



**Come and see
the world of
IDEN TEC SOLUTIONS**

**RFID in Automotive
Manufacturing**

VISIBILITY delivered.

IDENTEC SOLUTIONS

Who we are.

- IDENTEC SOLUTIONS

The leading provider of commercial
High Value Wireless Tracking & Sensing Technology (active RFID).



- KEY FACTS

Established 1999 in Austria
Global Activities (EMEA, NA, Asia)
½ million active tags, 30.000 readers in use



- BUSINESS LOCATIONS

Centers of Excellence

Lustenau, Austria (ILR-Line) - HQ
Weinheim, Germany (Automotive)
Kristiansand, Norway (Oil, Gas & Mining)

Sales & Service Centre

Dallas, USA
Hong Kong, China
Shellharbour, Australia
Jönköping, Sweden



IDENTEC SOLUTIONS

Whom we serve



AUTOMOTIVE



MINING, TUNNELING



PORTS



SEMICONDUCTOR



**MILITARY
LOGISTICS**



AVIATION



TRANSPORTATION



HEALTHCARE



OIL, OFFSHORE



VEHICLE TRACKING



PAPER INDUSTRY



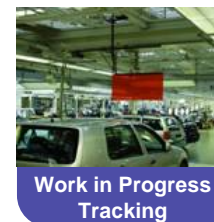
CONSTRUCTION

High Value RFID in harsh industrial environment.

- **Work in Progress - QUALITY**

Process/Quality improvement: The ability to track items from start to finish of a process help to continuously improve efficiency and quality.

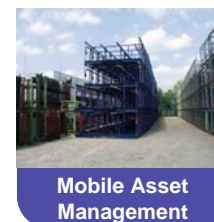
Find it fast: The challenge of finding the exact item among similar products is very complex, time consuming and error-prone.



- **Mobile Asset Management - ENVIRONMENT**

High Value: Generally, mobile assets have high value. This may be actual value or intrinsic value (value of content).

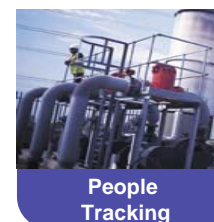
Complexity of operations: The handling of mobile assets within global supply networks has become more complex.



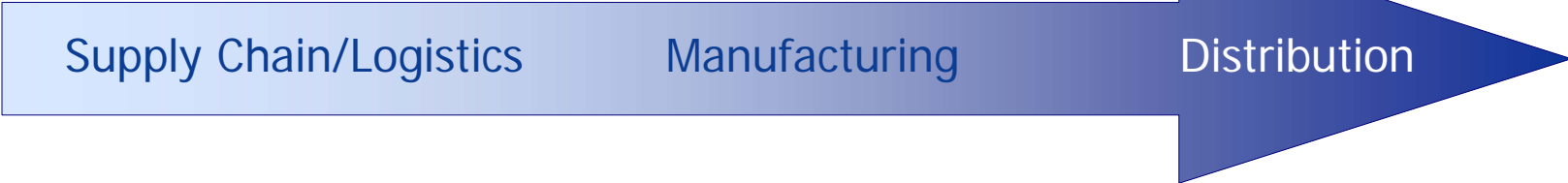
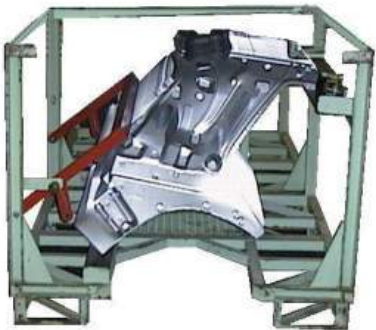
- **People Tracking - SAFETY**

Efficiency: Tracking of workers in facilities that encompass large areas, multiple levels and complex layouts increases the efficiency of operations.

Safety & Security: Automatically identifying, locating and accounting for workers, contractors and visitors in hazardous areas strengthens safety and facility-wide security.



The Process Chain in the Automotive Industry



RFID Applications in the Process Chain of the Automotive Industry



Requirements in Automotive Manufacturing Environment

Metal in the product (car) but also but also in transport container and the machines or mettalic waste eg. Chips in machining create reflections, distortion, etc.

