SCHELLER
SYSTEMTECHNIK

SIOS

Standard **I**dentifikations-, **O**rtungs- und **S**ensoriksystem

EN

SIOS
Standard **I**dentifikations-, **O**rtungs- und **S**ensoriksystem

Industrial applications - examples

port's management

monitoring of dangerous

steering of transhipment

tracing of goods by truck's

railway traffic

air cargo

access control

energy management

safety

Overview

Introduction

The .SIOS system provides information for the automation of business processes by dint of innovative RFID and wireless sensor technology.

The .SIOS-system offers the possibility to identify and localise people, objects and vehicles. Moreover different status information can be evaluated on site in the relation of time as well as central information systems can be forwarded via WLAN or UMTS. For this purpose, a standardised technology for management and analysis of information will be developed.

Only the module for data recording should be selected according to the respective task. An on-site unit serves on the one hand to collecting information (for example ID card reader) and on the other hand to releasing of activities (e.g. release of vehicles). Hence, the user becomes many opportunities to implicate and manage the logistics processes in the entire process of the company in a clear and prompt way. All stationary and mobile units are central managed, monitored and parameterised.

System integration
Implemented interfaces (connectors) allow a continuous information exchange without any media disruptions with other systems (human resources, financial accounting, purchase, materials and inventory management, fleet park, etc.)

Thanks to a WLAN module, which is integrated in the unit, the integration in the existing networks ensues without any additional expenses for data cablings. Also the application of the units on the mobile objects, such as vehicles, transport container, cranes or movable machines is hereby possible.

Investment protection
On the basis of existing systems with standardized procedures like data transfer networks, entitlement-systems, etc. can be used for the .SIOS-system. Therewith, the extensive investment protection for the available infrastructures is assured.

Flexible configuration
The user can carry out the configuration of the interfaces – connectors by himself according to the specific circumstances and consequently he can rapidly respond to changes in the operating procedure during the operation time.

Finally as a supplement, the .SIOS gives at disposal the resource management system, including authorisation management and card generation for ISO cards (e.g. business identification card).

Wide application area:
- Identification of people, vehicles and objects
- Proof of eligibility of persons and vehicles
- Staff and work time registration
- Overview of the presence of persons and vehicles on the company premises
- Tracking of vehicles or transport containers
- Record of goods in stores with supply of stockyard information
- Continuous or cyclic recording of status information such as temperature, pressure, humidity, weight and gas concentrations.

Fig. SIOS unit

SIOS
Standard **I**dentifikations-, **O**rtungs- und **S**ensoriksystem

Function overview

A .SIOS unit could be installed on site to capture information, initiate actions or save some log data. It could be both stationary and mobile, as the data connection to the unit is realized via WLAN.

The communication to the .SIOS-Resources-Management-System occurs by data network. People and objects, their assignment to the tag IDs, permissions and the recorded log information are managed in this system. For the evaluation, a great number of predefined reports is already available. Further ones can be added individually by the user or adjusted.

A flash memory, which is integrated in the unit, holds data permanently (e.g. permissions information), so that some relevant operations, such as the releasing of mobile vehicles, can be accomplished even in offline mode. Also the captured data (status or operating data) can be buffered in offline mode and released by the next online access to the network.

Depending on the application of the unit, it will be equipped either with a RFID reader (long range or short range) or a wireless sensor receiver. It is also possible to create a combination of these available components.

RFID-Longrange Reader
By providing the unit with a RFID Long Range Reader, the RFID tags can be collected and evaluated within a distance of 3 m. This technology is especially applicable for the identification of vehicles and large objects such as transport containers.

RFID-Shortrange Reader
By using the RFID-Short Range Reader, the RFID tags can be read at close range only - up to a distance of max. 10 cm. That's why they can be applicable for example in ISO standard cards (in normal card-size) for identification of people. At the same time, these cards can be used as business identification card. Through the short reading distance, unauthorized reading of card information is prevented.

Radio sensor receiver
If the unit will be equipped with a radio sensor receiver, it is possible to capture at the same time different status information such as pressure, temperature, humidity, etc. from self-sufficient wireless sensors within a radius of up to 300 m. Although the number of the wireless sensors, which will simultaneously collect the information in the working area of the receiver, is not restricted, but because of performance reasons it should not exceed 100.

