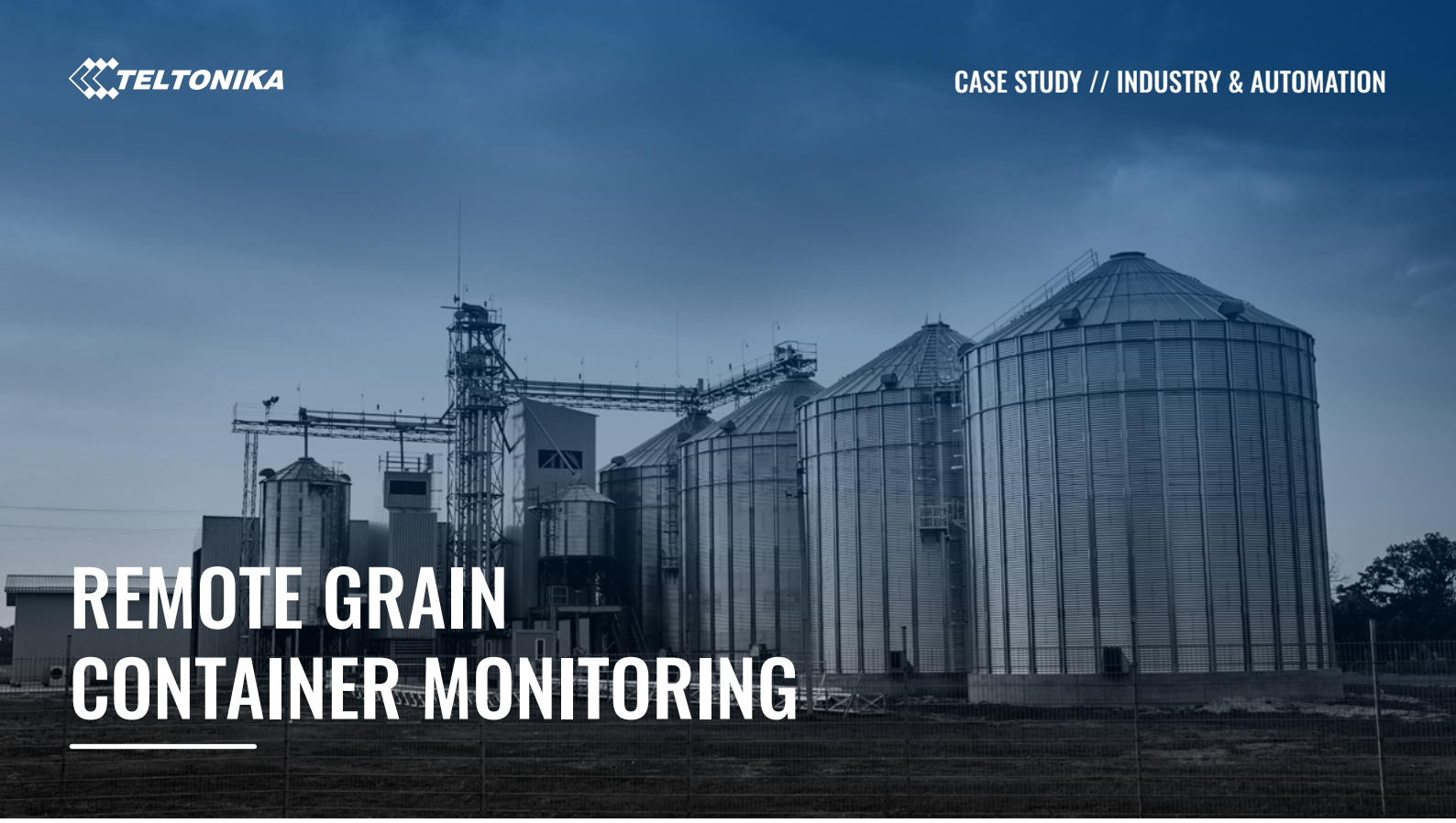


REMOTE GRAIN CONTAINER MONITORING

SUMMARY

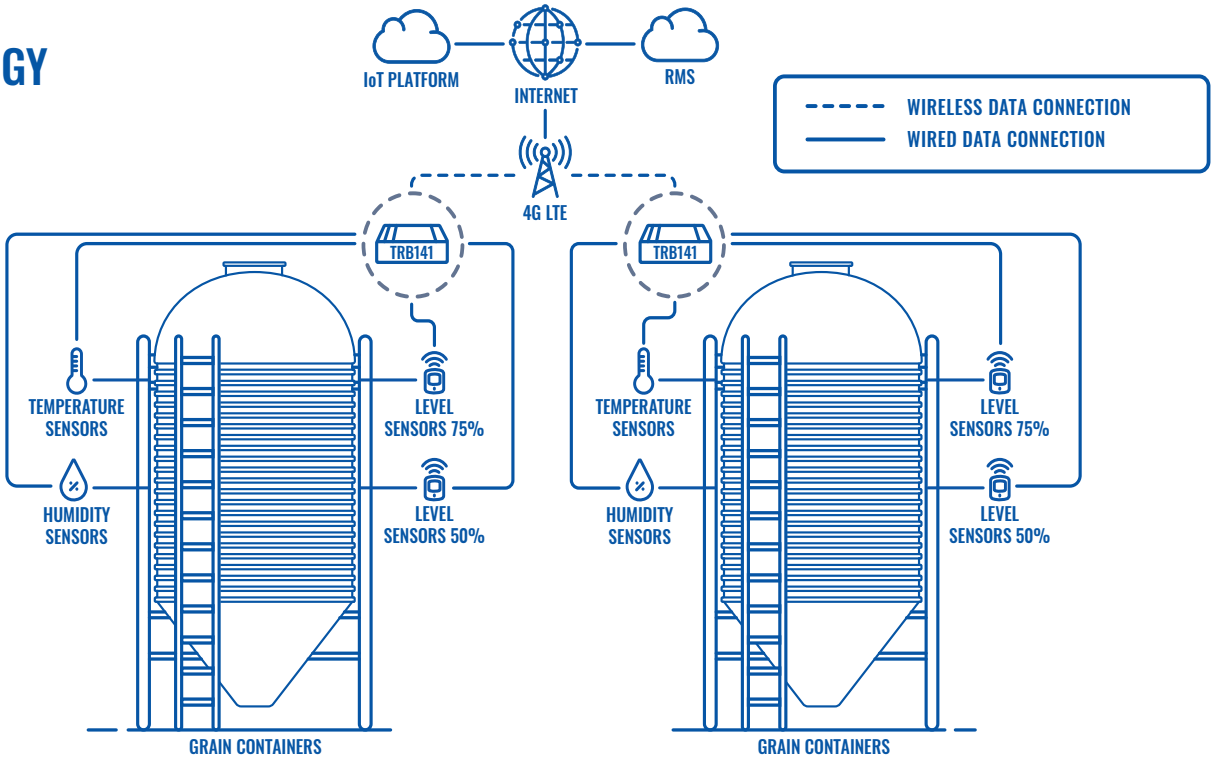
The grain seed market is projected to register a CAGR of 6.4% until 2025. A need for this growth is ruled by demand for food-related to increasing human population, economic growth, and cattle rearing. Higher demand for stock resulted in the need to increase productivity. Although we witnessed a temporary decline in the global grain market due to economic slowdown owing to the COVID-19 outbreak, the market is expected to recover and grow at full capacity as of 2021 to reach $1305.3 billion in 2023. Such volumes call for automated and digitalized management and monitoring of storage, as the price of human mistakes nowadays is too high.

CHALLENGE

Storage of grains requires huge bulk grain containers. It is important to monitor when containers fill up to allow for planning and business continuity. If loading and unloading are not managed on time, high financial losses are to be expected.

Other crucial indicators to monitor are the temperature and humidity of grains. These factors are essential for safe grain storage, as most of the losses are caused by improper conditions of conservation during the storage stage. The quicker the detection of fluctuation from the norm, the lower the losses. With the scope of growth and fast-pace of the business, there is a clear demand for automation and more efficient monitoring methods.

TOPOLOGY



SOLUTION

