



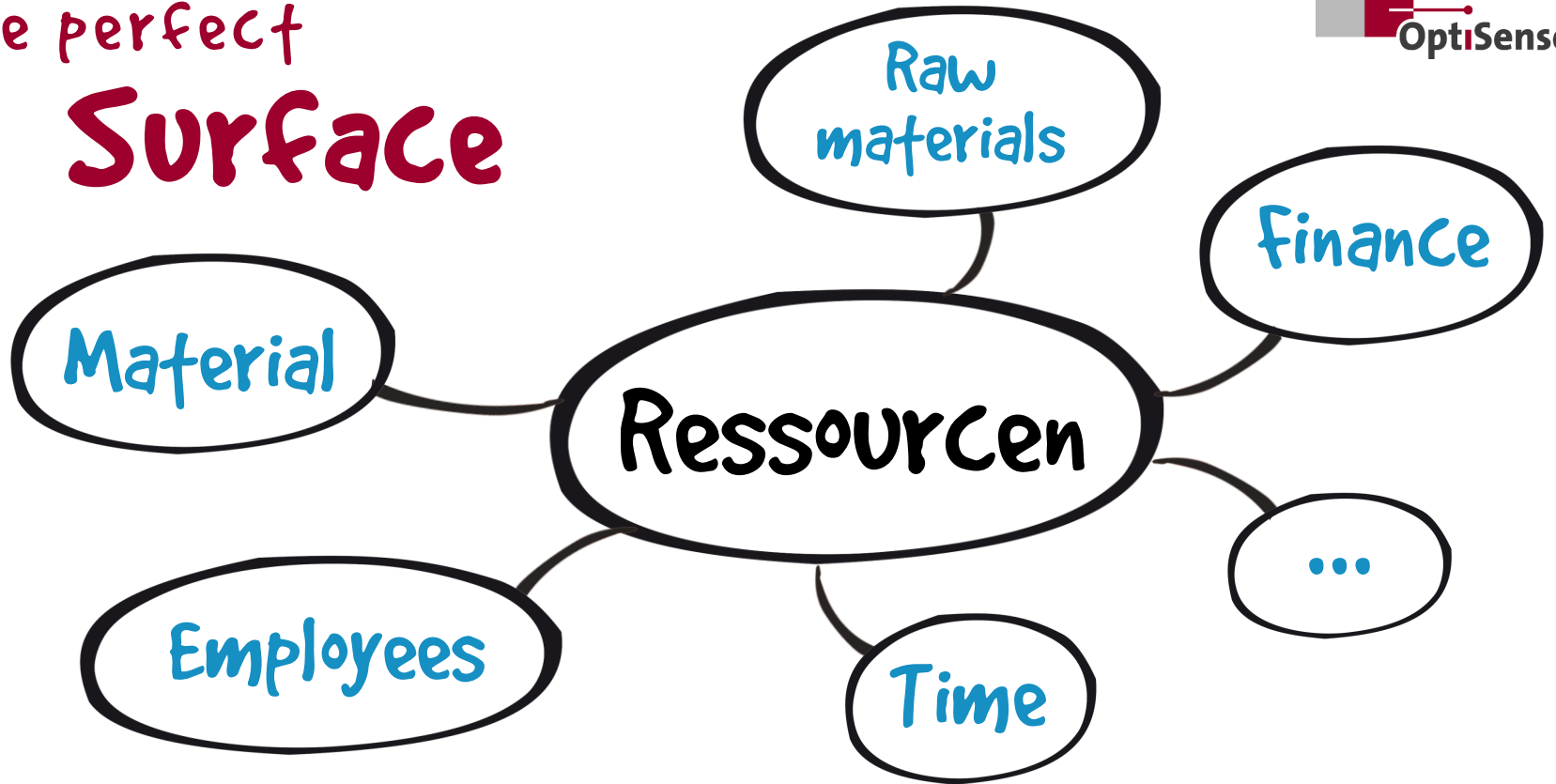
OptiSense | Haltern am See | Germany

Nico Janßen | Sales & Business Development

How to get the perfect surface



The perfect
Surface

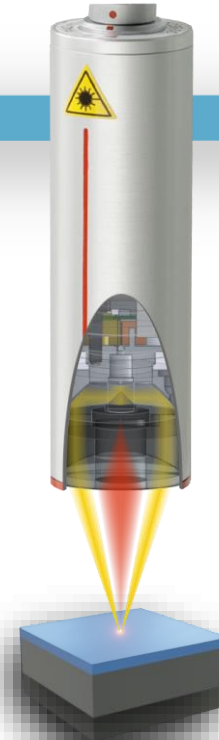
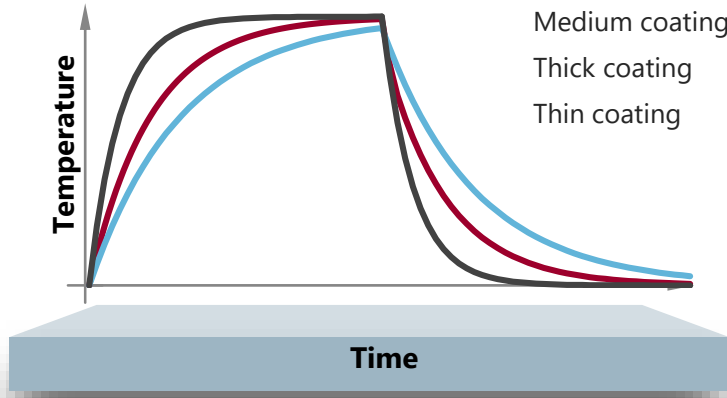


Measuring method

- A beam of light heats the coating surface
- The heat travels down through the coating
- The coating cools down again at different speed depending on thickness
- A detector measures the cooling time and calculates the coating thickness



OptiSense | Measuring Method



The logo for OptiSense, featuring a stylized red and white 'S' icon to the left of the text 'OptiSense' in a sans-serif font.

OptiSense



The challenge

- Minimize annoying noise while driving, such as "creaking", by applying a special paint coating
- Avoid coating thickness variation:
Anti-creak coatings require precise application, otherwise a disturbing noise level persists
- Precisely determine transparent, thin anti-creak coatings (15 μm) on plastic substrates
- Provide on-site testing support at customer site
- Replace costly, error-prone and time-consuming existing test methods



The strategy

- Non-contact coating thickness measurement
- PaintChecker Mobile with tripod for measuring anti-creak coatings in the lab
- Correlate "stick-slip behavior" with coating thickness measurement data
- Use PaintChecker as a mobile device for quality control at the customer's site
- Atline test for "fine tuning" the coating thickness



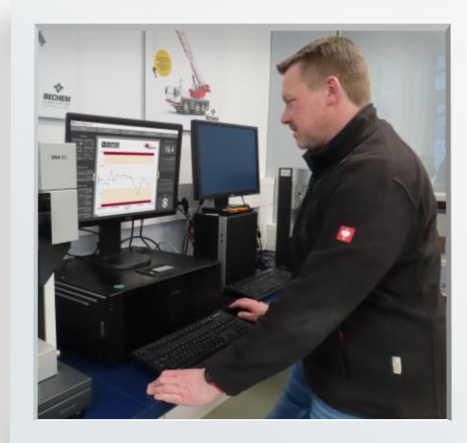