Weld Current in lower frequencies, but switch on can generate peaks. Robust electronics as well as methods to regain communication and ensure data integrity after disturbance

Weld resistance in terms of weld splatter material used for the material of the housing of transponders but also readers / antennas used in that area

Chemical resistance in paint pre treatment, lubrication, coolant in machining applications - sealed housing of transponders

Vibration / Shock require industrialized products e.g. connectors internal robustness of products

Temperature (Paint ovens)



Requirements in Automotive Manufacturing Environment



Requirements in Automotive Manufacturing Reliability

**Automotive Manufacturing Equipment has a long lifetime eg
Body Shop to Paint Shop (7-10 years) to Stamping Presses
(+ 30 years)**

Every technology has to cope with this long lifetime

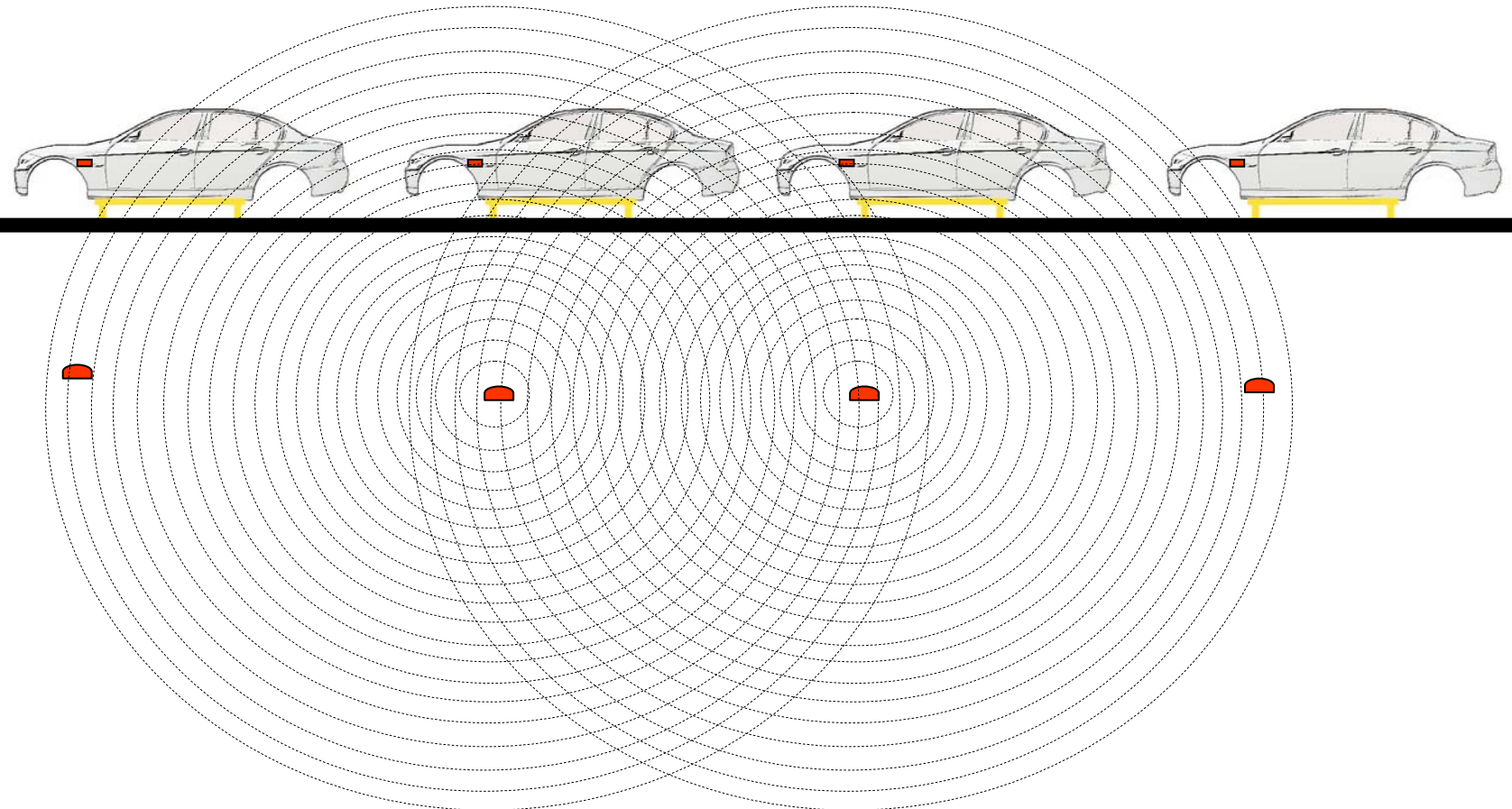
**Availability of function, software, spares or functional
replacements**

