

RFID succesvol in de praktijk bij Continental en Audi

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What is the Formula for successful RFID Applications?



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What is a RFID Application?



Source: www.rfid-im-blick.de

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What does it mean: successfully solved?

- From the customer point of view: the application is running and does not make any trouble
- Technically: 100% read and write performance under all conditions
 - Read and write distance
 - Object speed vs. transmission rate
 - Size of the object and tag
 - Bulk reading
 - Environment
 - Interfaces
 - Human factor
 -



What is the Formula for successful RFID Applications?



Als een hamer je enige gereedschap is,
lijkt elk probleem op een spijker

Paul Watzlawick
Communicatiewetenschapper

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What is the Formula for successful RFID Applications?



*Op ieder potje past een
deksel... en tot die tijd heb
je altijd nog afdekfolie.*

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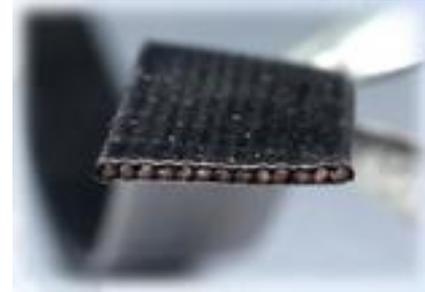


The Application

- Purpose: tracking and tracing of semi-finished products in the tire production for quality monitoring and recording
 - Make sure that the right material is used automatically
 - Documentation of material used, goal is reduction of paper work
- Equipment of the existing machine park worldwide and new machinery
- HF technology was set by Continental: several identification points close to each other with a lot of metal around, high memory tag with FRAM technology
- Challenge was the construction of machine, specific requirements and the time schedule
- Boundary conditions for the application are fixed and well defined

The Workflow

- A two step approach for rubber strips:
 - Rubber strips are produced on cap strip machines and winded up onto bobbins
 - Bobbins are transferred to tire building machines
 - Rubber strips are unwound from bobbin during tire build process
 - Necessity to identify the bobbins onto the machines