The solution: **PaintChecker Mobile in the lab**

- Development of suitable lubricant solutions
- Determining the optimum coating thickness range for particular friction partners
- Correlation of stick-slip analysis with PaintChecker measurement data



The solution: **PaintChecker Mobile at the customer's site**

- Support for the customer's paint application; on-site application testing of the anti-creak coating.
- Analysis of critical areas of the part with the PaintChecker Mobile
- Optimization of plant parameters for anti-creak paint application



The result

- ✓ Accurate coating thickness
 - ✓ Reduction of development time
 - ✓ Saving paint, effort and time; reduced costs
- **Efficiency targets of process optimization achieved!**

The PaintChecker is the only measurement system based on physical principles that can measure the actual coating thickness of the transparent anti-resin paint on a rough plastic surface!





Resource efficiency at the Brückner Group

- Manufacturer of complex plants for the finishing of textiles
- Multifunctional plant with 7 x 30 m working width
- Sheet metal and steel parts are painted using wet technology or powder-coated
- Powder coating system with automatic guns handles about 80 percent of the applications
- Hard-to-reach areas are coated manually



The challenge

- Uniform *minimum* coating thickness application
- Testing hard to reach areas

The solution

- PaintChecker Mobile hand-held unit
- Non-contact coating thickness measurement
- Atline testing before baking