**100% Read / Write reliability – don't miss a read - even worse
wrong read !**

Requirements in Automotive Manufacturing

Station density / Distance between Readers

Unwanted field characteristics in production lines

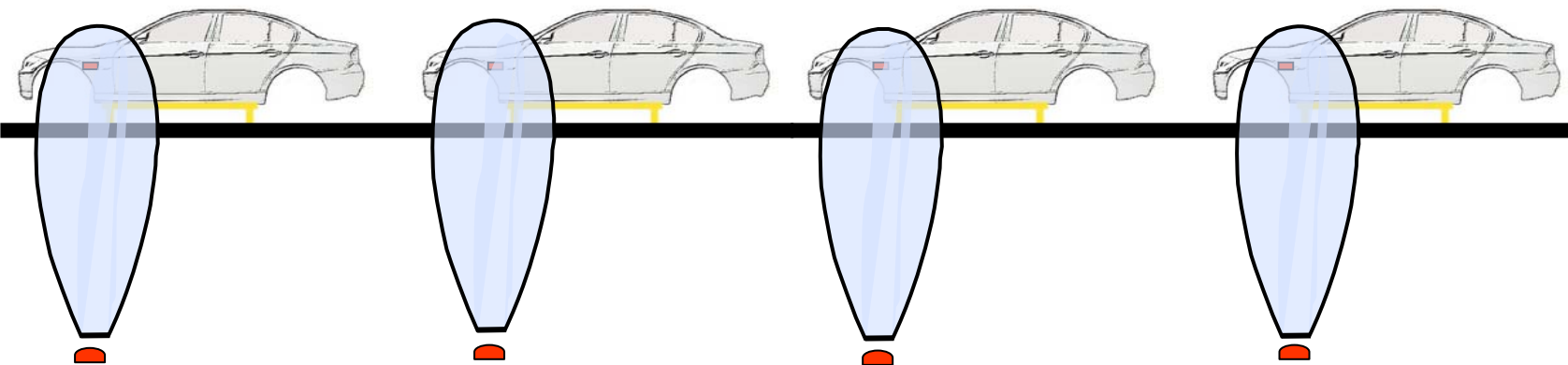
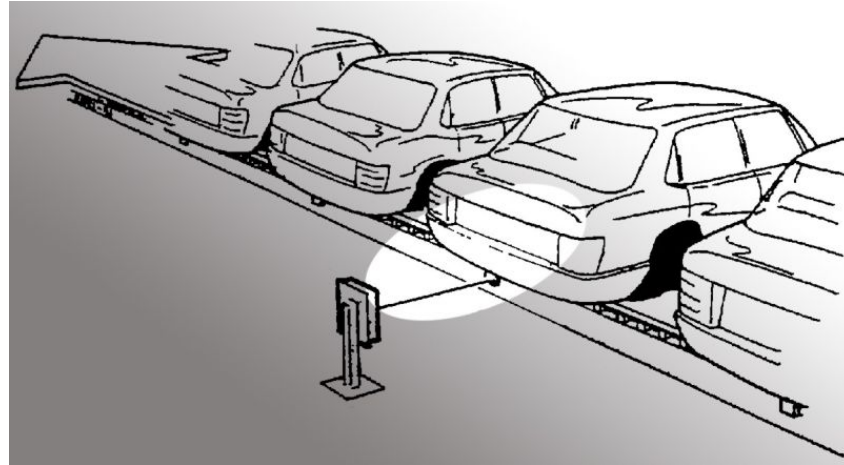


