

Your Global Identification Partner



Using RFID in the Manufacturing

Improve tracking of materials, parts and finished goods

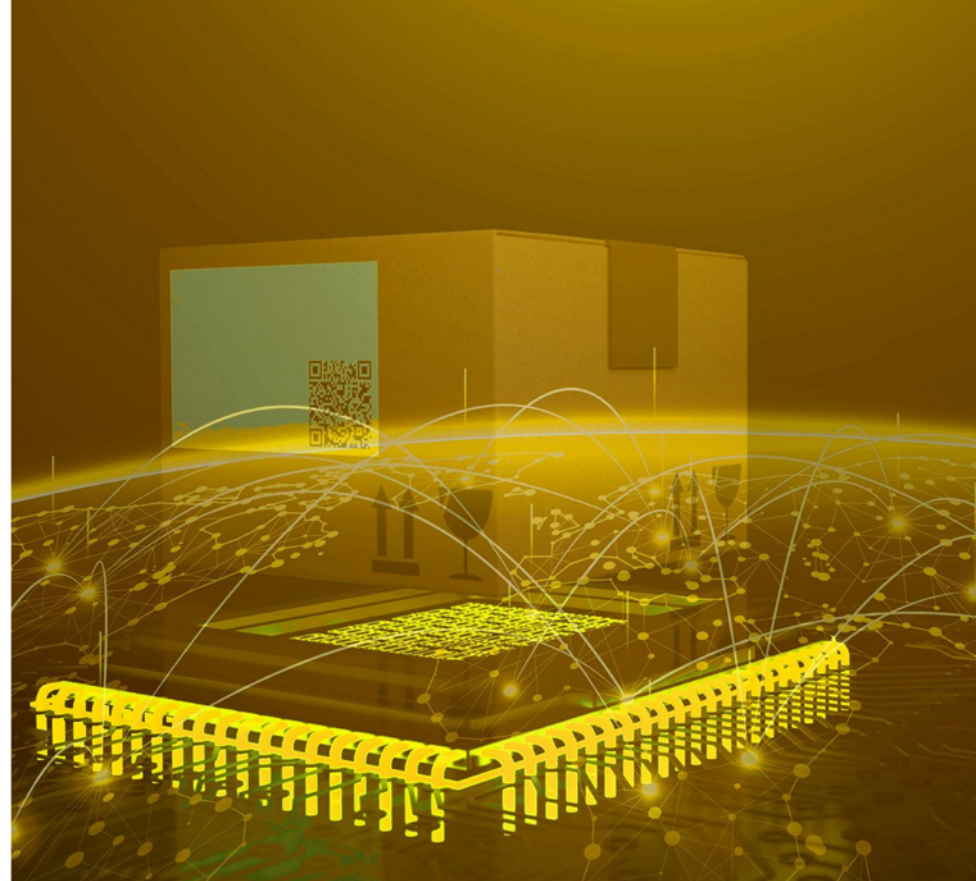


Agenda

- Introductions
- Overview of Turck Vilant Systems
- How the RFID System Works
- Case Studies
- Benefits of using RFID Systems
- Q&A

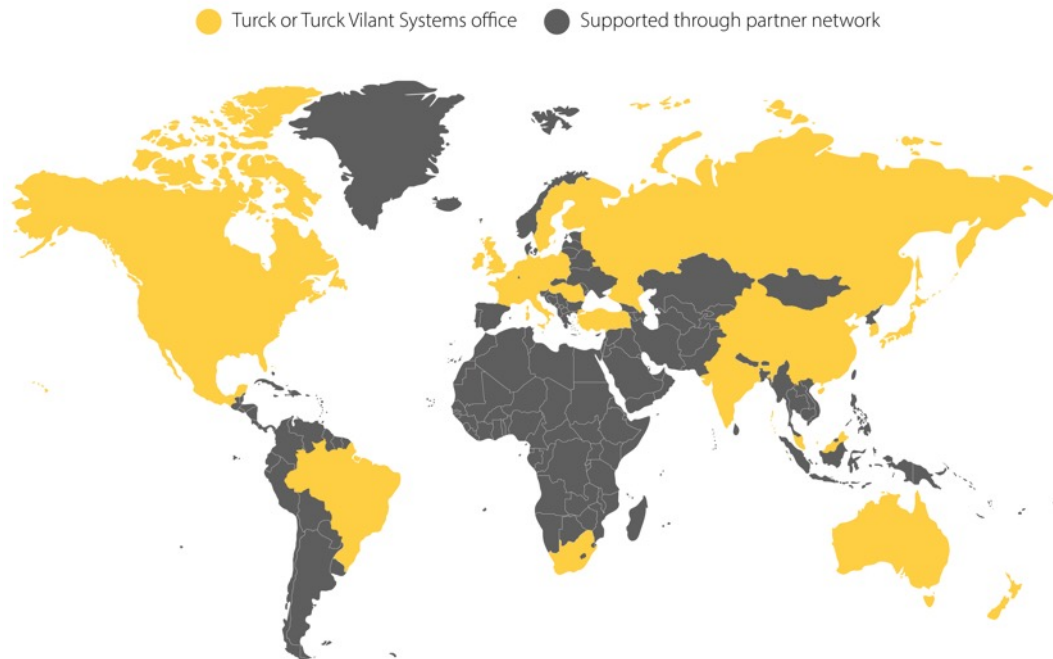
We deliver our customers a
digital supply chain
to improve their operations
and to ensure

- Richer Data
- Operational Visibility
- Better Quality
- Enhanced Throughput



Worldwide Projects, Delivery and Support

- Turck is a global automation solutions provider. Turck Vilant Systems are sold through local subsidiary offices in more than 30 countries
- Through our partner network, we have access to local support in 60 countries
- RFID solutions since 2002



Turck Vilant Systems and The Automotive Industry

- Currently serving 35% of the companies listed under Motor Vehicles and Parts in Fortune 500
- Applications include production tracking, serialized car part tracking, Reusable Transport Item (RTI) management and inventory control



RFID Platform



Turck Vilant Visibility Manager

Our application for data consolidation and analysis. Provides data for process development. Usually operates as the point of integration to customer systems.



