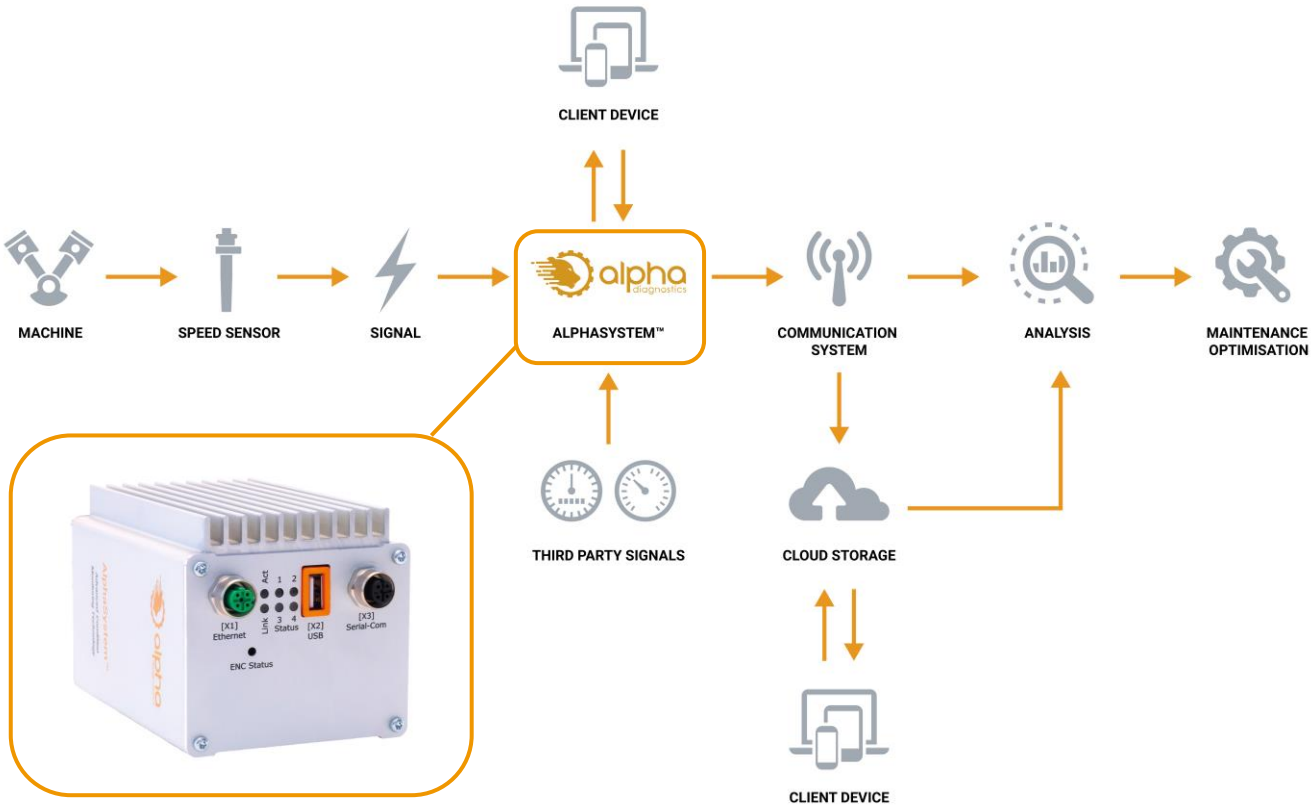
Keep trains on the move with a diagnostic solution for engines, traction motors, axle bearings and wheelsets

