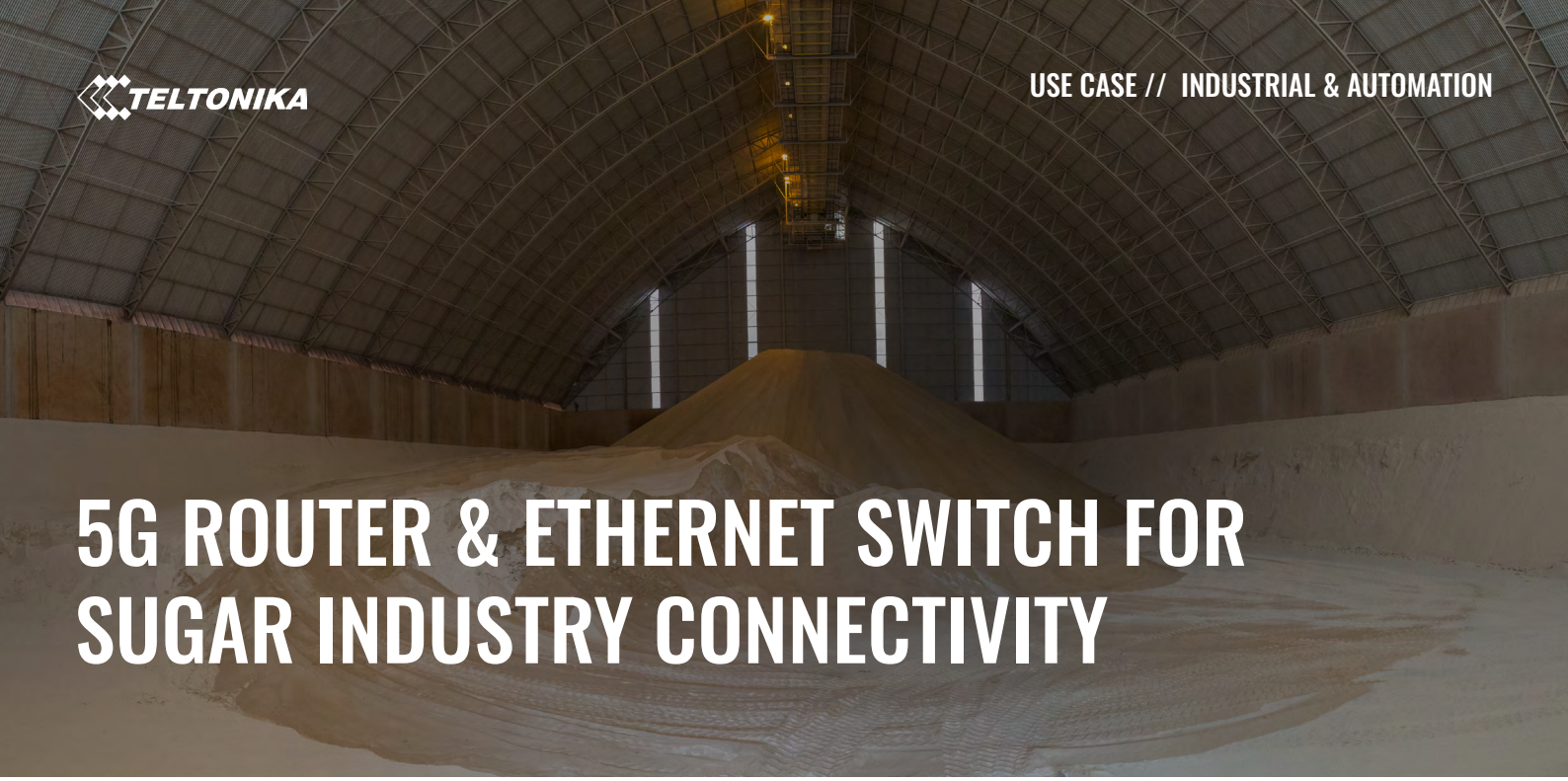


5G ROUTER & ETHERNET SWITCH FOR SUGAR INDUSTRY CONNECTIVITY

HIGHLIGHTS

- Sugar factories often rely on outdated stockpile estimation methods, leading to inaccuracies, production delays, and quality losses. Real-time, reliable data is essential to keep operations efficient and costs under control.
- Sachtleben Technology GmbH developed the OWL EYE® Monitoring System to measure the volume of bulk goods in storage boxes, open stockpiles, or warehouses – on schedule, in real time, or on demand.
- Teltonika's TSW210 Ethernet switch and RUTX50 5G router provide stable, high-speed, and rugged connectivity OWL EYE® needs, ensuring accurate data flow, uninterrupted operations, and easy integration with industrial and enterprise systems.