Source: www.steelastic.com

The Cap Strip Machine



Source: www.steelastic.com

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The Tire Building Machine



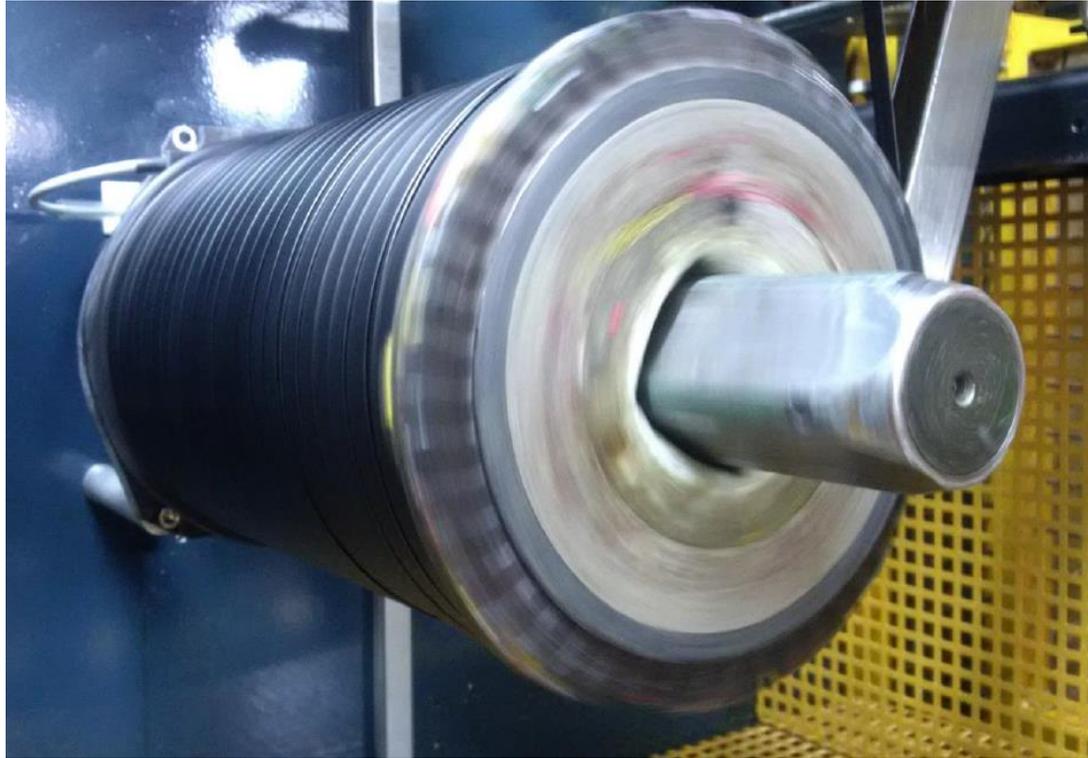
Source: Apollo Tyres Chennai Factory

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The Bobbin Holder



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The Challenge

Requirement: Tag attached to the bobbin must be written or read independent from position directly after mounting onto the machine

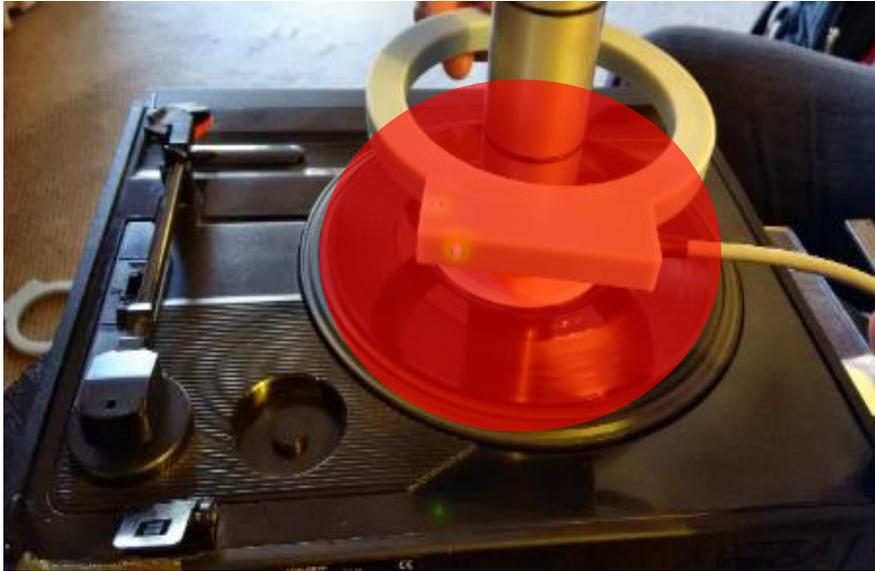


- Using a HF reader in a standard rectangular housing
 - Only a small segment of the necessary full 360° range is covered
 - Difficult to adjust
 - Needs a defined start / stop position
 - Time critical due to limited spatial coverage



The Solution

Large antenna coil in a new ring shaped housing with existing electronics



- Using new reader concept
 - Full 360° range is covered
 - Tag always perfectly adjusted
 - Continuous data transfer in motion conceivable
 - Independent from time and speed

Result:

Perfectly tailored solution for this application



The Time Schedule

- First visit at the customer site
- Two weeks later: proof of concept at the customer site with a single prototype based on existing electronics and new antenna coil in 3D printed new housing
- Six weeks later: contract received
- Four months later: first prototypes from standard production using molded housing for pilot run on one cap strip and on one tire building machine
- Two months later: type approval for Europe and series release

