

# Cloud-Based Type Verification

White paper

Sensorik

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# Abstract

## Cloud-based Type Verification from Pepperl+Fuchs GmbH and SAP AG

The signals from sensors used in spatially remote production units often need to be transmitted across vast distances. Direct wireless or wired connections, however, are often not considered due to reasons of cost and effort. Cloud-based solutions represent a real alternative in cases such as these. Cloud-based type verification replicates a typical use case within the context of product inspection while using sensor data that can be transferred to the SAP cloud for decentralized use.

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# Classification

## Sensorik4.0® Solutions for Industrie 4.0 Applications

Industrie 4.0 is the pioneering concept of totally interconnected production systems that support the exchange of small or large amounts of data within a process – via the cloud – and can also communicate with higher-level information systems outside conventional corporate boundaries. In contrast to the classical strategy of hierarchically structured communication (horizontally, vertically), this modern interconnected methodology offers the advantage that communication can occur anytime, between any participant, on any hierarchical layer. Sensors having the ability to communicate is a significant characteristic of Sensorik4.0®. This term embodies Pepperl+Fuchs' innovative sensor solutions for applications within the Industrie 4.0 framework.

## The Solutions Park Brings Industrial Sensors to the Internet of Things

The Solutions Park demonstrates real-world sensor solutions that highlight the customer benefits of Industrie 4.0. The customer benefits of Industrie 4.0 stem from the availability of process and diagnostic data from sensors and actuators within a company's internal or external IT systems. For instance, using this data, these IT systems can perform visualization, realize model-based optimization processes, and schedule demand-based preventive maintenance processes. For such applications, Pepperl+Fuchs and our IT partners offer solutions that allow sensing technologies to be directly connected to a company's IT infrastructure.

Pepperl+Fuchs offers a wide range of products designed to collect data from spatially dispersed sensors. Then, we make that data available to application-relevant databases on the Internet. This data is accessible on these Internet portals through mobile devices or can be used by downstream processes. In the context of Industrie 4.0, the idea of continuous engineering throughout the entire product life cycle plays a crucial role: All of the data must first be collected in a digital format, then made available for electronic processing. To this end, Pepperl+Fuchs has developed a system that directly compares quality data obtained during the manufacturing process to the design data – deviations are automatically identified.

## Sensor Data within the Corporate IT System

Replacing hierarchically organized machine communication with networked solutions offers several advantages: All of the data from field devices like sensors and actuators can be transmitted directly and without a loss of fidelity due to intermediate translation and processing transmitted to a corporate IT system. The information concerning availability and state of a machine or system allows early intervention, reducing the risk of product faults and costly downtime. With our IT partners, we developed solutions where a separate communication path brings sensor data directly from the field into the corporate IT systems.

# Description

## Cloud-Based Sensor Systems as an Alternative

The signals from sensors used in spatially remote production units often need to be transmitted across vast distances. Direct wireless or wired connections, however, are often not considered due to reasons of cost and effort. Cloud-based solutions represent a real alternative in cases such as these.

## Cloud-Based Sensor Systems in Use

The benefits of a cloud-based solution such as this can be illustrated in practice using a specific application: Mobile air compressors are produced for various markets where different rear lights are required by law. The light units are prefitted to the light brackets by a supplier at a different location. An ultrasonic sensor is used during this process directly on-site to verify which of the three possible light types has been fitted:

- EU
- DOT
- Off-road (construction site traffic only, passive reflectors)