Turck Vilant Device Manager

Our application for system health and remote maintenance. Allows support teams to monitor the RFID equipment from a-far and distributes updates to all devices.

3 RFID System Types:



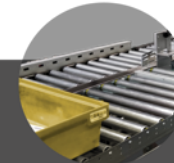
RFID Gates

Installed at dock doors or entry ways use RFID to register materials and assets passing by and their direction.



Forklift RFID

RFID readers with smart algorithms help to register warehouse movements of items on the fork.



Conveyor Belt RFID

Installed by conveyor belts or production lines uses RFID to automatically identify materials and assets and initiate actions.

RFID Forklift and Conveyor System

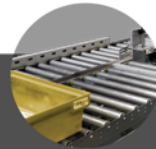


Forklift RFID

RFID readers with smart algorithms help to register warehouse movements of items on the fork.

Forklift Configuration

- Runs on a local forklift PC
 - Specially designed algorithms detect each item on the fork as well as exactly where the forklift moves
- Turck Vilant Forklift Client and suitable Turck Vilant RFID Reader cabinet, antennas accessories all delivered together to best fit customer purposes.



Conveyor Belt RFID

Installed by conveyor belts or production lines uses RFID to automatically identify materials and assets and initiate actions.

Conveyor Configuration

- RFID for conveyor belts and stationary read points
- Increases visibility and tracking of items/totes on a conveyor
- Eases product movement or transfer through improved tracking capabilities



RFID Gates

Installed at dock doors or entry ways use RFID to register materials and assets passing by and their direction.

RFID Gate Configuration:

Mounted over a warehouse dock door frame or within a factory, items going through gate are captured and recorded into the customer's ERP system or into a cloud server.

Benefits

- Eliminate stray reads for more accurate data capture - even at a distance
- Turnkey system with ready to use components
- Enterprise and factory level monitoring
- Software is 100% device independent

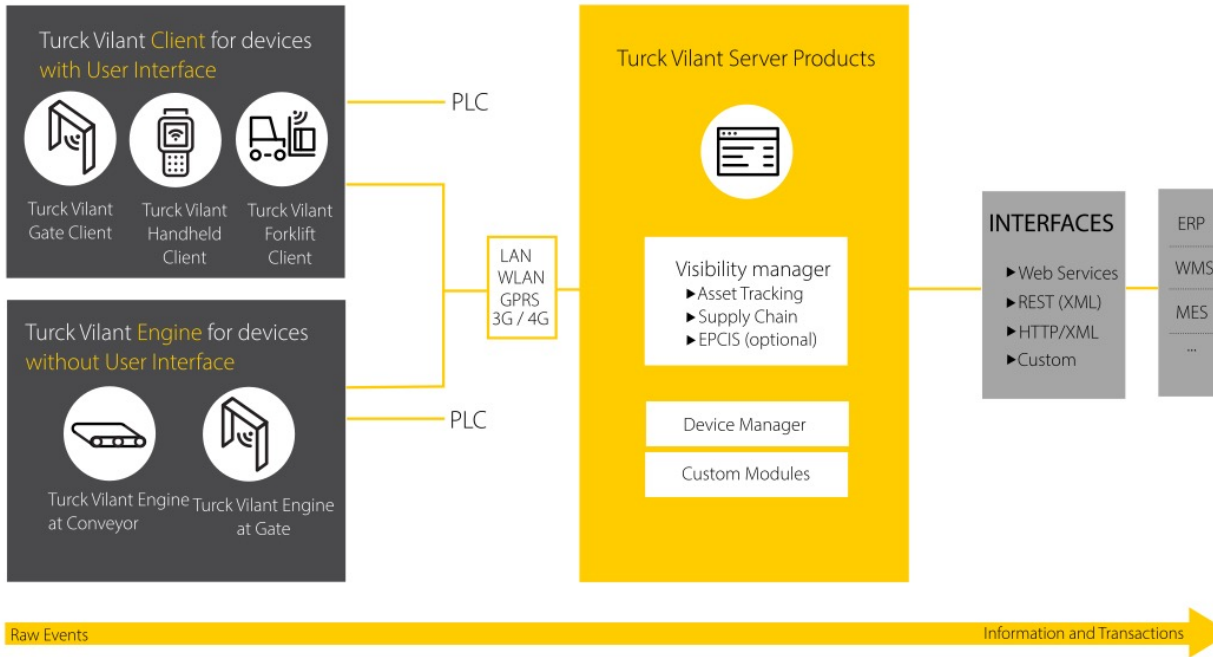


RFID Gate Demo Video

Now let's watch a video demonstrating Turck's RFID Gate.