alphadiagnostics.ch

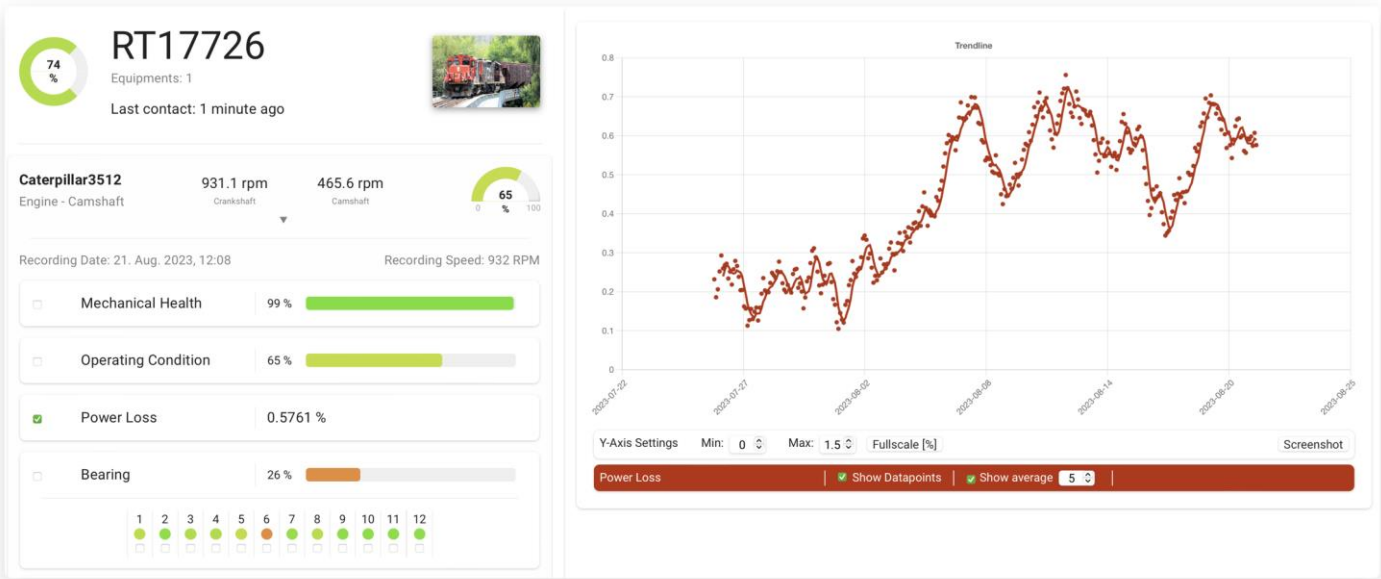
alpha diagnostics

System Architecture

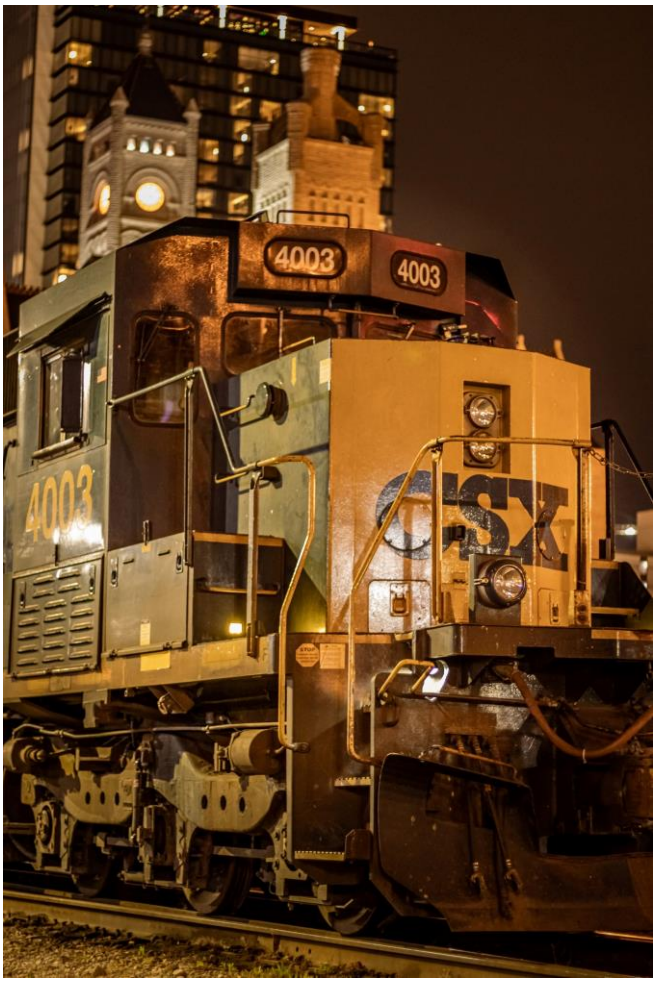
Based on the analysis of instantaneous speed of the machine, smartAlpha™ is a plug and play solution which detects anomalies within minutes. Multiple extension modules allow the integration of additional condition data to form a powerful monitoring platform.