THE CHALLENGE – PRECISE VOLUME MEASUREMENT IN REAL TIME

The sugar industry ranks among the world's largest agricultural processing sectors, and global demand continues to grow steadily. Sugar consumption is projected to reach around 223.1 million tonnes by 2033, reflecting the crop's enduring importance in diets and industries worldwide. During campaign season, factories run around the clock to process immense beet harvests before sugar content begins to decline.

Despite the industry's scale, many sugar factories still rely on outdated methods to manage their sugar beet stocks: manual estimates, rough input-output calculations, or occasional weighing. These approaches often result in inaccurate figures that trigger unexpected production stoppages and costly, last-minute logistics. Quality losses add to the problem – once beets sit too long in storage, their sugar content deteriorates, yet without clear visibility it is nearly impossible to prioritise which sections of a pile should be processed first.

That's where Sachtleben Technology GmbH comes in, with long-standing expertise in warehouse digitalisation and process optimisation. This German company has developed the OWL EYE® monitoring system, a fully automated digital inventory tool for bulk materials such as sugar beets. This technology is also proven in industries such as mining, recycling, and construction, where it tracks bulk stocks and material flows.

The system delivers more than 98% accuracy in volume measurement, provides real-time 3D visualisation of stockpiles, colour-codes beet volumes by age, and integrates directly with enterprise systems such as SAP.

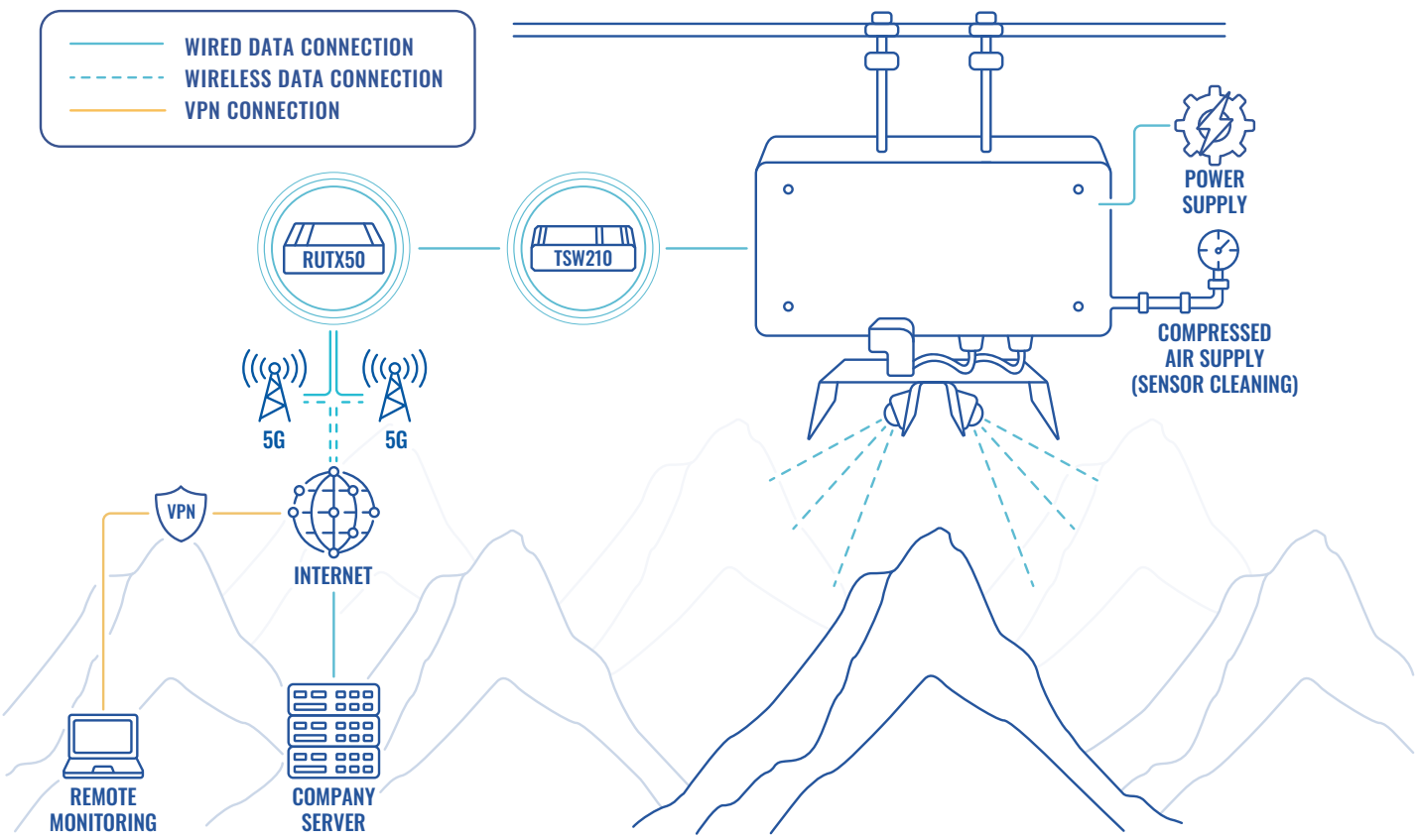
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In practice, OWL EYE® transforms stock management from guesswork into a reliable, data-driven process. The system begins with the LiDAR sensors' unit, which scans its surroundings using laser rays to measure distances and generate 3D surface data. To ensure accuracy in challenging conditions, the sensor is supplied with compressed air that automatically cleans the lens, preventing dust or debris from interfering with the laser. At the same time, it receives a steady power supply, which keeps the device running continuously in the field.