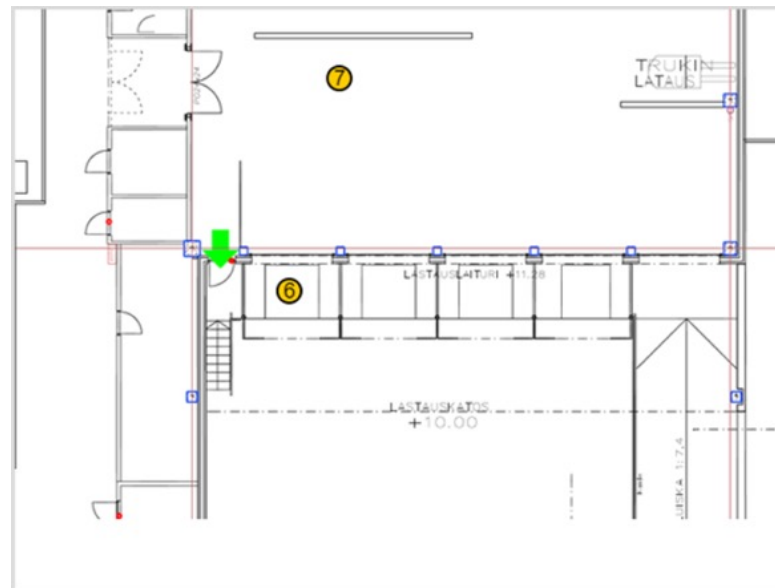
Turck Vilant Software Platform



- Standard software package for plug and play RFID implementation
- Internet of Things/Industry 4.0 compatible
- Scalable for high volume applications
- Reader pool management and failure alarms
- Advanced intelligent filtering
- Direction detection
- Stray removal
- Report and track
- Experience with integration to over 30 different backend systems including SAP, Oracle, MS Dynamics, AS400.

Example on how an asset travels

Example of the data available on an individual assets history in our Turck Vilant Visibility Manager