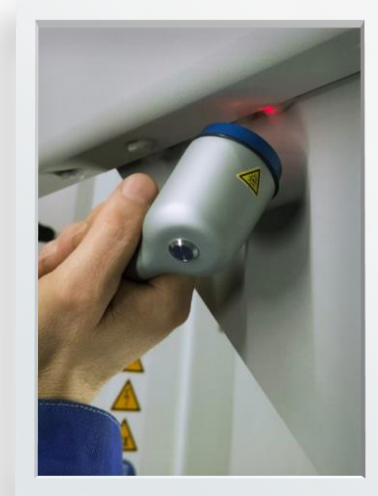
WAGNER

The challenge

- Precise powder application for (new) special coatings
- Processes cannot be standardized
- Shortage of skilled workers

The Strategy

- Intensive training of less experienced employees
- Automate learning processes as far as possible



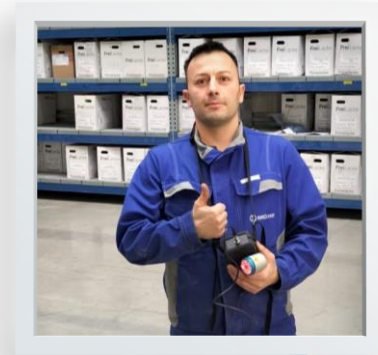
The solution: PaintChecker Mobile

- Flexible, lightweight hand-held device
- Checks without contact before curing
- Measures hard-to-reach areas
- Can be used on a wide range of materials
- Precise and easy to use
- "Virtual teacher": inexperienced staff can quickly check and adjust their powder application



The result

- ✓ Less scrap and rework
- ✓ Production losses significantly minimized
- ✓ Effort and time saved; costs reduced
- ✓ Fast and "automated" training of new colleagues
- ✓ Employees can optimize their skills independently



→ **Efficiency goals *material savings* and *staff qualification* exceeded!**

Recalculated: How much do you save?

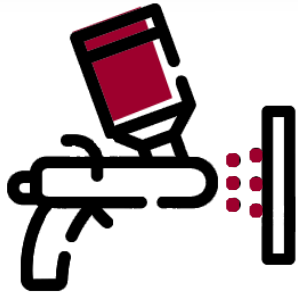


Model calculation

Coated area per year 300,000 m²
Powder price per kilo 10,- \$
Density after baking 1.5 g/cm³
Powder loss 7 %

	Target	Actual	Savings	
Coating thickness	60	80	20	µm
Powder consumption	28.89	38.52	9.63	t/Year
Powder coating costs	288,900 \$	385,200 \$	96,300	\$
Cost of scrap/rework	3,082 \$	15,408 \$	12,326	\$
Total costs	291,982 \$	400,608 \$	108,626	\$
CO ₂	260	347	87	t/Year

Recalculated: This is how much you save!



Powder Saving

9.6 to



Cost Reduction

108.600 \$



CO₂ Savings

87 to



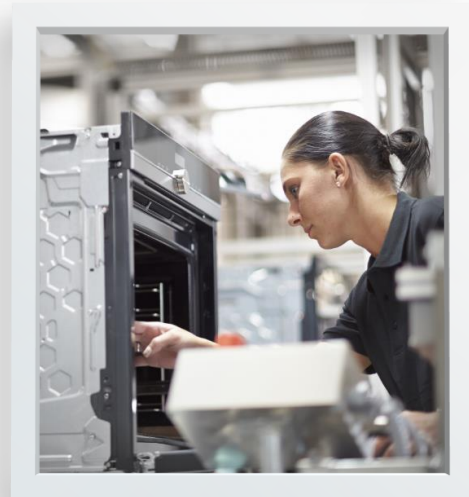
Coating of household appliances | Baking Oven

- The cooking chamber of an oven is heavily strained:
 - Temperatures up to 350°C
 - Persistent dirt removed by pyrolysis at 500 °C
 - Scratching and bumping should have no effect
- Today: glass-ceramic powder material instead of liquid enamel dispersion
- A very smooth but highly porous surface
- At 800 μm , the ceramic coating is significantly thicker than conventional powder coatings



The challenge

- Measuring the very sensitive, uncured powder layer
- Checking at several different positions in the oven
- Space for measurements is extremely limited inside the cooking chamber
- Measurements have to be taken quick and precise