Yet precision alone is not enough. For sugar factories to fully benefit, this Monitoring System must continuously exchange data with the wider ecosystem of enterprise software, logistics planning tools, and quality monitoring systems.

That requires connectivity devices that are secure, provide stable connectivity, and are able to handle large data flows in demanding industrial environments.

TOPOLOGY



THE SOLUTION – TSW210 ETHERNET SWITCH & RUTX50 5G ROUTER

At the heart of OWL EYE® lies Teltonika's TSW210 industrial Ethernet switch and RUTX50 5G router, forming the backbone of the communication system.

All LiDAR sensors and controllers connect directly to the TSW210 Ethernet switch, which consolidates multiple data streams into a single, stable flow. With eight Gigabit Ethernet ports and two SFP ports, the switch delivers reliable wired connectivity, minimising packet loss and ensuring measurement accuracy as information moves downstream. Built for harsh industrial environments, the TSW210 is housed in durable aluminium and operates in temperatures from – 40 °C to 75 °C, making it resilient against dust, vibration, and extreme weather.

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From the switch, data passes to the RUTX50 5G router. The information follows two paths: one leading to the company server for storage, processing, and integration into enterprise systems, and the other, secured through a VPN, enabling remote monitoring of real-time LiDAR data.

With speeds of up to 3.3 Gbps, this 5G router can transmit even the heaviest LiDAR datasets in real time, giving managers instant visibility into stockpile volumes, age distribution, and available capacity. Dual SIM and auto-failover ensure uninterrupted connectivity, so our partner's monitoring system remains online even if one mobile network experiences downtime.

Beyond that, this dual SIM router supports a wide range of industrial protocols including MQTT, Modbus, and SNMP, allowing seamless integration with SCADA systems, IoT platforms, and cloud analytics. It makes the data valuable not only for visualisation but also for process control and predictive maintenance.

Just like the TSW210 switch, RUTX50 router is built to withstand harsh industrial conditions. As a result, it ensures reliability across diverse environments, whether in warehouses, outdoor stockyards, or exposed industrial sites.

Curious how our connectivity devices can enhance your IoT solution? Get in touch with us – we're ready to answer your questions and help you find the right choice to meet your needs.

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