



Sensor-Technik Wiedemann

Meeting London's bus emissions goals
with the power of an IoT platform



Customer Profile

Sensor-Technik Wiedemann (STW) is a Bavarian company dedicated to electronic products for the digitalization, automation and electrification of mobile machines with a global reach. Founded in 1985, STW quickly became the source for telemetry solutions used by the world's leading manufacturers of mobile machines, large vehicles and agricultural equipment. Winning awards from its earliest days, STW is leading the way to a clean, efficient and profitable future.



New challenges

- Strict emissions initiative
- London's 2020 goal to cut NOx and PM emissions by 50%
- Real-time sensor data
- Nearly 5 billion passenger bus journeys per year



Software AG Solutions

- Cumulocity IoT platform



Key benefits

- Retrofitted 150 buses with TC1 emissions monitors as of December 2018
- Achieved centralized data recording with live cloud-transmission
- Hit milestones for NOx and PM reduction
- Enabled smart data collection and predictive maintenance
- Integrated CANbus, sensor data and cloud systems

IoT meets the road

Sensor-Technik Wiedemann (STW) is a leader in automation, electrification and digitalization and a specialist in large vehicle and equipment telemetry. So when the City of London set an ambitious goal to create the world's first Ultra Low Emission Zone in central London by 2020, STW was the name everyone knew would be connected to the effort.

"One of the key tools for hitting London's target is real-time monitoring of soot particles [PM] and nitrogen oxide [NOx] emissions from a fleet of over 5,000 buses that ply the city's streets," says Dr. Michael Schmitt, CEO, STW. "No one had accomplished anything like this before, but with Software AG's Cumulocity IoT platform customized and branded as 'STW machines.cloud' we knew we could pull off a world's first without missing a step."

The confidence is warranted. That's because STW machines.cloud has relied on the Cumulocity IoT platform for three years, delivering class-beating results for more than 100 companies that harness its power across industries as diverse as municipal vehicles, construction, agriculture, heavy vehicles and maritime.

With more than 150 buses connected via TC1 wireless systems by July 2018—and ready for next-gen IoT networks and 4G as it rolls out—STW's system is transmitting data to the cloud. The data shows that London is well on the way to meeting its goal to reduce PM and NOx, thanks to its busses cutting particulates by 99% and NOx by 90%. Users can visualize live data on dashboards seamlessly on PCs, mobile devices or the web, leading to real-time diagnostics and calibration. And cleaner air for London.

CANbus to cloud

By 2021, more than 5,000 buses in London's public transport network will be fitted with sensors, such as HJS Emission Technology's Selective Catalytic Reduction Technology, which uses cutting-edge particle filters and catalytic converters to dramatically reduce emissions. But in today's world, blind implementation isn't enough to meet the strictest of emissions guidelines—London needs to know what every single vehicle is doing in real time. The best solutions go further, gathering and parsing data with even better visibility into any individual vehicle's operating data and module systems.

To do this in London, STW is adding its TC1 telematics modules to the city's busses. By tapping into industry-standard CANbus vehicle data systems and transmitting the gathered data wirelessly, users can access everything from real-time emissions data to vehicle faults, GPS-based locations and fuel consumption with the click of a button.

"Thanks to the foundation of Cumulocity, all this data gets sent to the cloud in intervals of two minutes," says Schmitt. "STW machines.cloud provides user and device management to connect, monitor and analyze bus operations in real time."

This made it a breeze to meet legal certification obligations that the data also be recorded centrally and stored for 60 days while providing live access for remote condition monitoring of exhaust gas treatment systems.

Best of all, because of the tight partnership between Software AG and STW, the implementation of intelligent algorithms inside the telemetric modules turns big data into smart data—enabling automatic fault alerts and predictive maintenance actions ahead of when they are needed.

Where data can drive itself

To unleash the power of the data the London bus system is gathering requires the “perfect combination” of STW’s digitalization and automation technology and mobile machine expertise with Software AG’s carrier-grade IoT platform. Step one was getting the hardware and software systems in place to monitor and visualize the right things. Step two is about making that data drive itself.

“It’s really clear that today’s solutions must have the longer-term view of tomorrow’s needs, which is one of the reasons we rely so heavily on Cumulocity IoT,” says Schmitt. “Soon we’ll need to bring the power of big data, advanced streaming analytics and machine learning to bear on achieving an even higher level of efficiency in London—and Cumulocity IoT is already set up to do that.”

Once finished with the full installation, HJS will have the ability to pick and choose its capabilities, such as machine learning to optimize routes and operating parameters for better balancing emissions and expenses.

And because Cumulocity IoT is an open, secure platform, London’s solution isn’t locked into any single vendor ecosystem. With a wide range of third-party products and services already available, STW can evolve machines.cloud with additional technologies as it needs without delay or uncertainty.

That means better flexibility for London, and better air for its residents.

“We have taken Software AG’s Cumulocity IoT platform and rebranded it ‘STW machines.cloud’ as our IoT solution for the collection of data from on-board devices such as our TC1 telematics modules. STW machines.cloud provides user and device management and can connect, monitor and analyze operations in real time. HJS will use it to gain significant insights into the vast amount of data streaming from the embedded devices in retrofitted buses in London.”

– Dr. Michael Schmitt, CEO, Sensor-Technik Wiedemann (STW)

ABOUT SOFTWARE AG

Software AG simplifies the connected world. Founded in 1969, it helps deliver the experiences that employees, partners and customers now expect. Its technology creates the digital backbone that integrates applications, devices, data and clouds; empowers streamlined processes; and connects “things” like sensors, devices and machines. It helps 10,000+ organizations to become a truly connected enterprise and make smarter decisions, faster. The company has more than 5,000 employees across more than 70 countries and annual revenue of over €830 million.

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