Requirements in Automotive Manufacturing

Station density / Distance between Readers

**Directed antenna field
provides unmistakable
identification of cars**

High density of readers

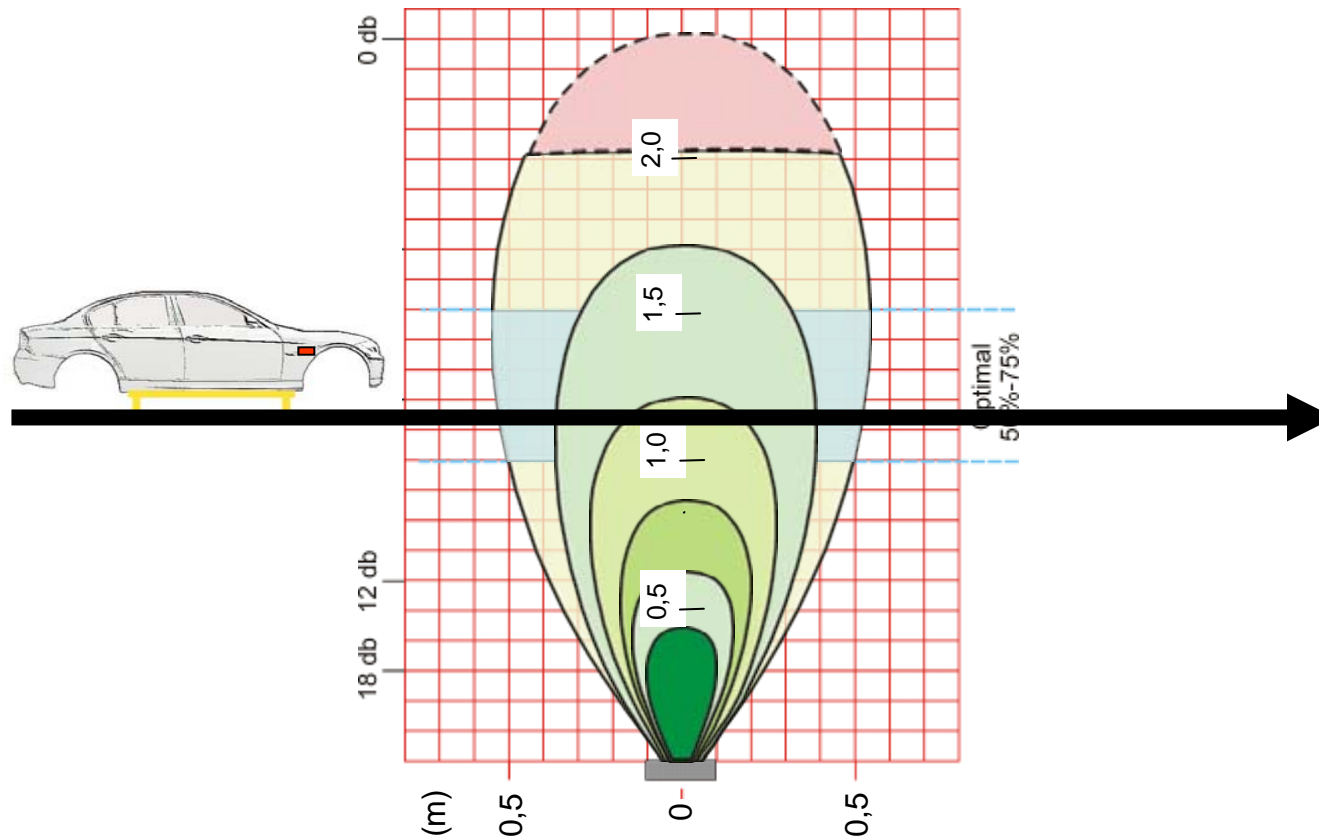


Requirements in Automotive Manufacturing Speed

Data Volume requires time

Reading Speed impacts the speed of the conveyor

Impact on Production cycle time

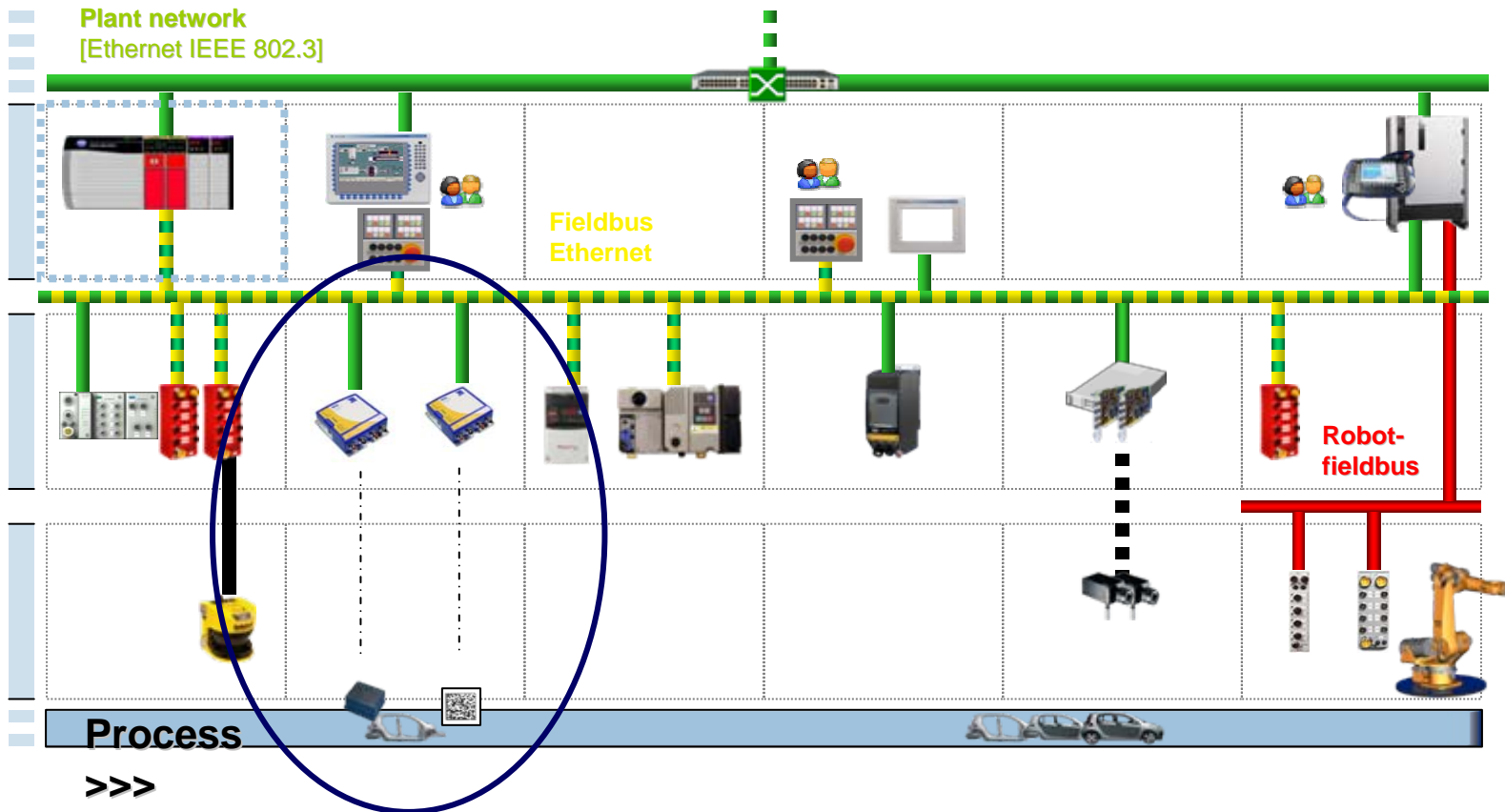


