

Full transparency of the rack park in electroplating thanks to the system solution with RFID!

Complete rack park management with RFID for small and medium-sized electroplating companies



As with every project, at the beginning, together with those responsible in the company, there is a discussion, the elaboration and creation of the specifications. The specification is used to clearly define the range of functions and helps everyone involved to get a complete overview of the process as well as a precise overview of the functions.

The special feature of this project was the linking of a manual process of storage and retrieval with a modern and transparent system solution. With a number of around 1,300 to 1,500 racks, warehouse management did not appear to be a major challenge.

However, the downstream production process was considerably more complex than originally thought. The solution required the seamless monitoring of racks throughout the production process (including the galvanic processes).

As with any process in which individual racks are to be recorded in order to then be able to fulfill a clear assignment in the course of the process, the racks must be given an individual identification. This is achieved with unique numbers of the RFID transponders (tags). The special feature of this project was the desire to fulfill a label and at the same time i.a. attributes of the material must also be taken into account.

Due to the flexible system solution, these requirements were implemented accordingly.



Transponder (Development RadioForce GmbH)

Here, tags were selected that enable the racks to be read selectively. The criteria demanded that the labeling be read quickly and clearly assigned to the relevant product groups.

This is of essential importance, especially in the downstream production process. Another extremely important criterion was the resistance of the tags to "endure" the galvanic process.

Because the tags had to be attached to locations on the racks that would involve immersion in the galvanic baths, the tags had to be "protected" appropriately.

On the one hand, the aggressive baths would destroy a normal tag in a very short time and, on the other hand, normal tags would soil the galvanic "bath". Mechanically the tags had to be able to be screwed to a metal frame (at the neck) and the biggest difficulty was the fact that the tags had to be **acid resistant**!

In the absence of this specific tag on the market, it was decided to in-house develop this to meet these exceptional criteria and work with an electroplating rack manufacturer to create 2 UNIQUE solutions.





The electroplating UHF tag comes in different sizes, shapes and types of attachment to fit all types of frames.



Initialization process (SW development RadioForce GmbH)

Assignment of the tag number to the frame with unique number and attributes of the frame. The initialization takes place with a PDA, which offers exceptional flexibility. **Here is the first time saving!**

This makes each rack UNIQUE - THE basic requirement for transparent storage!



Principle of the process



Here you can see the first 3 masks to start the process. EVERYTHING starts with the order (order number, material number and quantity).

Next, the system suggests the appropriate racks to be used. This depends on various criteria such as the use of the racks (number of runs), number of pieces...

At each step of the process, the status is recorded and transferred to the database in real time. Then the racks are loaded with the goods.

The frame is reported back to the system as "equipped" with the corresponding number of pieces and transported to the electroplating shop.





As soon as the racks, which are hung on the transport trolley, are driven into the loading station, **the system automatically checks the rack numbers via an RFID reader** and transmits the relevant data to the electroplating production system.





RFID – Readerbox

RFID-Antennas for rack recognition

After the frames come out of the electroplating shop, they are subjected to an initial inspection. This is an **extremely important step** in the production process!





After the products have been removed from the racks, the racks are released with a scan and can then be stored again or used for the next assembly. **FINISHED!**

Some impressions from the electroplating production!











General information about the storage/retrieval station

- 1. UHF readers
- 2. High power antennas
- 3. High quality coax cable with industrial connectors
- 4. PDA with RFID UHF
- 5. Database
- 6. Process control system by RadioForce

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General information about loading station

- 1. UHF readers
- 2. High power antennas

General information about transponders (tags)

1. Acid-resistant UHF transponder (868 MHz, different types)

General information about server and control software

- 1. The server was provided by the customer
- 2. The process control software was created and installed by RadioForce.

Based on the customer's wishes and requirements, RadioForce developed and installed a tailor-made solution that is unparalleled today.

We are looking forward to new challenges in electroplating!

A fantastic project in a friendly city. Your RadioForce team

