How to Leverage RFID to Improve Automotive Production
Today’s Presenter

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How to Leverage RFID to Improve Automotive Production

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Agenda

Car body identification

RFID-based Kanban

Identifications of tires

Automotive part identification
RFID in Automotive Production
Car body identification

RFID tag
- Removeable high-temp label
or
- Fixed on-metal high-temp tag

RFID reader
- Integrated antenna
- typ. up to 2m range
- Connected to PLC via fieldbus
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Car body identification

Motivation:

Situation in the past:
- multiple ident technologies throughout production
- different data carriers
- data conversion from one medium to another

Save costs and reduce complexity by
- using less technologies
- using one data carrier → one UHF tag per car
- no media changes / data transfer points
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Car body identification

Challenges

Requirements for tag:
- Short and long ranges
- Difficult orientations between reader and tag
- Chemicals in catalytic process
- No line-of-sight in paint shop
- High temperature in dry oven
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Car body identification

Examples
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RFID based Kanban
Advantages with RFID
- Reduce manual efforts for operator
- Real-time information → transparency
- History about material flow → continuous improvement
- → reduction of stock
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RFID based Kanban

Challenges

ESD container $\rightarrow$ the right tag

Overshoots $\rightarrow$ limiting reading zone

Network $\rightarrow$ Power over Ethernet

IT integration $\rightarrow$ Middleware

World-wide use $\rightarrow$ Radio approvals
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Identification of Tires

EXTRUSION LINE
CUT & SPLICE MACHINE
CURING PRESS – SPRAYING BOOTH
CURING PRESS
TIRE BUILDING MACHINE
FINISH TIRE
CALENDERING MACHINE
TIRE PICKING STATION
FINISH TIRE
TIRE PICKING STATION

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Identification of Tires

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TIRE PICKING STATION
FINISH TIRE
TIRE PICKING STATION
Sick has a long history in tire identification with optical systems.

**Challenges with RFID**

- Low performing tags
- Challenging tag environment
- Position & orientation of tire
- Dynamic read and write
- Large reading field
- CrossReads
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Identification of Tires

Different requirements need different solutions
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Identification of Tires

Important to know in advance

- Conveyor width
- Conveyor speed
- Position of tag
- Object gap

Actions on air interface
- Read (Ull, TID, User memory)
- Write (Ull, User memory)
- Lock (Ull, User memory)
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Identification of Tires

**RFID Tire System Core**
- RFID reader + antennas
- Connection box (optional)
- Cabling and holders
- Trigger

**Component approach**
- Only start/stop
- 24V provided by customer
- Integration/framing provided by customer

**RFID Tire System Prime**
- System controller MSC800
- RFID reader + antennas
- System framing
- Trigger and encoder
- Standard shielding modules

**Self-supporting RFID tunnel**
- Flexible and robust design
- Advanced shielding with absorbers to avoid cross reads
- Advanced tag reading with precision in tag assignment
- Start/stop and tracking (different conveyor speed)
- Combination with optical scanner possible

**RFID Tire System Pro**
- Absorber tunnel solution
- Antennas integrate in tunnel modules
- System controller MSC800
- Trigger and encoder

**Engineering for integration and framing**
- Standard shielding to avoid cross reads
- Advanced host interface
- Start/stop and tracking (different conveyor speed)
- Combination with optical scanner possible
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Automotive part identification
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Automotive part identification

- **RFU61x**
  - Short range
  - Limited space

- **RFU62x**
  - Mld range

- **RFU63x**
  - Long range

- **RFGS**
  - Bulk reading
  - Long range
  - Direction detection

- **RFU65x**
  - Direction detection
  - Long range
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Q&A

For further questions and feedback, please mail to info@sick.com
THANK YOU

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