Interfaces to the unit
The following interfaces, for communication or local event control, are external available:
- 10/100 Mbit/s LAN, RJ45
- 54 Mbit/s WLAN
- Galvanic separate contact up to 16 A~/6 A=

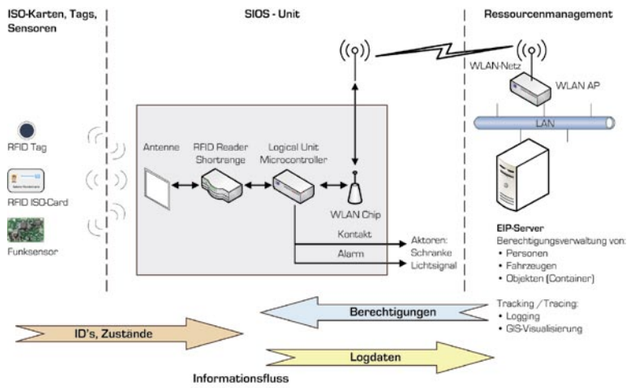

Fig. SIOS unit with function overview and communication structure

Examples of implementation

Identification:
- Detecting and authorising people to relevant access points such as factory's stores, premises, halls, security areas, etc., Access to existing locker, gate and door opening systems
- Automatic detection and authorisation of vehicles
- Personnel and orders registration
- Operating hours compilation of vehicles and equipment
- Identification of vehicles at fuel dispensers with an automatic approval of petrol releasing unit, assignment of the tank filling to the vehicle
- Releasing entitled persons to vehicles and manufacturing equipments

Localisation:
- Overview of the presence of persons and vehicles on the company premises
- Staying of people, vehicles or objects in security areas or production environments
- Tracking of vehicles or transport containers
- Record of goods in stores with provision of stockyard information

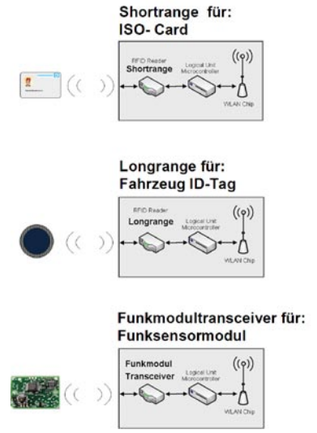

Fig. Collection systems for the identification of persons and objects

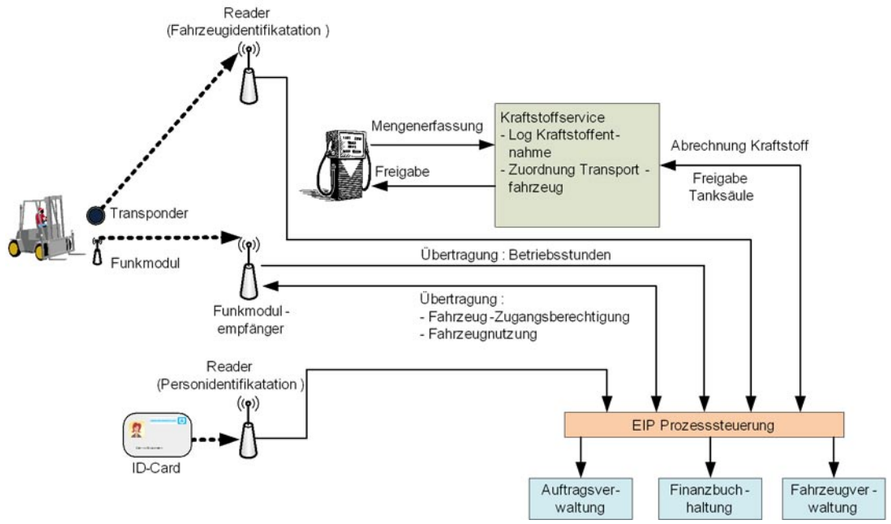

Fig. Identification of persons and vehicles at fuel dispensers and registration of fuel-filling

Examples of implementation

Sensor system:

- Temperature:
  - room temperature for window and jalousie control
  - monitoring of temperature of food shipments for sustained cold chain
  - frost warning systems
- Humidity:
  - climate monitoring of rooms with susceptible to moisture objects (galleries, greenhouses, libraries, document archives)
  - monitoring of pipes regarding leaks
  - wood drying
- Pressure detection:
  - monitoring of pipes pressure
  - pressure tank by transport of dangerous goods (technical gases)
  - monitoring of tires' pressure
- Mass / weight:
  - determination of the weight of transport containers
  - wagon and truck weighing
  - weighing of bulk material by transhipment

