Logistics

A long range ID system

Utilising the internationally approved 2.45Ghz UHF band allows specialised readers to access the information contained in transponders at a distance of up to three metres. Familiar sources of disturbance such as reflection, noise interference and overreach have been eliminated by integrating UMTS/GSM technologies

by Victor March

Automated industrial production as well as logistics and distribution place exceptionally high demands on non-contact identification systems, for example insensitivity to dirt and dust and temperature fluctuations.

The Siemens Automation and Drives (A&D) Group has developed an identification system based on radio frequency technology, designed to meet the specific needs of demanding industrial and logistics applications. The system, called Moby U, can operate at long-range reading distances and can be adjusted to cover distances from a few centimeters to as much as three meters. Moby U was developed for industrial and logistical use and is suitable for use on main assembly lines in automobile production facilities, vehicle identification for access control in haulage company depots and for the identification of containers, boxes and charge carriers.

How it works

Tags with mobile data memories are installed directly on the product, its carrier or its packaging unit and accompany the object from the beginning. Information stored in the memory chip of each tag is written and read via non-contact read/write devices, allowing use even under the roughest production and environmental conditions. The read/write devices are linked using a serial connection to an interface module, which handles the data traffic to and from host automation systems. Utilisation of the internationally approved 2.45 gigahertz UHF (ultra-high frequency) band makes Moby U suitable for use anywhere in the world. Furthermore, important national and international standards and regulations have been taken into account and their observance substantiated by certified testing laboratories. Known UHF transmission disturbances such as reflection, interference and overreach have been eliminated through the use of appropriate technologies, while special encoding procedures that use well-proven methods and algorithms common to mobile radio technology (e.g. GSM, UMTS) ensure that transmission errors are corrected automatically. This allows error-free data transmission even in the vicinity of interference sources such as welding equipment, and ensures consistent data integrity.

Specially constructed antennas generate a homogeneous transmission field, allowing reliable recognition of mobile data memories even under unfavourable conditions. In addition, automatic selection of available, disturbance-free frequency channels prevents transmission conflicts with

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other users, such as radio LAN's. Such technical innovations reduce the costs for configuring, installation and commissioning, and ensure maintenance free operation.

Reliability in harsh environments

With its rugged, high-IP housing and the power-saving circuitry contained within the mobile data tags, Moby U is designed for maintenance-free continuous operation even in the roughest industrial environments. 32 kilobytes of user RAM - upgradable to as much - as 256 kilobytes - in the mobile data memory make it possible to store all relevant product, production and quality data needed. A high-temperature version of the mobile data memory is suitable for cyclical use in the drying ovens associated with paint shops.

A user-friendly solution

To enable user-friendly commissioning the compact read/write devices are equipped with a service and diagnostics interface, which can be used to analyse current transmission parameters and log data communications. Suitable modules and powerful software tools are available for low-overhead integration into Simatic automation systems, Sicomp, PCs and Profibus. Moby U uses a specific file-handler management system for data management that includes user-friendly data formatting and editing of stored records. In order to

accommodate the demands of assembly and production lines, the read/ write devices and the mobile data memory can be installed easily and with flexibility.

The Moby family

In addition to the new "long range" Moby U identification system, Siemens also offers four other Moby identification systems for different industrial applications: Moby F is specially designed for logistics and distribution, for example for containers, boxes, and charge carrier's. Moby E is not only used in logistics and distribution, but also in industrial production, for example on workpiece conveyors and various tools on assembly lines. Moby I is used in industrial production processes which place high demands on reliability, dynamic reading/ writing, and a degree of protection, for example on workpiece conveyors and skids. Moby V is specially designed for traffic applications, such as subway and tram systems.

Thanks to new functions such as a multi-tag capability, a rugged housing with a high degree of protection and the power-saving circuitry of the mobile data memory, the menu RFID Sistem can be put into operation quickly and easily. It is suitable for maintenance-free continuous operation in even the roughest production environments