The Realization - Reader

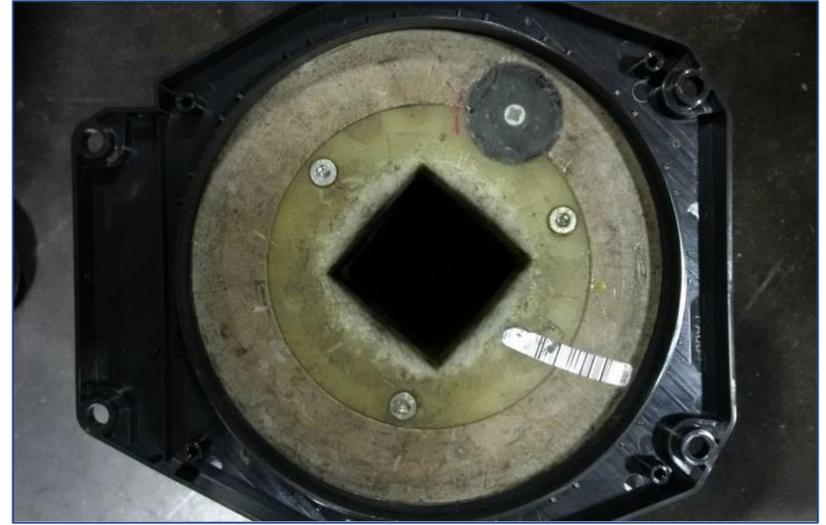


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The Realization -Tag



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The Application

- Purpose: tracking and tracing of mounting parts in the body shop
 - Mounting parts are e.g. doors, hoods, trunk lids
 - Mounting parts are stored into containers
 - Make sure that the right material is used automatically
- Old line was equipped with an HF RFID system
- New line shall be equipped with an UHF RFID system to have higher flexibility during planning and construction

The Challenge

- Boundary conditions are not fully defined, therefore high flexibility of the reader performance expected
- Reader should not be big in size for mounting under limited space conditions
- Strong metallic environment has to be mastered

The Solution

- Compact UHF RFID read/write head with integrated antenna
- Size: 110mm x 110mm x 50mm