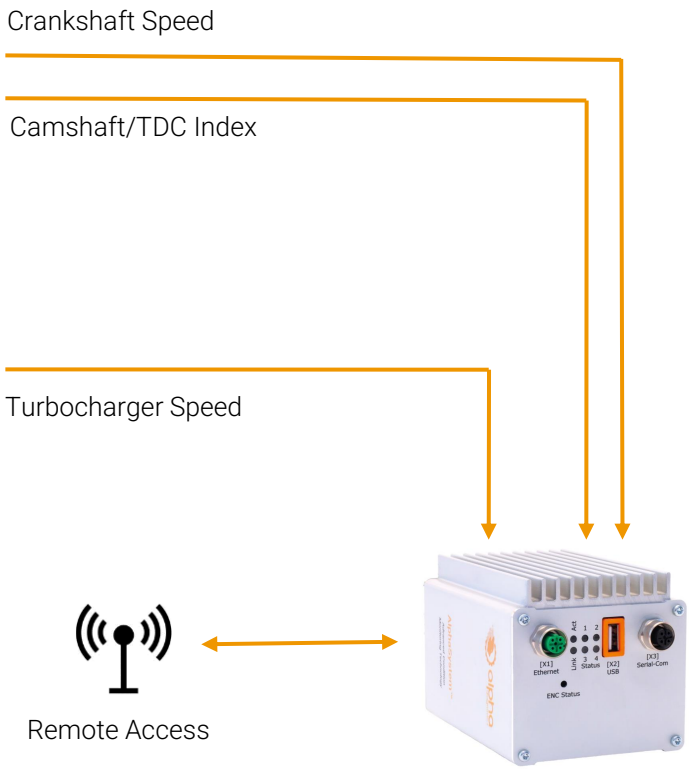
The alphaCloud™ dashboard allows users to easily visualize the diagnostic data collected by smartAlpha™ devices:



Diesel Engine Monitoring



(example configuration for a train with a diesel engine incl. turbocharger)



smartAlpha™ is non-intrusive and easy to retrofit. Existing speed sensor signals can often be used.

Engine diagnostic features

- Engine health indicators are provided graphically and/or numerically.
- Overview indicators for mechanical health, operating condition and power loss.
- Cylinder-specific indicators for compression, injection and bearing issues.
- Requires only 2 speed sensor signals per engine.
- Works with 2-stroke and 4-stroke engines of all manufacturers and with all fuel types.
- Easy integration into existing IoT environments.

Further applications

Due to its modular architecture, monitoring the condition of a locomotive's diesel engine is not the only function smartAlpha™ provides - it also allows customers to monitor other sub-systems and components:

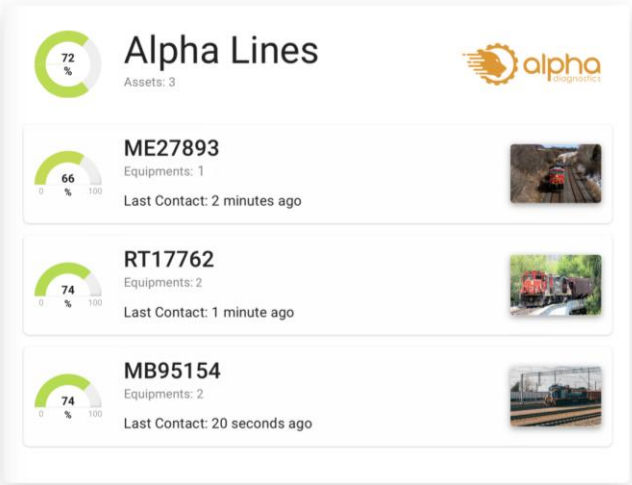
- Traction motors
- Axle bearings
- Wheelsets
- Gearboxes
- Batteries

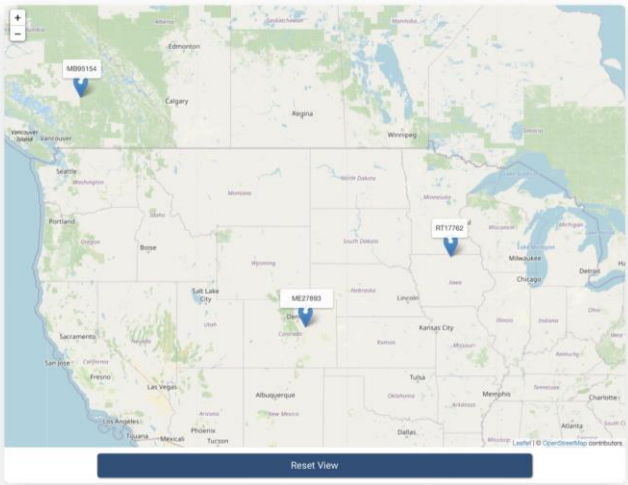
Please contact us for more information on these features.

Fleet-wide Trend Analysis

Monitoring the condition of an entire fleet offers the advantage of being able to compare performance and condition data from multiple vehicles and analyse trends.

smartAlpha™ can easily interface with a variety of IoT platforms for data collection and visualisation. As condition indicators are generated locally on the vehicle, results can be easily transferred via limited bandwidth networks.





Business Benefits

- Early detection of impending failures
- Avoidance of unnecessary shutdowns
- Quick ROI and reduced energy cost
- Easy retrofit on all vessels
- Significant savings due to targeted maintenance
- Extended and optimised propulsion system lifetime
- Support for predictive and condition based maintenance strategies.

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