Requirements in Automotive Manufacturing Interfacing into Host Structures

Standard interfaces to PLC´s eg ProfiNet, EtherNetIP and others

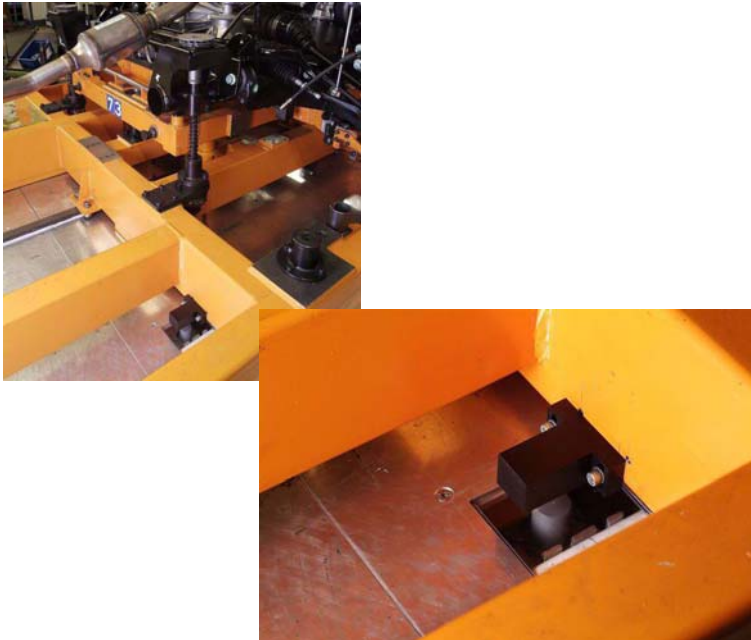
Sequence Control via PLC

Information to other Technologies



Requirements in Automotive Manufacturing Transponder Usage

Transponder on Skid
Short reading distance
Stop while reading,
Guidance of Processes