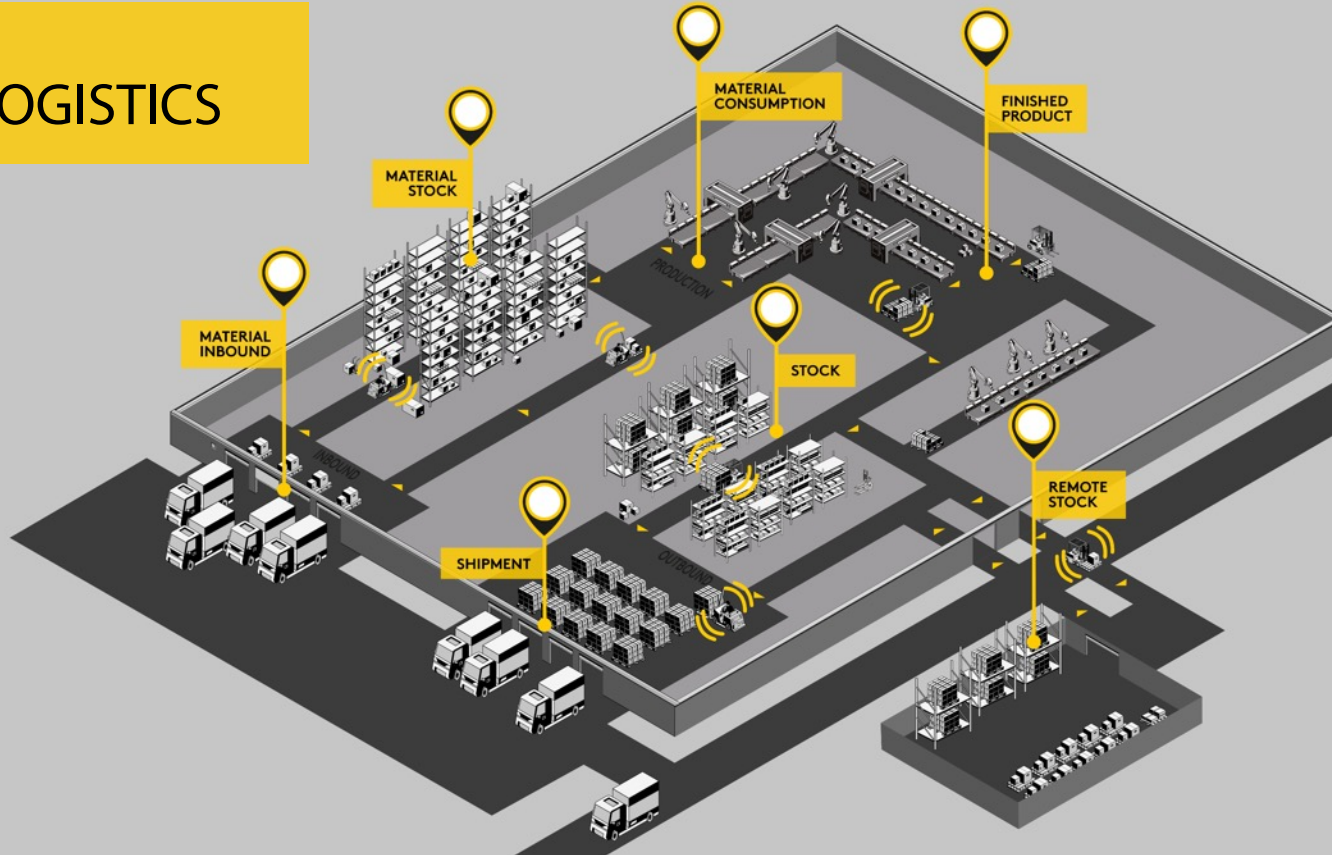
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✓	31158775DC0000009B000000	sscc-96 0.6413687.0000000155	Warehouse	A100	MOVE	May 3, 2021 2:26:53 AM GMT										1000	Generic sp
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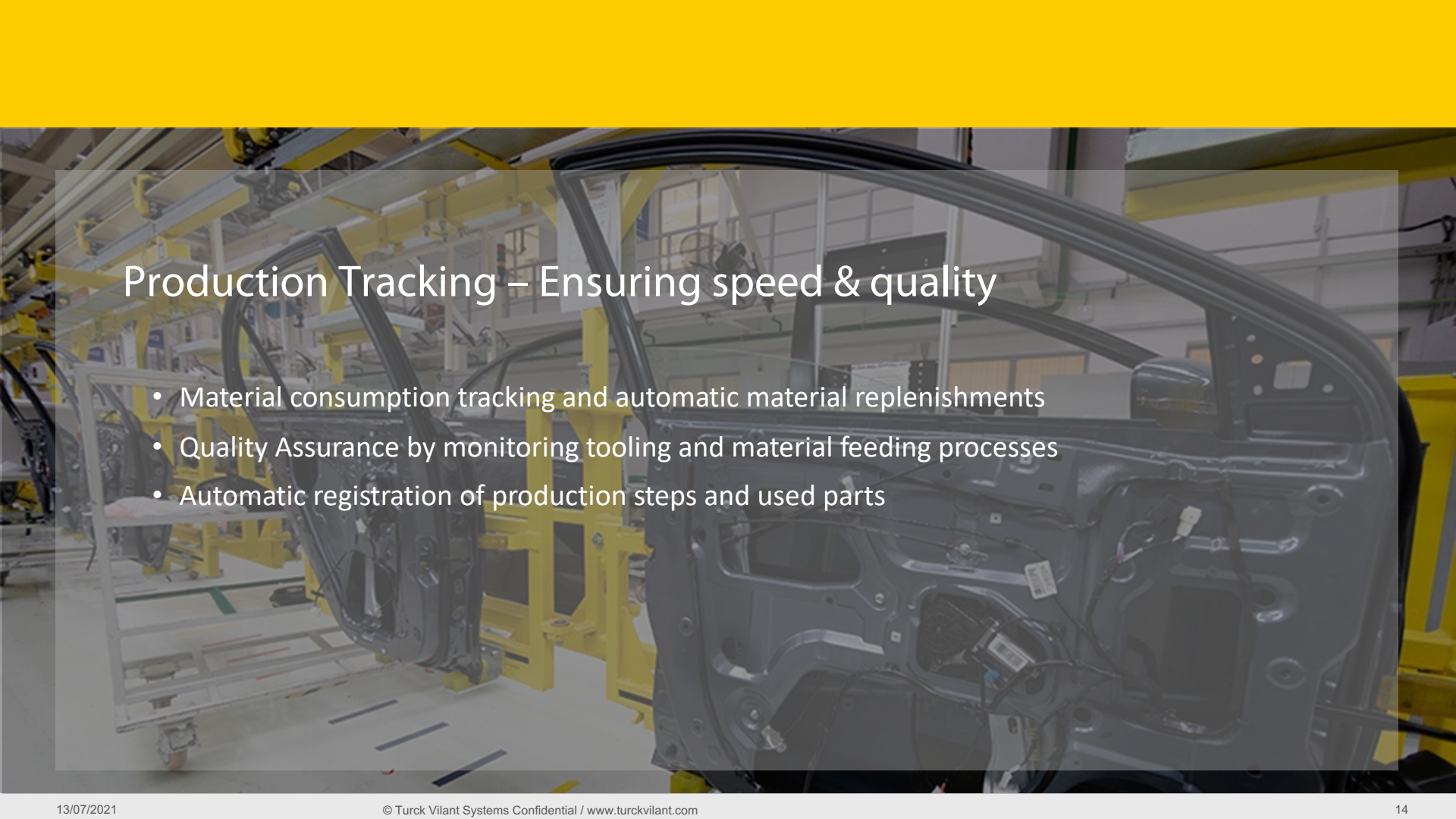
CASE STUDIES



RFID tracks materials, inventory and production

RFID IN INTRALOGISTICS



The background image shows a car body in a factory setting, with yellow overhead cranes and assembly equipment visible. A semi-transparent grey box is overlaid on the image, containing the title and a bulleted list.

Production Tracking – Ensuring speed & quality

- Material consumption tracking and automatic material replenishments
- Quality Assurance by monitoring tooling and material feeding processes
- Automatic registration of production steps and used parts

TIER 1 CAR SEAT MANUFACTURER

A global supplier for the automotive industry with operations in over 20 countries, in 5 continents. Operates a car seat manufacturing facility in Europe.

THE CHALLENGES



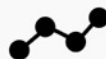
- Need to improve production throughput times
- Existing process relied on reading barcodes at work stations (for checkup & documentation of production steps)

THE SOLUTION



- Replacing the barcode system with **RFID**
- Each part (backrest, seat, shell) tagged with **UHF RFID tags**
- Production line equipped with **UHF RFID readers and antennas**
- UHF RFID system directly **integrated** to **MES**

THE RESULTS



- **51% faster Production Cycle**
- Manual scanning process removed

TIER 1 BUMPER MANUFACTURER

A global supplier for the automotive industry with operations in over 20 countries, in 5 continents. Operates a bumper manufacturing facility in Europe.