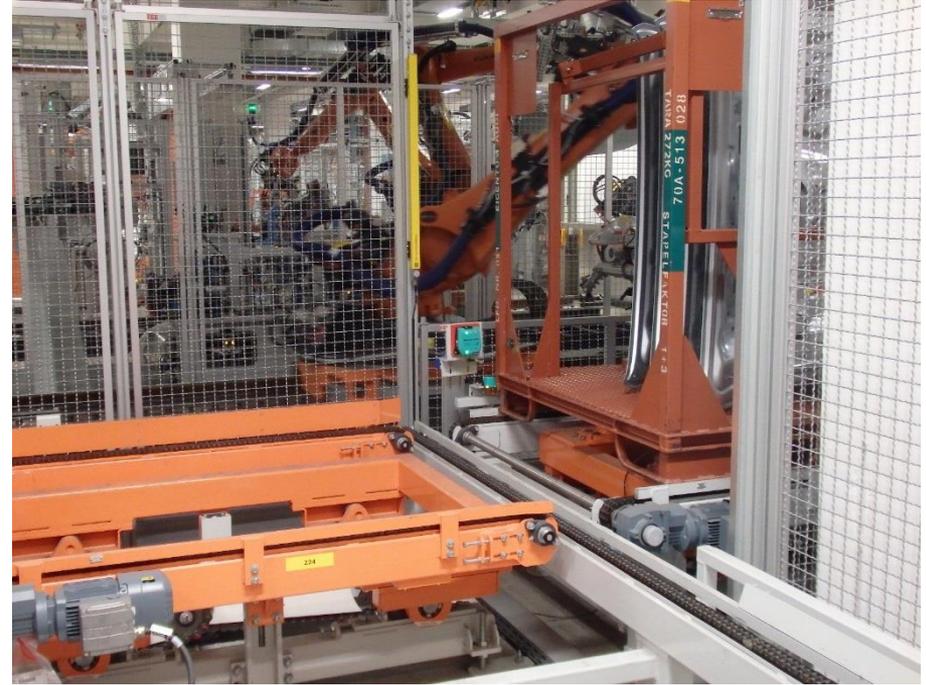


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The Realization

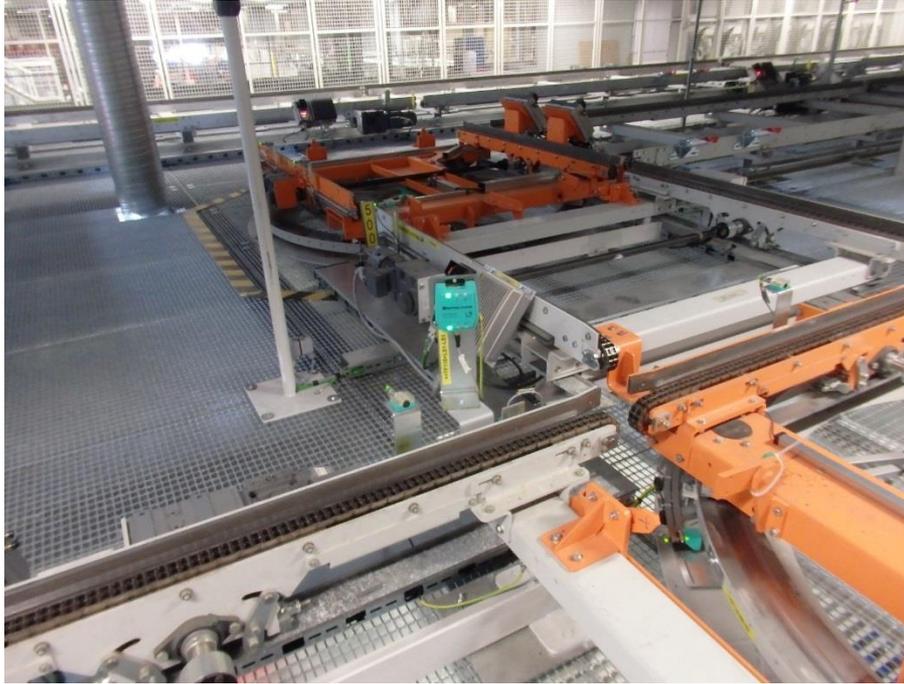


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The Realization



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The Realization

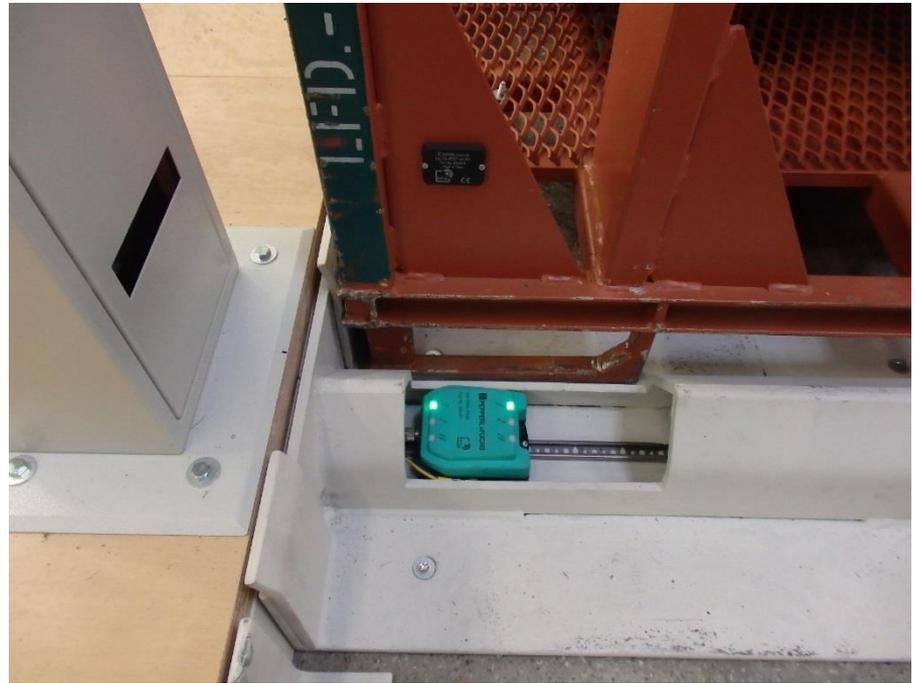


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The Realization



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Conclusion

Do not use a hammer to solve a RFID application but an approach, which is tailored to the requirements of the application.

Know
→ how!



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