How to choose the best from various of specific on-metal tags ❓

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With the development of RFID industry, many application are flourishing, a hundred schools of thought contend. However, due to the RFID project has a certain degree of integration, integration, both in the early stages of the solution, or in the latter part of the implementation of the project, a wide range of details will be endless. And for the on metal UHF tag basic issue, Light-Pioneer would like to share that how to use and select the appropriate special tags based on our years of project and application experiences.

Definition：

What is a special tag：

In the field of UHF, the general meaning of the RFID tag is a paper label or card encapsulated into with the INLAY (can be called inlay or transponder, is a combination of chip&antenna, with the initial reading/write functions). Such products can be attached to paper products, corrugated boxes, glass, plastic containers and most of non-metallic, non-liquid items.

The right side shows
the INLAY with adhesive,
It's WET INLAY.
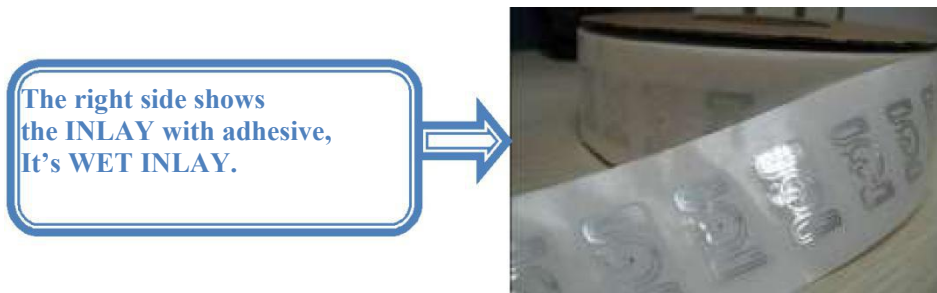
However, due to the principle characteristics of UHF band, ordinary labels has an unavoidable defects for metal or fluid (such as metal surface is dispersed magnetic waves, the liquid absorb electromagnetic waves) . For the practical applications, the metal and liquid are widely exist, how to deal with the solution? So the special anti-metal and anti-liquid tags came into being.

Various sizes and shapes of special tags
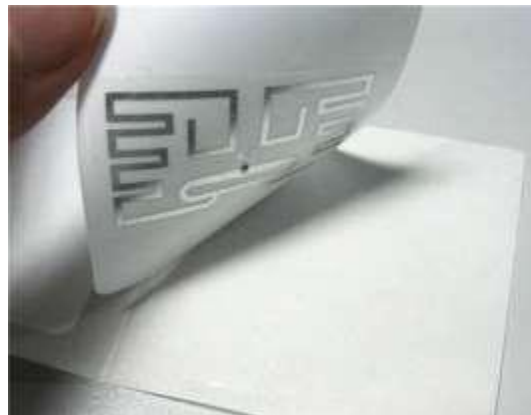
INLAY processed into paper stickers

In the absence of special tags years, some users utilize simple ABS plastic shell and encapsulated the INLAY into it and make the INLAY isolated with the metal, to achieve anti-metal function. But the biggest problem like his kind of form is that It is difficult to ensure product consistency, and can't meet the harsh environment applications.

Secondary encapsulation, large size, thickness is usually more than 8mm, and IP level is low.

Special tag's related application function：

Up to now, the concept of special tags is not just a single function with anti-metal. In the real application, durability (recycling over 12 months), plyability (anti-metal, high temperature and other multiple characteristics), unique (such as ultra-small size with long range read, one-time reading stacked tags and so on), can be defined with special tags. And with the new application of continuous developing, new materials R&D, special RFID tags variety with features will become more and more rich.

Based on the real requirement of the market and industry, Light-Pioneer has focused on RFID Specific Tags for many years, and supply nearly 30 different material properties tags for different project applications for choice.

Application: Choosing the right tag based on the actual environment is the first element of the current project consideration. In this case, Light Pioneer sort out three kinds of different environments for mainstream application and provide a detailed statement below.

First, the indoor projects such as enterprise asset management, indoor warehouses asset management and factory machine room equipment management.

The usual sense of the specific tag application concept for indoor is easy to meet. If it's meet the IP54 industrial grade, then it can be applied to this kind of projects.