THE CHALLENGES



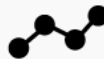
- Need to automatize bumper production line
- Lack of visibility to entire production process from molding to raw material inventory, paintshop, storage for painted parts and finally the waterfall into assembly.
- Need for real-time production status data

THE SOLUTION



- The introduction of RFID tags on each bumper
- Production lines equipped with UHF and HF RFID readers and antennas to support a mix of technologies used
- The Turck Vilant RFID system directly integrated to customer MES (Manufacturing Execution System)

THE RESULTS



- Fully automated production line
- Real-time production status data
- No more manual check points during production

VALMET AUTOMOTIVE

Finnish service provider for the automotive industry providing vehicle manufacturing for OEMs, manufacturing of batteries for electric cars and developing covering roof and kinematic systems, which the company provides to automotive customers as Tier 1 supplier.
In the past 50 years Valmet Automotive has manufactured over 1.7 million cars to brands such as Mercedes-Benz, Saab and Porsche.

THE CHALLENGES



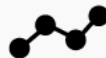
- A barcode system was in use to track the painting cycle of the car chassis, but the system was unreliable.
- It is crucial to feed the Manufacturing Execution System (MES) correct information on how many painting cycles each chassis has in order for the MES to manage the production line process for each chassis correctly.

THE SOLUTION



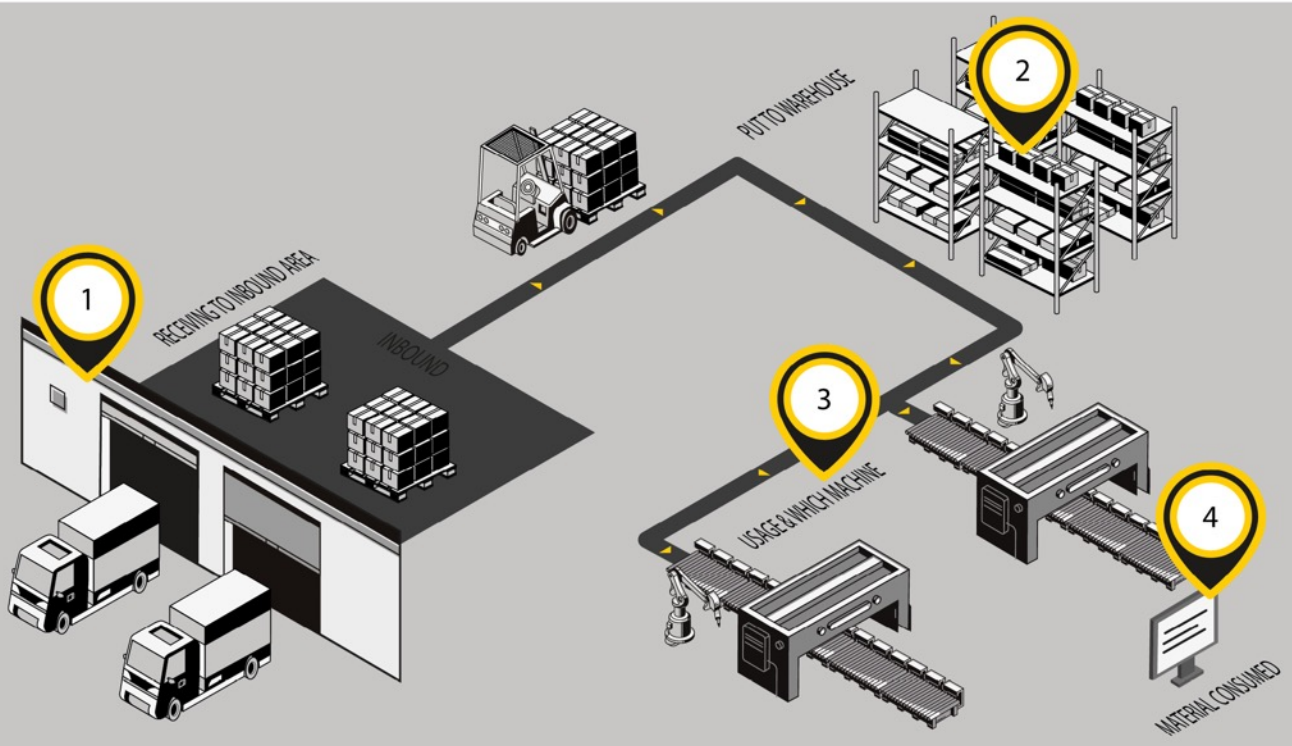
- Special **heat-resistant RFID tags** that can endure 220 degrees Celsius were introduced on chassis level
- **RFID readers with Turck Vilant RFID application** were introduced with a direct integration to Valmet Automotive's production automation (MES)

THE RESULTS



- Higher level of automation and traceability
- Reduced manual level
- Reliable data from the RFID System to the MES

Material Tracking



1. Material is received from suppliers through RFID gates that automatically receive the goods to backend system.
2. Material is moved to inbound warehouse through RFID gates or with forklifts equipped with RFID readers and new stock location is automatically updated to WMS (to exact shelf position).
3. Material is automatically scanned by fixed RFID readers at production machine. The RFID system verifies that used material is correct and alerts the operator in case of false material.
4. Full traceability of materials is provided to each production step. Consumed materials are automatically booked to help initiate replenishment.