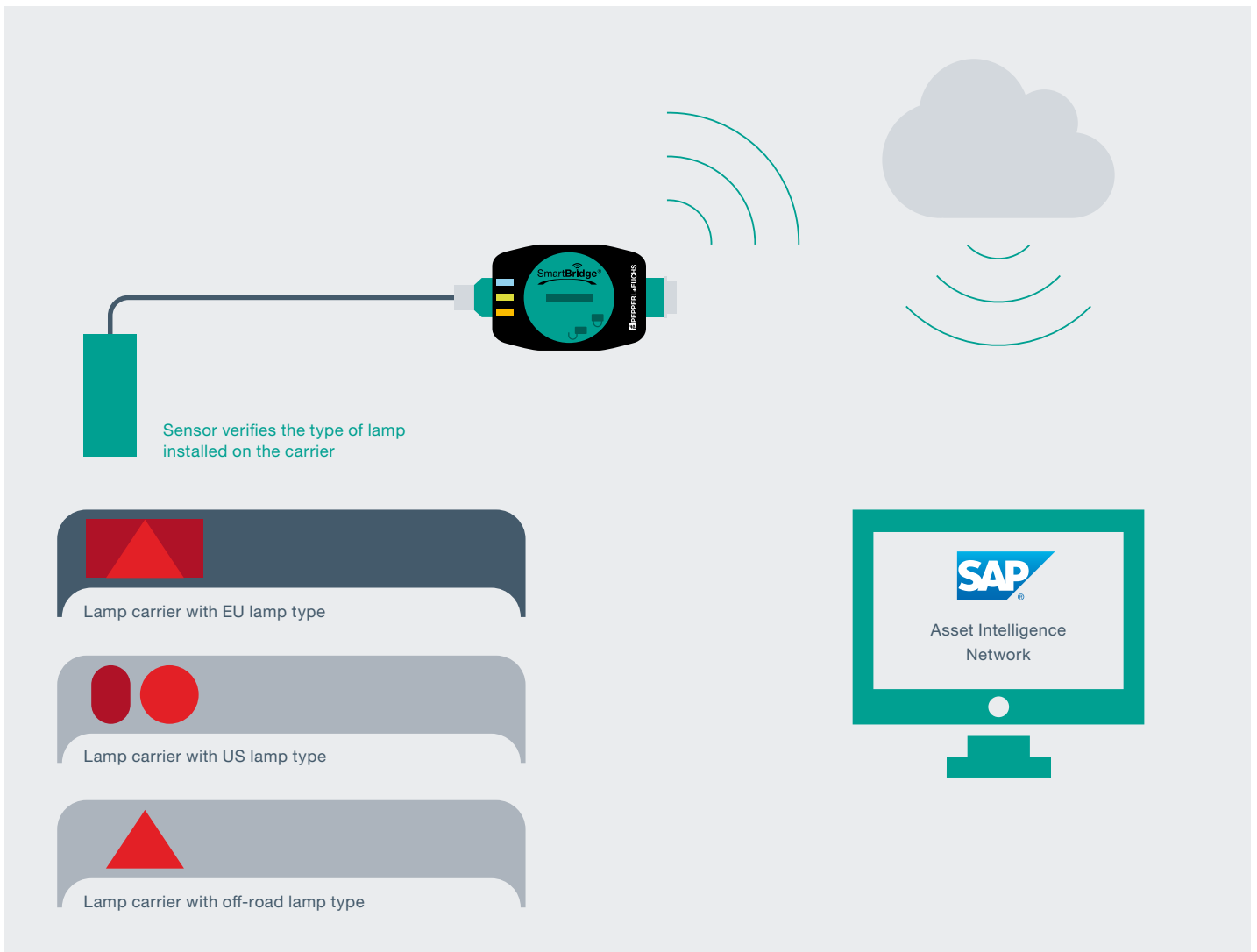
The measurement result from the sensor is uploaded to the SAP cloud where it triggers a track-and-trace production process in the Asset Intelligence Network (AIN) stretching beyond the boundaries of the company's premises.

AIN is an SAP platform that allows manufacturers, service providers, plant operators, and plant users to adopt asset management.

## Outlook

Cloud connections enable sensor signals to be made available on a platform and managed centrally. In addition to public clouds, private clouds can also be used in cases where public access to the data is undesirable. In this way, selected data can be transferred from a number of sensors directly to super-ordinate IT systems — without any interruptions to media.

SmartBridge® technology from Pepperl+Fuchs together with the IoT Connector supports connections to the most popular sensor interfaces as well as to a wide variety of cloud systems.



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## Explosion Protection

- Intrinsically Safe Barriers
- Signal Conditioners
- Fieldbus Infrastructure
- Remote I/O Systems
- HART Interface Solutions
- Wireless Solutions
- Level Measurement
- Purge and Pressurization Systems
- Industrial Monitors and HMI Solutions
- Electrical Explosion Protection Equipment
- Solutions for Explosion Protection

## Industrial Sensors

- Proximity Sensors
- Photoelectric Sensors
- Industrial Vision
- Ultrasonic Sensors
- Rotary Encoders
- Positioning Systems
- Inclination and Acceleration Sensors
- AS-Interface
- Identification Systems
- Logic Control Units
- Connectivity