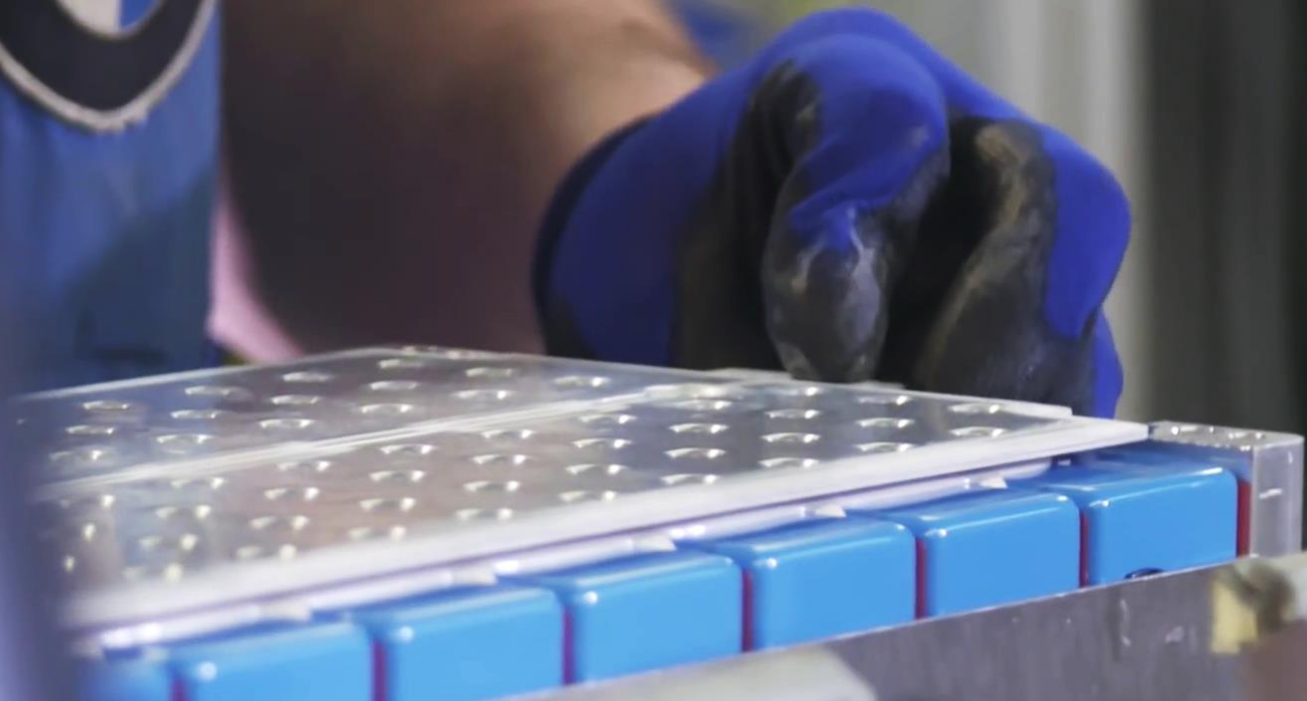
The solution: PaintChecker Industrial

- Non-contact, non-destructive system checks before baking
- Highpower multi-sensor measurement system
- Integrated into highly automated production line

The result

- ✓ Precise and reproducible coating
- ✓ Material savings reduce costs
- ✓ Scrap is avoided, productivity is significantly increased





Efficiency in battery production

- Battery systems of electric cars consist of lithium-ion cells
- 800 volts voltage
- Safety of the modules is the primary goal
- Coating thickness is a function-critical parameter



Efficiency Target | Zero Defect Tolerance



The Challenge

- 100% control of the battery coating
- Short cycle times → fast measurements
- Synchronous measurements at several points
- Very limited space in the plant



The Strategy

- Development of a novel coating thickness inspection system for battery cells

The Solution: PaintChecker Industrial

- Industrial, non-contact coating thickness measuring system
- Controls several sensor heads simultaneously
- Angular sensor with folded optics for minimal installation space
- Measures coating thickness up to 300 μm quickly, accurately and reproducibly



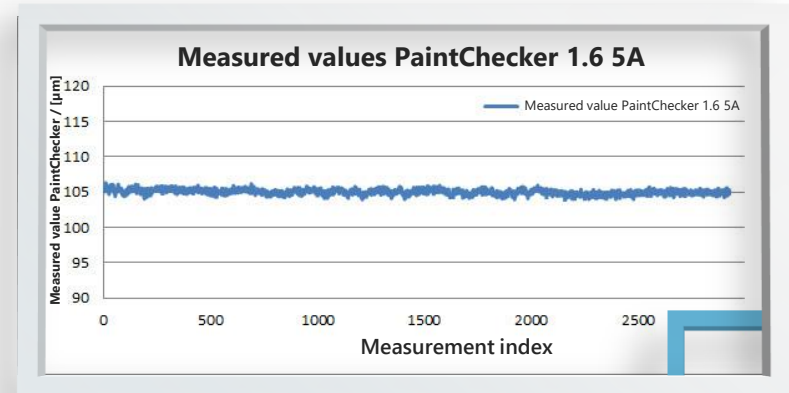
Efficiency Target | Zero Defect Tolerance