NOKIAN TYRES

Nokian Tyres is a 1.3 billion Euro tire manufacturer and a market leader in Nordics and Russia. The company focuses in manufacturing passenger car and heavy tires, additionally it owns Vianor, a company focused in tire retail and services business.

THE CHALLENGES



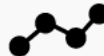
- Production suffered from false material inputs due to raw material being difficult to tell apart
- Manual raw material consumption tracking process prone to error

THE SOLUTION



- Introduction of RFID to Production
- Specialised RFID read points for component manufacturing machines
- RFID read points run use-case specific **Turck Vilant RFID Application**
- **Turck Vilant Application prevents the use of a machine** in case user tries to input **wrong material**
- **Mobile RFID devices for Quality Checks**

THE RESULTS



- Full visibility to raw materials used
- Real-time production monitoring and steering
- Reduction of errors

ABB MEDIUM VOLTAGE PRODUCTS

ABB is a globally leading power electronics and automation company with presence in more than 100 countries. The company employs 145.000 people and operates in roughly 100 countries.

ABB's Medium Voltage Products business unit provides technologies for the distribution of electricity.

THE CHALLENGES



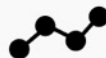
- Vast material flow of incoming goods
- Inefficient material receiving process with manual errors
- Overall factory modernization program in place

THE SOLUTION



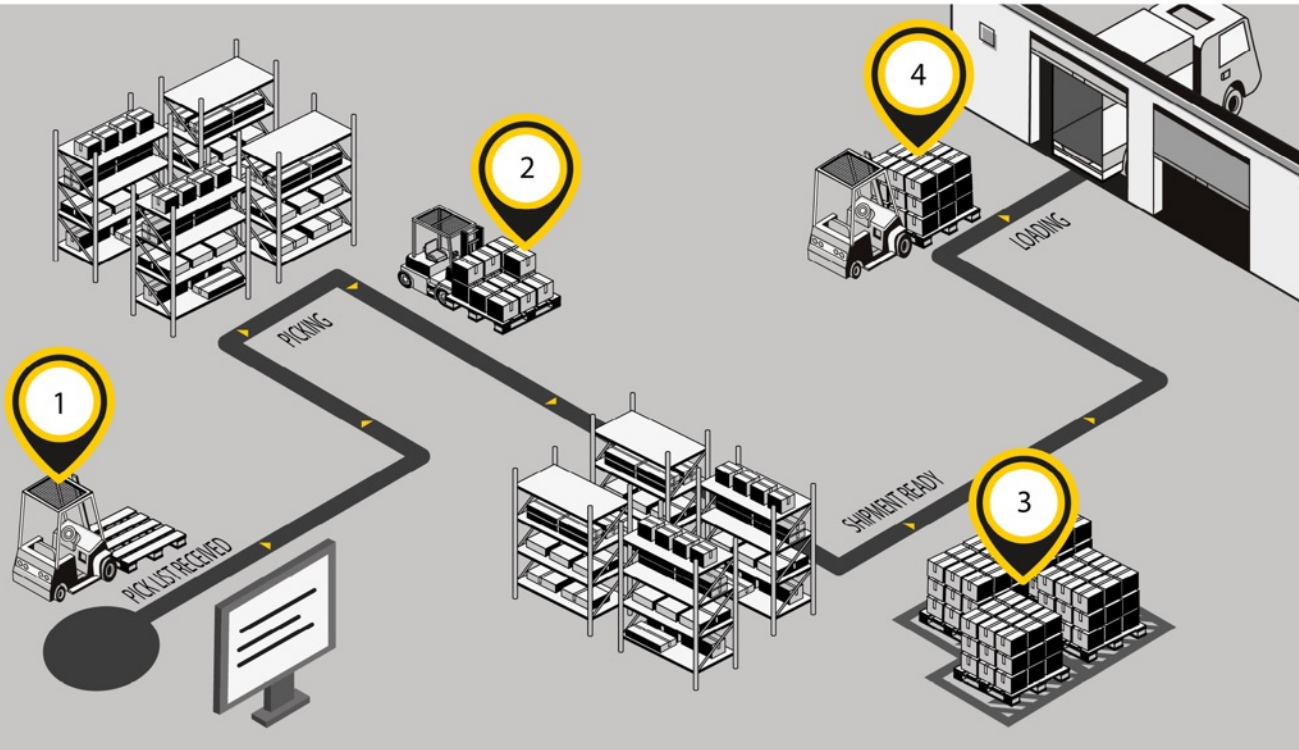
- Introduction of **RFID** to material suppliers and at the factory
- **Turck Vilant RFID server** to manage needed **RFID devices** and to handle the **encoding of RFID tags** and the **data exchange** with business applications
- **Turck Vilant RFID Gates** for receiving materials at the factory

THE RESULTS



- Significant improvement in material receiving efficiency
- Reduced amount of manual labor and drop in human errors
- Substantially faster stock turnaround times
- Lower inventory levels

Shipment Verification



1. Customer business system (such as WMS or ERP) provides the RFID System with pick lists for shipments.
2. The RFID System verifies that the items, which the operator picks up based on the picking list are correct. The pick list can be shown on forklift PC or Handheld readers.
3. Ready pallets are parked at packing area for the creation of shipping documents and when necessary further processing of the RFID tags.
4. As the pallets are loaded onto trucks the RFID System verifies that correct handling units are moved through correct dock doors and alerts operators in case of mistakes during loading.