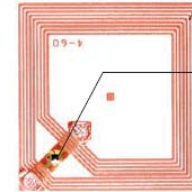
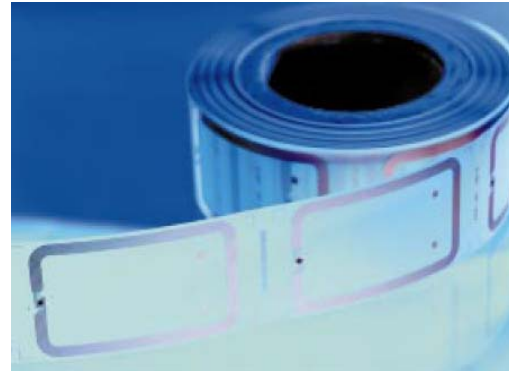
Transponder on Car Body / on Engine
Long reading distance,
Read/Write while moving
“Unguided” Processes



Requirements in Automotive Manufacturing Transponder Styles

• Reusable Transponders

Used in the process Multiple Times
Heat Resistance eg Paint Shop 235 C
Handling

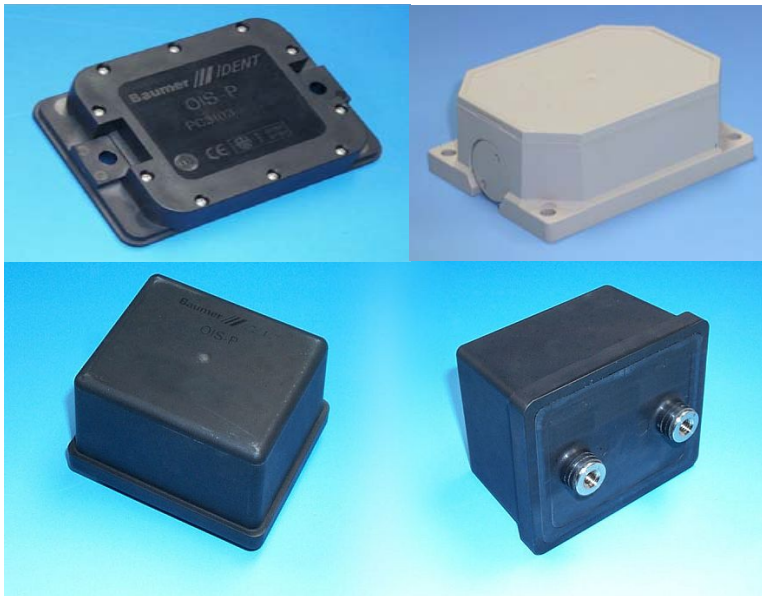


• One Way

Only used one time
Low Price per Tag but Quantity
Limited Storage Capability



• Permanent
Future



Requirements in Automotive Manufacturing Production Control Philosophies

Centralized control

Associate transponder ID with VIN number

Select technology programs / parameters from
Production Control IT

Only ID number on transponder required – no write
function

Decentralized Control

Store car data set in transponder (also write quality
data to transponder)

Select technology programs / parameters based on
tag information

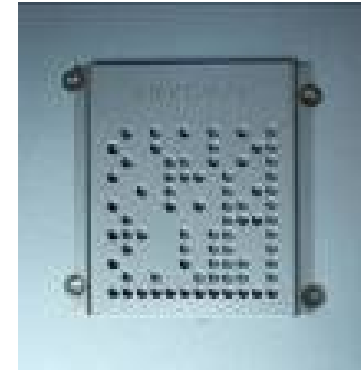
Read / Write Memory on transponder required

