HellermannTyton

Smart identification

RFID cable ties support 'Industry 4.0'

Three in one: information carrier, product label and fastener all in a single product!
RFID technology, combined with the versatility of cable ties, provides highly flexible
new opportunities for labelling and managing assets and tools with digital data.

These days, cable ties are used in virtually all industry scenarios. The combination with RFID technology harbours great potential for the 'smart factory', as RFID cable ties enable the intelligent combination of multiple work steps.

RFID ties can be more flexibly deployed than many standard labelling solutions. The low frequency (LF) and high frequency (HF) transponders are integrated into glass capsules and embedded into the body of nylon cable ties using UV-hardened adhesive. These 'glass tags' are especially resistant to weathering, corrosion, vibration, shock and wilful manipulation.

Each RFID tag is pre-programmed with a unique digital serial number. Contactless reading of the number is possible through most materials. This not only saves time but also reduces paper costs and additional expenditure caused by human error.

Even when hidden or obscured, the data saved on the glass tag can be read error-free at any time. With the help of a tailored IT system and the suitable reader device, RFID cable ties help create a data layer which supports the intelligent automation of business processes in accordance with Industry 4.0 project goals.

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Strength through experience

The idea of combining a plastic cable tie with an RFID transponder didn't come out of nowhere.

HellermannTyton developed the single-piece RFID cable tie in response to requests from many customers who were looking for a flexible way to introduce RFID technology into their industrial processes.

The result reflects the company's long-standing experience as a provider of professional identification systems as well as quality fastening and fixing solutions.

Initial customer projects demonstrate that RFID cable ties facilitate an intelligent use of digital data in individual operational scenarios. The use cases frequently focus on inventory and tool management and the clear identification of components.

HellermannTyton customers are already applying RFID cable ties in a variety of facility management projects: for example for securing, serialising, tracking and identifying assets and they are also used for equipment rental or simplified maintenance and inventory processes.

Variety of applications

In a current case, a maintenance engineer receives all necessary information about a defective heavy lift hook at the touch of a button. All because the manufacturer of the crane system attached an RFID cable tie to the component. Using this unique digital signature, the correct part can be determined and an order fast-tracked for the replacement. Previously, at best, there was a lot of outdated or incomplete data with a long paper trail.

The reliable bundling and labelling of critical components is just one of many scenarios already supported by RFID cable ties. Besides reliable product labelling in general, they also simplify and optimise component tracking processes: for example, in the case of faults, recalls or maintenance interval monitoring.

Automotive suppliers are applying RFID cable ties to sensors because they are durable and sustainable. Once the cable tie has been cut off, it cannot be reused for another component. This has the bonus of assuring the authenticity of the information accompanying the sensor.

RFID cable ties are also being used to effectively track valuable tools and assets in North Sea offshore wind parks. Engineers use a small tablet PC from their employer with an app programmed by the in-house IT department. The engineer scans the RFID cable tie on a tool when they pick it up and scan it again to log its location at the end of each maintenance tour. This data is synchronised at the end of the shift so that the staff has a reliable overview of where resources are at the start of each day.

Making industry more intelligent

RFID technology is a basic building block for Industry 4.0 – cable ties equipped with RFID transponders are multi-talented when it comes to flexible digital identification. Contactless reading of data is possible at any time, even when dirtied or installed in hard-to-reach places.

HellermannTyton's ultra-high frequency (UHF) and HF glass tags are also writable. RFID cable ties that have already been installed can therefore be reused. They are also Near Field Communication (NFC) compatible and can be read by many smartphones and tablet devices. This possibility of making digital data available – by networking and automating it – is a catalyst for many new Industry 4.0 projects.

Even more robust

RFID cable ties offer numerous advantages over conventional asset labelling with barcodes (see table, next page). Particularly in adverse environments, reliable detection of maintenance-critical parts is indispensable. The faster each repair or maintenance interval is digitally noted, the better.

Hydraulic service staff are delighted to have reliable data when they are knee-deep in mud carrying out an emergency hose repair at a building site. It is not uncommon for labels in this environment to have become illegible. A metal RFID cable tie, which is unaffected by oil and heat, is the ideal solution for these kinds of conditions.

Despite grime or the negative effects of chemicals, heat or wear and tear on print, the engineer now knows exactly what type of hose he is dealing with, which maximum pressure it can withstand, who manufactured it, who installed it and who last worked on it.

The crane company is also happy that they can at last apply corrosion protection without having to replace standard identification markers with each coat of paint. Besides RFID cable ties, HellermannTyton also offers plastic accessories with integrated glass tags that can be attached using conventional cable ties, screws or bolts wherever required.

RFID cable ties help to eliminate data recording errors and to reduce working hours.

Why use RFID cable ties instead of barcode labels?

RFID cable ties	Barcode labels
Fastening, labelling and tracking in one step, intelligent combination of several work steps	No traceability of identified parts, more work steps necessary
Clear identification of objects with a unique digital serial number	Higher effort for realisation of a truly unique identification
Unique identification	Only identifies product groups
Non-contact reading in any direction	Readout only with direct line of sight
Easy labelling and identification of hard-to-reach or covered parts	Easy labelling only for parts which are easy to access, readouts error-prone when labels are difficult to access
Readout not impaired by dirt, RFID identification is robust and resistant to harsh environments and cleaning processes	Readout impaired by soiling or in harsh environments, chemicals can make readout of labels impossible
Clear, durable and reliable labelling in harsh environments, resistant to weathering, corrosion, vibration and shock	Durability of labels can be impaired by harsh environments
Counterfeiting protection: once removed, a cable tie cannot be reused for the same purpose	Only limited counterfeiting protection as labels might be reusable after removal
Reusability: information can be added to RFID chips	One-time label preparation, disposal when data needs to be changed
Bidirectional data transfer	Unchangeable data status
Fast and accurate data capture	More time effort with paper based solution

i **In addition to plastic cable ties with LF and HF tags, HellermannTyton's RFID product range also includes extremely robust stainless steel cable ties (equipped with UHF and HF glass tags) as well as HF tags embedded in plastic accessories for alternative attachment. RFID hand-held and desktop readers complete the flexible range.**

About HellermannTyton

From cable ties with integrated RFID tags to special labels and shrink materials for thermal transfer printing, HellermannTyton offers a tailored range of printers, consumables, ID markers and software which puts everyone in the position to implement any kind of labelling requirement professionally and efficiently. The company is also a leading manufacturer of products for fastening, fixing, processing, connecting, insulating, protecting and labelling cables, hoses and data network components.

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