# Autonomous Sensor Unit for Automated Material Provision

## WILSEN Series IoT Wireless Sensor Solutions Ensure Quick and Reliable Retrofitting

### At a Glance

- Industrial-grade battery-operated IoT wireless sensors for distance measurement, fill level monitoring, and various other detection tasks
- Broad sensor portfolio encompassing several hundred sensors
- Energy-saving LoRaWAN wireless standard without a license or any running costs
- Virtually maintenance-free due to high energy efficiency and a long battery life
- Complete wireless sensor solution from a single source that can be installed quickly and reliably

## The Application

In production logistics, there is a wide range of possible situations and processes relating to material provision and collection that require status data in order to be automated. For example, this type of data is used to ensure containers are moved into specified positions by auto-guided transport systems (AGTS). Before transportation, an automation system checks whether the position is occupied. At occupied positions, the fill level of the container is monitored so that the system triggers an empty container to be delivered and replenished as punctually as possible. The system can determine when a reporting limit or critical threshold has been reached on material provision vehicles or in kanban racks. In many cases, installing wired sensors for such tasks is too expensive or time-consuming, or it is not technically feasible. For this reason, most companies have historically relied on manual checks.

## The Goal

It should be possible to automate such checks with as little effort as possible, and they should encompass mobile applications such as material provision vehicles. The solution should be cost-efficient and easy to install or retrofit. The selected sensor should function autonomously, have a long, maintenance-free operating time, and have the ruggedness to withstand industrial conditions. It should be easy to integrate data communication into existing structures. Commissioning should also be as simple as possible. The checks should still be carried out as before—with a high level of reliability.

## The Solution

The WILSEN concept encompasses autonomous sensors with a battery-operated central unit that communicates with the higher-level IoT platform via LoRaWAN. The energy-saving wireless technology facilitates a battery life of up to ten years. The intuitive WILSEN app allows simple commissioning and parameterization on-site. The downlink channel provides remote access to the sensor. The devices are encapsulated in a strong plastic housing with IP66/67 degree of protection. The following device versions are available:

**WILSEN.sonic:** An ultrasonic sensor (measurement distances: 2.5 m, 4 m, or 7 m) is integrated into the central unit. The device can monitor various processes such as the status of positions (free/occupied) or measure the fill level of containers precise to the millimeter.

**WILSEN.node:** Several hundred sensors from the Pepperl+Fuchs portfolio can be connected, for example inductive and capacitive devices. These devices are suitable for various noncontact detection tasks. Capacitive sensors can be used to detect non-metallic materials such as plastic containers or cardboard boxes on provision vehicles, while inductive sensors detect metallic objects—from small components such as screws right through to large objects, for example a vehicle door.

## The Benefits

Due to their technology, WILSEN.sonic ultrasonic sensors are resistant to functional impairment caused by adhering dust or liquids. WILSEN.node can be combined with various types of sensors to automate complex detection tasks. WILSEN series devices can be connected to any LoRaWAN network without any running costs or license fees.

### Technical Features

- Provides additional measurement data: sensor location (GPS), ambient temperature, and battery status
- Battery life of up to ten years due to energy-efficient operation
- Reliable data transmission via LoRaWAN
- WILSEN app for intuitive commissioning and parameterization—also displays live measurement data
- Downlink channel for remote parameterization
- Reliably creates the required downlink payload per generator
- Battery life calculator for calculating the expected service life in the application
- High-power lithium battery (3.6 V, 13,000 mAh), easy to replace


For more information, visit: **pepperl-fuchs.com/px-wilsen**