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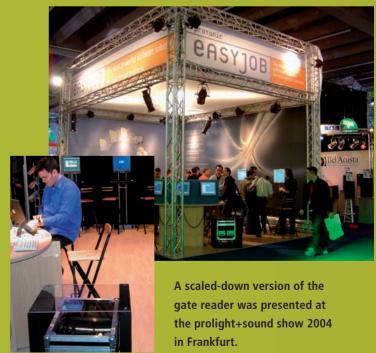
Reading RFID with easyjob

There has been a lot of press coverage lately on the miracle of RFID. The ability to check items in and out without manually scanning them would mean a quantum leap for the event industry.

The acronym RFID stands for „Radio Frequency Identification". This technology enables tags or identification numbers to be read without being physically touched or visually inspected.

At protonic software, we have been studying RFID's progression for the last several years with the intent of developing a realistic and affordable way to harness its potential.

We initiated an RFID task force and collaborated with our partner companies to produce a custom-fit solution that would address the special challenges facing the event industry.

We presented our first prototype at the 2004 prolight+sound show in Frankfurt, Germany. Items were identified by conveying them through a gate controlled by a touch-screen terminal.

A scaled-down version of the gate reader was presented at the prolight+sound show 2004 in Frankfurt.

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Rental management made easy

The question of whether or not your company can deploy RFID technology depends on a variety of factors.

RFID Basics

Active Transponder

The first variation is the active transponder. An active transponder is comprised of a microchip, antenna and battery that provides the necessary transmitting power. But these elements also make active transponders bulky, high-maintenance and expensive.

Passive Transponder

The passive transponder consists of an antenna, a capacitor and a micro chip. The passive transponder gets its energy from the field and stores it in between the capacitor in order to respond to commands in the form of disturbances to this field. This technology has a major disadvantage. If the field is shielded, for example by a metal object, the tag will not have enough energy to send back its response.

Simply stated, the reader creates an electromagnetic field. The transponder's antenna receives the energy from the field and transmits it to the microchip, thus enabling it to receive and respond to commands. In general, this will transmit a command to respond with a unique number. The transponder sends its response to the field using temporarily stored energy.

The transponder does not create its own magnetic field bur rather transmits its message to the reader via small disturbances in the electronic field. The reader evaluates these changes and transmits them to the respective reader software.

Ideally, this process should take just fractions of a second to complete. In practical effect, however, there are significant confounding factors in the event industry that may keep ideal distancing conditions from being realized. For example, metal objects and copper pipes distort the measurement results of the reader, requiring the distance from the tag and the reader to be limited to just a few centimeters in order to get an accurate results. Therefore using RFID tags on objects like this can prove difficult.

The same also applies to materials with a very high density. In addition, the angle of the antenna on the object wields considerable influence. Ideally the transponder should be placed at a right angle.

The RFID's energy supply comes from the magnetic field produced by the reader. As distance increases, the strength of the field decreases, thus less distance or a stronger field may be required to be effective. Another challenge is that stronger fields weaken the ability to interpret the transponder's responses.

Due to their large size and high investment costs, active transponders are unpractical for the event industry. . Therefore, we have chosen to base our solutions on passive transponders in accordance with the input submitted by our customers and RFID task force members.

The passive transponders come in various designs. Each type has its own distinct advantages and disadvantages.

Smart Labels

Smart Labels (label with tag on the back) are low cost, but their small antennas and short distance requirements make them unfavorable. For example, if you apply a Smart Label to a metal object, the field will be shielded by the metal object and the transponder will not be able to function properly unless you scan it just a few centimeters away.

Smart Labels cost about a Euro per piece.

Tags in Plastic Housings

Tags in the plastic housings are available in different sizes. The advantage is that the larger design provides more space for the antenna. In addition, there are designs that increase the amount of distance you can have between the reader and the object's transponder.

The major disadvantage of these tags is their bulkiness and cost. They currently cost about six Euro per piece.

Readers

Data is processed using a transponder reader. The reader may come in the form of a barcode terminal for manual reading or integrated into a gate where objects pass through on a conveyor belt.

easyjob and RFID

Objects are identified using our especially-designed loading and unloading touch screen or mobile barcode terminals.

More information

Should you have additional questions about whether or not RFID is right for your business, please contact our sales department.

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