For example, enterprise asset management projects, in addition to firstly determine to use the specific tags or general tags, the tag size and read range is an important option, especially the tags'size will impact the long-term fixed/installation. Light Pioneer have variety small size with advanced durable UHF tags optioanl, such as LP-2509, LP-3613, LP-4010, LP-2828.

LP-2509 for laptop asset tracking

The above two model are customized for asset management for SGCC

Indoor warehouse applications, considering the premise of the industrial environment requirements, specific tags with IP65 will be basically meet the requirement (For the cold storage application, we recommended early field test to understand the presence or absence of signal attenuation). Except the metal shell, some projects need RFID real applications , Landmark (storage location) identification is also one of the options to consider the case, so the tags selection is to confirm the ability to withstand pressure and read performance of underground. LightPioneer suggest our LP-9011, LP-7022 and other model, which is applied to this line long-term, some customers had utilized this series to the outdoor application, and seeing their mature&stable performance.

Typical indoor metal shelf management   Magnet tag for recycling usage

Why does the computer room management be classified separately? As computer room equipment and its actual environment are quite different from common asset management applications. which is more significant is the engine room work application will have significant interference for UHF RFID , even cause the tag can not work.

As we all know, UHF work principle is through the electromagnetic reflection, but in such an environment that hundreds or even tens of thousands of servers, memory machine are at work, the electromagnetic interference is a disaster for RFID application! Therefore, such projects need not only carefully selected tags, the reader and antennas are to be custom design.

Data center selected special tags , above is LP-2509, below is LP-2828, Both are custom design for project

Second, outdoor environmental applications, such as equipment management, power inspection:

Equipment management in the usual sense with the communications industry, the power industry and the field of oil outdoor outdoor equipment, compared to indoor environment, outdoor applications, unpredictability is more prominent, the overall performance requirements for the label is higher, not only need (Such as the oil field), high temperature environment (power field), radiation interference (communication industry), and even low temperature applications (such as the northeastern region of the cold weather conditions), but also to the water, Should be considered and ensure that the product performance is correct, Light Pioneer information related products such as high temperature labels, power grid and label are the actual project inspection, the effectiveness of outstanding.

The national grid and the Southern power grid for equipment application and management of RFID special labels

Power inspection is to pay attention to inspection results, such as close to 100% of the Connaught requirements, high damage resistance and ultra-long distance Connaught, etc., the current sail information AcmeTag that is in accordance with such needs R & D design, Up to 35 meters, fully meet the power grid projects such as high-voltage wire, high-altitude equipment such as inspection and management, the true sense of the RFID power inspection applications to maximize and optimize!

AcmeTag, Light-Poineer exclusive design
Read distance is more than 35M by fixed reader

Third, extreme environmental applications like manufacturing line supply chain, mould embedded.

Essentially, the tags self belay are more important in practical applications for this kind of projects, and the key is that how to ensure rfid tags are in good condition, especially they're applied to heavy industry, such as high temperature, chemical, high pressure and a series of production workflow, and end users eager to reduce the cost by recycle. Therefore, based on this type of projects, the applicability of the RFID tags isn't only the tag's material, more is the protection measures to ensure the project is on the rails. Take the mold tooling as an example, we could consider to embedded the on-metal RFID tags into the mold (mold is for recycling) and take the appropriate protection, then the RFID tags along with the mould can adapt to the overall link of work, and have an certain life cycle.

Comparison:

With the development of the RFID tag industry, there are a variety of specific rfid tags on the market, the good and bad are intermingled, as RFID technology with application is in the new stage, the users are usually influenced by the rfid tags' prices. We believe that many companies who are determined to employ the RFID technology need to understand how to judge and choose a suitable RFID tags for the application(like tags selection, device testing etc.)

High Quality RFID tags features:
There must be have had a successful application case; that will have a multiplier effect for new projects.

The supplier with the application experience of the project in relevant industry; on-site visits is necessary.

There must be product or system parameter information, that is not only the mature features introduction, but also the special instructions of the shortcomings;

How to distinguish inferior RFID tags?

The below figure is an on-metal UHF tags made with impurities for raw materials and with poor craft, by the visualized of the photo, whatever the cutting technology or substrate coating are showing a sense of roughness and fake. Especially the poor coating technology would easily lead to the tags' damage and can't work if it's being in the long term use under harsh applications, the project has a substantial impact too.

