

## The Project Partners



### Smartrac

Smartrac Technology Group is the world's leading developer, manufacturer and supplier of RFID inlays and solutions based thereon for the Internet of things. The company, which is headquartered in Amsterdam, develops and produces with around 3,600 employees large quantities of high quality and reliable RFID transponders for several application fields. Within the project partnership Smartrac is responsible for the development and production of sensor inlays.

[www.smartrac-group.com](http://www.smartrac-group.com)

### Vilant

Vilant Systems is one of Europe's leading suppliers of turnkey RFID information systems for production and logistics applications. The Finnish company offers an extensive range, consisting of RFID software, hardware and the associated services, such as process and system consulting, implementation and integration. Vilant is responsible within the project partnership for the RFID gates and the integration of the system solution in the MES/ERP systems of the users.

[www.vilant.com](http://www.vilant.com)

### Turck

Turck is one of the leading manufacturers in industrial automation. With more than 4.000 employees, the company offers sensor, fieldbus, connection and interface technology as well as RFID solutions for factory and process automation. Turck has also been an automation partner for the automobile industry for 50 years. Within the project partnership Turck functions as the general contractor for the engineering, as well as for implementing the project on-time to meet application requirements.

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Your Global Automation Partner

# Leakage Testing in Automobile Production



# Leakage Testing in Automobile Production



## Relative measuring detects humidity

Together with its partners Smartrac and Vilant, Turck offers the world's first system solution for fully automated leakage testing in automobile production. The system is based on UHF-RFID technology and detects all leakages in car bodies without the need for any manual intervention. For this the car body is fitted during the production process with self-adhesive tags at relevant points, which react to humidity.

Before the vehicle is driven into the rain spray chamber as part of the final inspection, it first of all goes through an RFID gate which registers all the tags. After the spraying process, the car goes through a second RFID gate at the exit, which in turn reads in all the tag data. If humidity has penetrated at any point, the system detects a discrepancy between both read operations and sends an appropriate fault message to the MES system of the user. Car bodies that are affected can thus be removed directly and reworked.

## The Sensor Tag

In close collaboration with an automobile manufacturer, Turck has drawn up a requirements profile for the system solution for leakage testing. Project partner Vilant is responsible for the provision of the gates and the integration in the MES system of the user. The sensor tag for detecting humidity was developed and produced by project partner Smartrac.

The passive UHF-RFID sensor tag can be stuck directly on metal and later also read in positions that are difficult to access in spite of the surrounding structures of the vehicle. Thanks to this capability and its compact format of 21.5 x 73 mm, the self-adhesive sensor tag can be mounted without any problem at many points in the car body.

If areas have to be monitored where direct mounting is not possible, tag variants with extension strips are available in different lengths. The water reaches the tag via the extension even from places that are otherwise inaccessible.



Photo credit: Smartrac

If the tag detects humidity, it reacts with a change in impedance, which is registered by the RFID read/write heads in the gates. A powerful evaluation software enables the affected point in the vehicle to be localized precisely by means of the collected data.

In Europe the tag works in the 865 to 868 MHz frequency range. Being a passive RFID

sensor tag, it does not require a power supply and can remain in the car for its entire lifetime so that it can be read again at any time. The tag draws the required energy from a handheld or the read/write heads of the gates.

At a glance	
Memory	128 Bit EPC + 144 Bit User Memory
Frequency	865-868 MHz (ETSI-Band)*
Dimensions	21,5 x 73,0 x 2,5 mm
Storage temperature	-40...+85 °C

\* for Europe, other frequency ranges are available in other regions



**100% inline quality control**  
The fully automated quality control in the production line reliably excludes user faults resulting from manual operations. Faulty vehicles are immediately detected and removed. All detected data is available directly in the MES and ERP system of the user.



**Considerable cost reduction**  
With the current test methods for leakage tests, some faulty vehicles are not detected and delivered to the customers. The 100% detection ensures that each vehicle is leak proof when it leaves the production hall. Any costly rework is no longer required.



**Greater customer satisfaction**  
As only checked vehicles which have been verified as leak-proof are delivered to the customer, complaints from the customer about leaks are a thing of the past. Thus both the customer and the brand can benefit from the increased level of quality.



**Turnkey system solution**  
Once the initial test phase is successfully completed at the user and the feasibility determined in the actual application, Turck hands over the functional turnkey leakage testing solution.