TRB141 gateways are used in every storage unit and connected to the sensors via I/Os. They collect information regarding the fullness, temperature, and humidity of containers. All the data then travels to the Central Management Platform via MQTT protocol. When containers fill up to 50% or 75% point, a sensor will send a signal to the gateway, which will send out an SMS or email warning. This allows for planning and prevents downtime.

In the meantime, temperature and humidity sensors monitor these measures accordingly. In case of going over the predetermined values, the sensor sends this information to the gateway, which in turn notifies the system via SMS or email, and triggers the ventilation system to adjust. All these measurements can also be monitored and managed remotely via the Teltonika Networks Remote Management System (RMS).

BENEFITS

- Remote management– no need to physically travel to the location for measuring the rates and adjusting systems in case of minor fluctuations.
- Reliable connectivity - LTE Cat 1 provides reliable connection even in remote or rural areas.
- Ease of installation – this gateway is designed to be small, lightweight and energy efficient, which gives flexibility to install it almost anywhere.
- Durable – TRB141 comes in aluminum housing with DIN rail mounting option.
- I/O – TRB141 offers a wide range of multiple Inputs/Outputs for sensor connectivity and control.

WHY TELTONIKA?

Teltonika Networks offers a cost-efficient device that serves all the purposes needed for such a project. Multiple Inputs/Outputs and a Micro USB port allow connecting various sensors. LTE Cat 1 connectivity ensures stable connection outside of urban areas. Possibility for remote management saves time and finances related to constant traveling due to minor interruptions or adjustments.