After the loading process is completed the RFID System finishes the transaction by sending a message to the customer business system. (e.g. Post Goods Issue)

TYRE MANUFACTURER TRACKS HEAVY TIRES

One of world's largest tire manufacturers uses RFID to track their heavy tires and ensure correct and on-time deliveries.

THE CHALLENGES



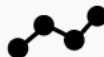
- Ensuring **on-time** and **correct** tire type deliveries of heavy tires to OEM customers
- Delivery Accuracy
- Cost efficient tracking solution

THE SOLUTION



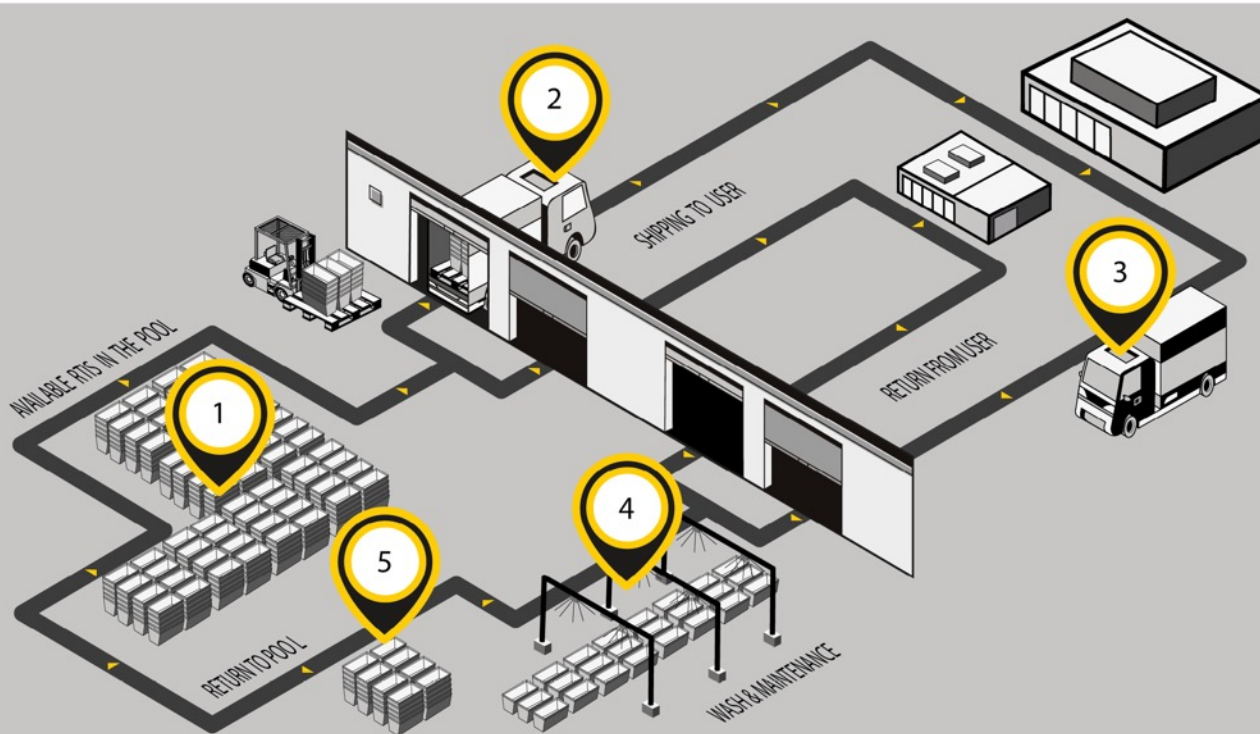
- One product level RFID tag on each tire
- Turck Vilant Forklift RFID solution that tracks up-to 10 tires on the fork during picking and loading
- Turck Vilant Shipment Verification solution integrated to customer Business System (SAP)

THE RESULTS



- Cost efficient tracking with only one tag per tire
- Loading transparency and accurate shipping process
- Increased data quality as customer now tracks individual products instead of earlier batch level tracking

Managing a pool of RTIs or other rotating assets



1) New RTIs / assets are generated to the pool and marked as available in the system.

2) As RTIs are moved through dock doors to trucks the status of RTI is changed to shipped. The destination and a timestamp of the shipment are automatically added. If a product is linked to RTI, an automated transaction of product been shipped is sent to customer backend system.

3) The RFID System automatically registers the returning RTIs as arrived back to pool handler.

4) Returned RTIs will undergo an inspection to see if they need maintenance. Any that do, will undergo needed maintenance.

5) RTIs are returned to pool



POOL OF RTIs (RETURNABLE TRANSPORT ITEM) MANAGED BY A CAR BRAND IN EUROPE

A top car brand listed among top 10 largest car brands in the world.