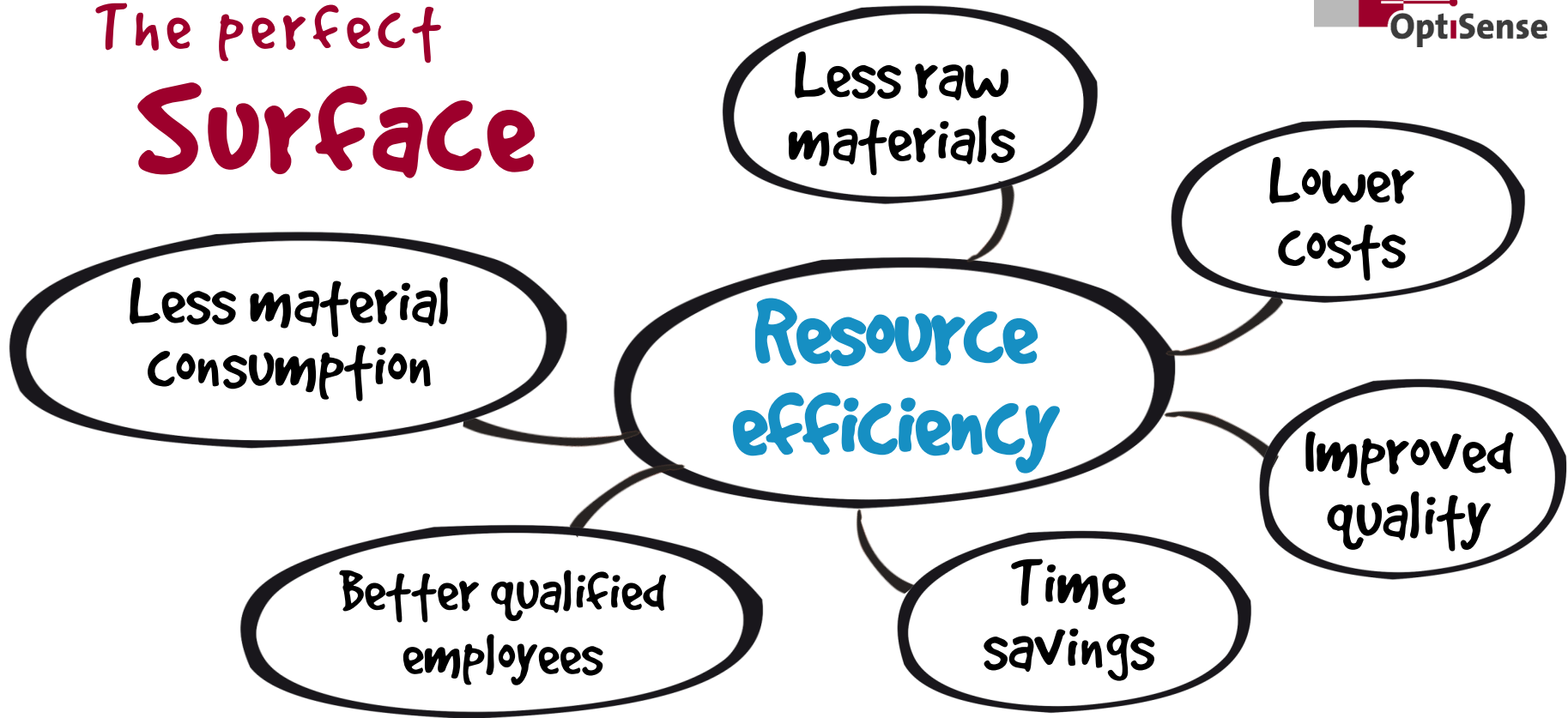
The Result

- ✓ 100% testing of coating thickness
- ✓ Fast and reproducible measurements
- ✓ Far more accurate than conventional eddy current or magnetic inductive measurement methods
- ✓ Optimised process control
- ✓ Traceable documentation

→ Efficiency target *Zero-Defect Tolerance* met!



The perfect Surface





Nico Janßen

Sales Manager

Tel. +49 (0)2364 50882-210

Mobil +49 (0) 151 11688713

janssen@optisense.com

OptiSense GmbH & Co. KG

Annabergstraße 120

45721 Haltern am See

GERMANY

www.optisense.com