Rough Drawings

And look at the following item LP-9011 produced by Light Pioneer, neat cutting plate process, also the clear sense of RFID tags' surface finishment (with barcode laser engraving) , all had show a high quality RFID tags' level.

LightPioneer LP-9011

While another type of specific UHF tags, the inferior item (on the left side) antenna is exposed directly(Visible from the image), the antenna was made by silver paste printing,but we all are clear that silver pulp molecules is easy to oxidize for long time exposed to the air, if once the antenna is oxidized, its performance will be affected significantly.For short time, read range is in a serious of decline, and for long time, the tag is unable to work and read any info.
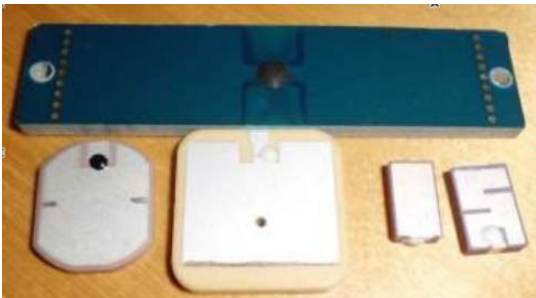
On the right is the same size RFID UHF tags from LightPioneer, in the premise of quality control, utilizing the coating technology for silver paste protection, that's to ensure tag performance and long-term use.


Rough Drawings

Light Pioneer LP-2117

The left rfid tags are with simple production processing and without antenna protection, for the so-called low-cost strategy.

Intention to do label:

Tag as an auxiliary material carrier, in the field of RFID has its special significance, Light Pioneer information is precisely because of its meaning, only in this area quietly for many years, hope that the ultra-high cost of products in more and more Many different types of projects on the application, only this can only bring the industry's progress, in order to allow more enterprises to identify individuals and play this technology.

Light Pioneer™ I-goTag
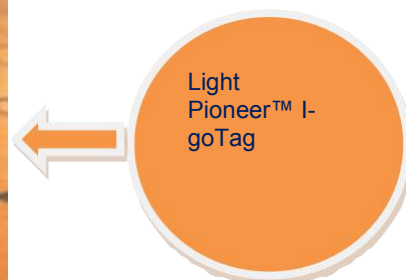
Light Pioneer™ Series of product application overview table

Applications	Product Model	Handheld read range (≤1W ERP)	Features	Remarks
Enterprise asset management	LP-4010	≧1.6M	High Cost-Effective	
Room server	LP-3613	≧1M	Stable performance	
Archives management	LP-5313	≧1.3M	mechanically installed	
Product parts	LP-2509	≧1.2M	Elegant appearance, mini size	
Warehouse Logistics	LP-9011	≧1.5M	Mature application	
Tray Box	LP-7022	≧2M	Magnet fixed performance	
Metal shelves Metal cages	LP-4436	≧1.5M	Durable non-metallic standard	
	LP-9525	≧1.8M	Mature application is extremely high	
Outdoor inspection	AcmeTag	≧8M	Less interference and distance away	
electric equipment	LP-9525	≧1.8M	waterproof	
Telecommunication outdoor assets	LP-7525	≧1.8M	Cost-effective, reading long distance	
High-altitude power equipment	LP-2828	≧2M	Mini size and long distance	
manufacturing	LP-2419	≧0.8M	High temperature environment applicable	
Mold production line	LP-0909	≧0.45M	Smallest size and embedded	
Product embedding	LP-1615	≧0.8M	Small size and embedded	
R F I D Screw	LP-1309	≧0.6M	Small size and long distance	

	I-go Tag	≧0.5M	Rugged shell against external force	
	LP-2424	≧0.5M	Stack read is excellent	
Vehicle management	Vehicle（Thin）Tag	≧3M	Fragile and reading long distance	

About:Light Pioneer™

Light Pioneer，is a company with the field of things in the field of products and applications

consulting business. Light Pioneer product localization of the field of automatic identification, UHF RFID series based. Core competitive products for special smart labels (with anti-metal, high temperature, outdoor harsh environment applications, etc.), are independent research and development and production. Covering paper electronic tags, heterosexual cards and fixed, hand held devices and other hardware, and related projects related to the application of advice. We are closely with the system integration business, providing excellent cost-effective products and rich experience in the implementation of the known.

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