Requirements in Automotive Manufacturing

Backup Concepts

Backup concepts are required to make production failsafe as possible

Backup concepts include VIN number in 2D Code, Barcode , Metal Barcode etc



variSys® RFID System for Manufacturing

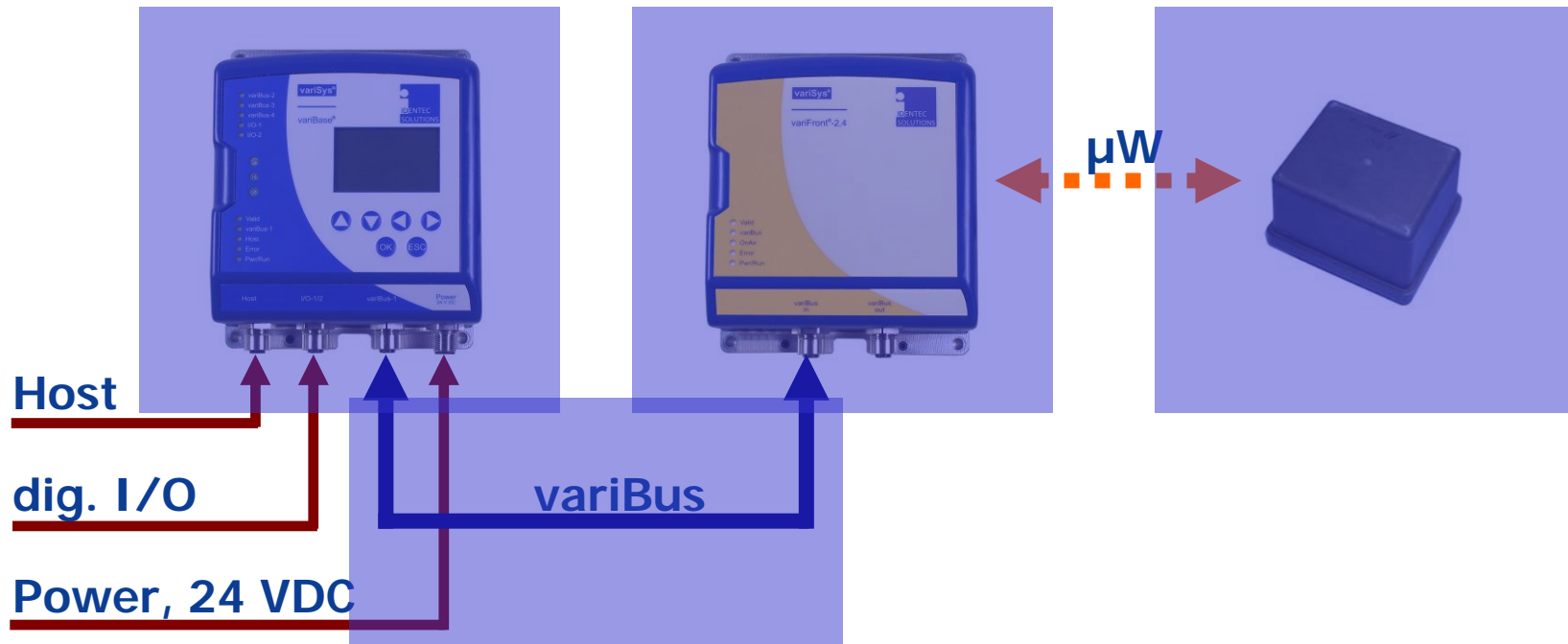


- **Incorporates more then 20 years of experience in the Automotive Industry and Lessons learned from over 4000 Readers and over 125.000 Transponders installed**
- **Versatile platform for different RFID technologies**
- **Allow for easy customization (configuration, host I/F, accessories)**
- **Reduce effort and cost of installation, maintenance and performance tuning**

- **Semi-active Microwave RFID system**
 - Transponder contains a battery to supply electronics
 - Battery is not used to generate RF, Tag transmits via reflection principle (backscatter)
- **Communication is in 2.45 GHz ISM band**
 - Internationally accepted
 - Band is very wide (85 MHz)
 - Small antennas with high gain and narrow lobe
- **Robust Industrial Design**