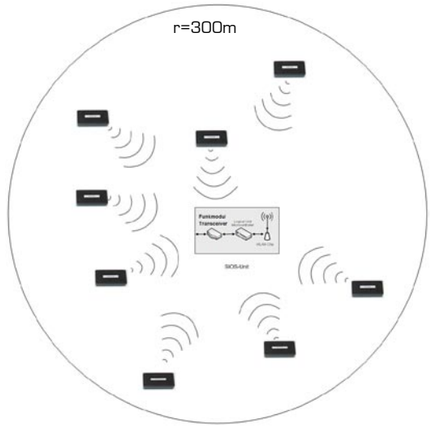

Fig. Radio sensor network with SIOS unit

- Detection of gas concentrations:
  - monitoring of the ripening process of fruit in warehouses
  - monitoring of exhaust emission from fireplaces (CO, NO, O2)
  - prevention of risk by fire-fighting equipment with quenching gases
  - gas formation on storage sites

Radio sensor:

- Small geometric measurements
- Long range of the wireless sensor receiver (up to 300 m)
- Working with long-life battery cell
- Operating with self-sufficient power supply (no battery) by using renewable energies

Fig. Radio sensor with self-sufficient power supply

Resource management

Cards preparation
A system for generating ISO cards, including printing option is already available and can be use to preparing ISO cards. They are necessary for using the EIP.SIOS for controlling the staff work time as well as access. Hereby these cards can be created as ID-card for enterprises in an easy way.

A camera and a desktop RFID reader complete the system. According to predefined templates, an employee's photo and all necessary information will be also printed on a card, which will work as a business identification card.

After memorising the ID cards, the employee will be automatically linked with this card in the authorization system, so that no personal data has to be deposited on the card itself.

Lost cards can be centrally blocked and replaced by new ones.

The transmission of the changed data to the decentralized units will take place after creating or changing of permissions.

System for authorisation
Each employee will receive the necessary access authorisation to the resources (vehicles, gates, machines, etc.). Besides assigning each employee some resources, it is also possible to combine not only workers but also resources into groups and to define "working rules" by fixing certain parameters.

By adding an „employee" to a „working rule", all relevant for him „resources" will be unblocked, what will make the management of permissions much easier.

Capture of production data
The information about activities and conditions (such as log or sensor information), which are saved on the decentralized units, will be automatically stored in a central database.

By using data grids and self-defined reports, it is possible to prepare a variety of evaluations or analysis such as the utilization of vehicles or the current presence of employees and visitors.

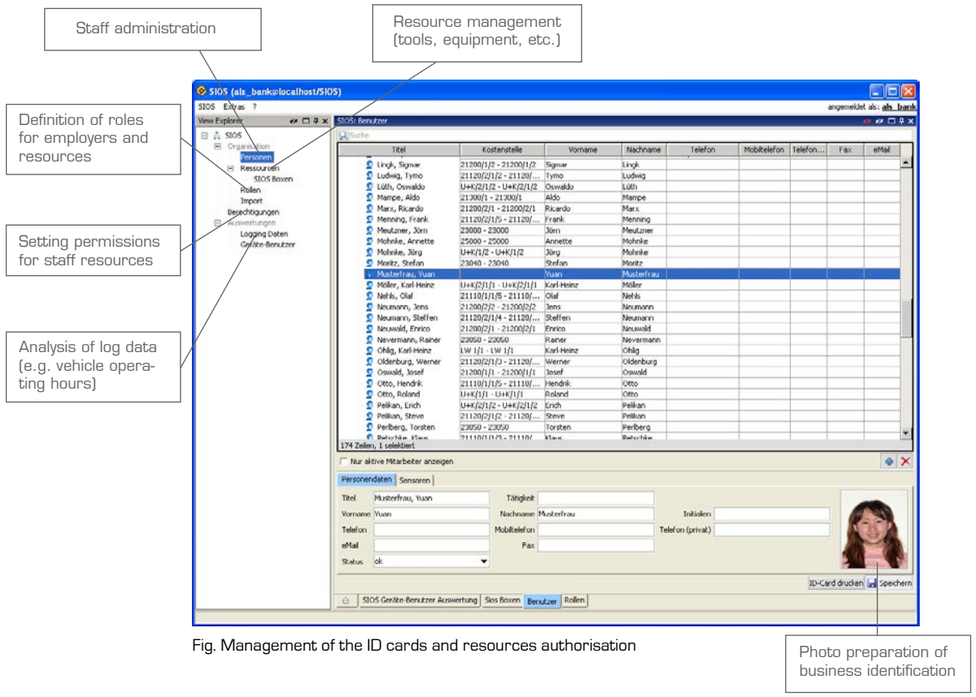

Fig. Management of the ID cards and resources authorisation

SCHELLER SYSTEMTECHNIK

Scheller Systemtechnik GmbH
Poeler Str. 85a • D-23970 Wismar
phone: +49-(0)-38 41-46 00 0 • fax: +49-(0)-38 41-46 00 46
info@scheller.de • www.scheller.de

made in Germany