THE CHALLENGES



- Managing a pool of rotating RTIs used for parts transport between several actors in the value chain in 15 countries
- Need for visibility to a pool of roughly 70,000 RTIs
- Loss and non-availability of the RTIs

THE SOLUTION



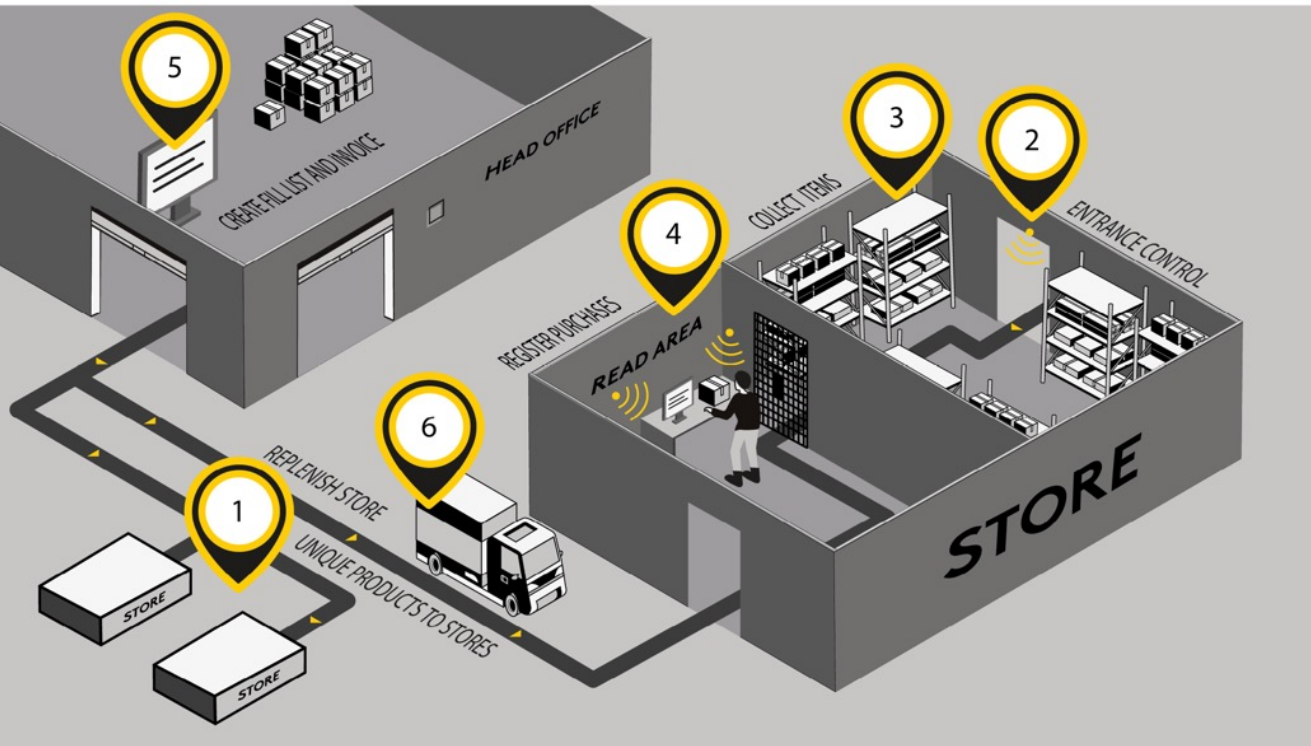
- RFID tagging 70,000 RTIs
- Pallet depots and partner locations all equipped with **Turck Vilant RFID Gates** (with and without direction sensing, dependent on location), which automatically register the RTIs as shipped or received.
- **Turck Vilant Server** for monitoring RTI whereabouts and availability and to check RTIs are returned back to pool in time. Additionally system health and maintenance is managed by the server.

THE RESULTS



- 40,100 - 60,500 RFID scans that monitor the shipments of full RTIs to regional depots and onward as well as the return of empty RTIs
- Better understanding on RTI availability
- Faster RTI turnaround times

Unmanned store or storage



1. Products will be labelled with RFID. Pre-defined selection of products will be delivered to each store. The selection is fully customizable.
2. The RFID Store system helps manage individual users and their access to different locations.
3. Each RFID Store is equipped with an entrance control system that only allows access to authorized users for that location.
4. Users select the products they need from the store. When they are done, they move to the secured Read Area.
5. The Read Area grants access to only one users at a time. All items the user is carrying will be registered as purchased or loaned.
6. Data for invoicing and replenishment is made available on the RFID backend system.
7. The store is filled with new products based on the replenishment list.



WÜRTH

Würth develops and markets products for construction, craftsmen and industrial customers. With operations in more than 80 countries and a turnover of nearly €14,5 billion (2019) Würth is a worldleader in fastening and assembly materials.

THE CHALLENGES

- Tool and material availability outside of store opening hours
- Ability to increase product availability closer to customer
- Customer service enhancements

THE SOLUTION

- The customer chose **Turck Vilant RFID Store** concept that can be built to
 - Sea Container
 - Customer stock room
 - Customer other premises
- **Turck Vilant RFID Store** allows the customer to centrally manage
 - Sellable and lendable products, their prices and other data
 - Customers and users of the system and their access and purchase rights
 - Individual purchases
 - Creation of RFID tags for all products
 - Stock count of products per location

THE RESULTS

- New Store Concept open 24/7 with no local personnel
- Tailored product range for each location
- Never out-of-stock products, better customer satisfaction

Benefits of Using RFID Systems

- Easy identification of parts and materials ensuring production quality
- Speed through automation
- Visibility on material movements and material levels
- Full visibility to current stock levels
- Drop in errors
- Improving current operations by using Big Data
- Legal / brand owner mandate compliance

ALSO NOTABLE

- Works even in the harshest conditions where more traditional technologies may fail
- Works in conditions where no line-of-sight is available



Your Global Identification Partner

TURCK

VILANT SYSTEMS



www.turckvilant.com