- Operates with low field strength – selectable read /write distances (important in the ever present health discussion)
- Allows high data transmission rate (fast read / write cycles at high conveyor speed)
- Provides high data volume on transponder (actively supports concept of decentralized manufacturing by providing data locally)
- Short wavelength allows small, very directive antennas with narrow beam (avoids reading of unwanted tags passing near by – high reader density)
- Microwave ISM band is world wide accepted (single version for all countries)
- Semi-active principle yields long battery lifetime (depending on application 10+ years)

variSys® RFID System for Manufacturing



variBase

- Central processing
- Host interface
- Power supply
- LCD / keys

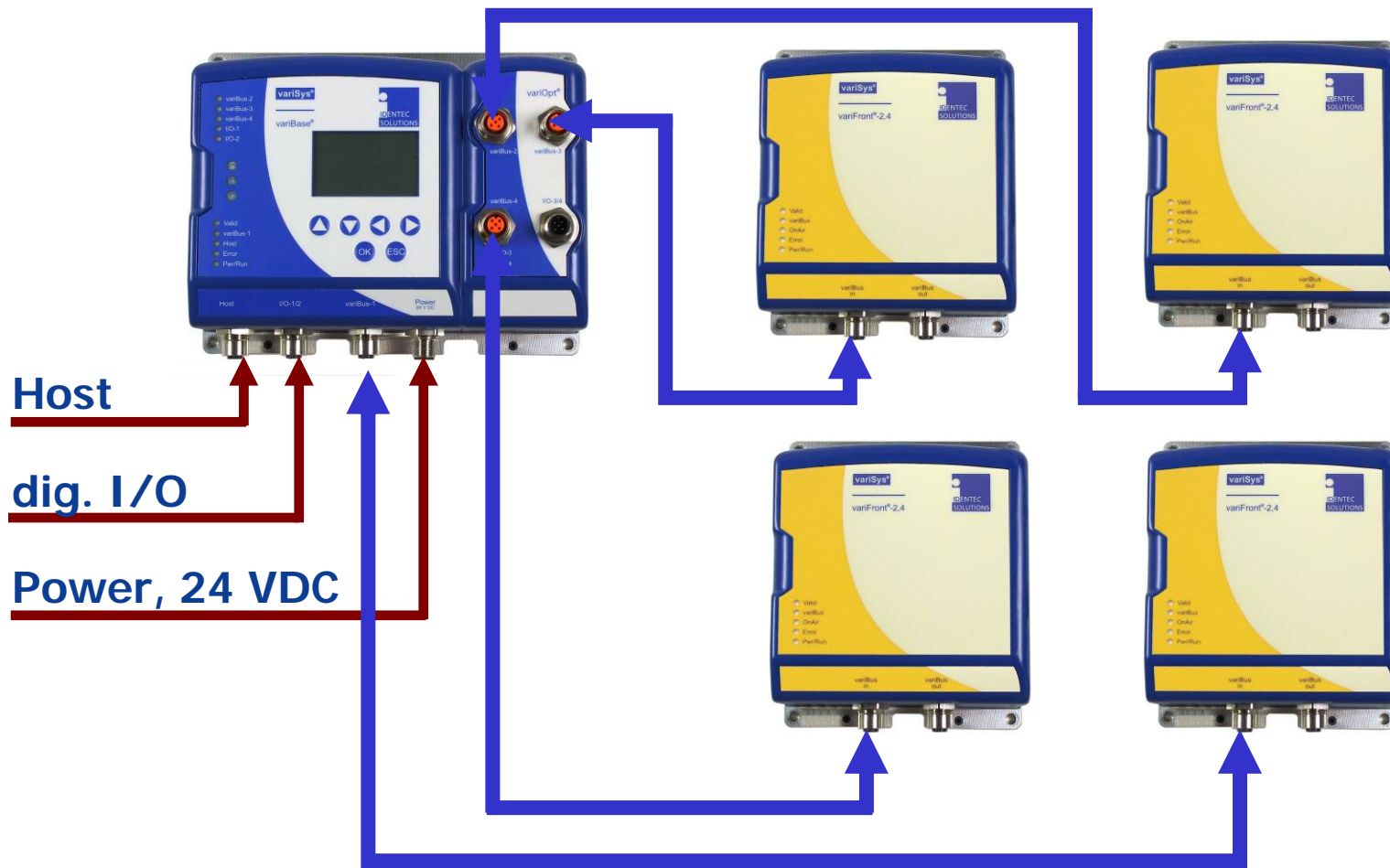
variBus

- High speed digital signals
- Power distribution
- up to 100 m

variFront

- Analogue part
- Air interface

variSys® RFID System for Manufacturing



Example of a system using multiple front ends

variSys® RFID System for Manufacturing



A perfect fit for Automotive Manufacturing



Thank you
For your kind attention
IDENDEC SOLUTIONS AG

Beyond RFID.

IDENDEC SOLUTIONS AG

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