A vertical decorative bar on the left side of the slide, composed of five horizontal segments in red, green, blue, orange, and green from top to bottom.

Sustainable process stability through efficient application technology

11th April 2024

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5th WORKSHOP Forming and Punching

Sustainability & process stability united

Challenges & goals of today and tomorrow

Growing Challenges:

- Geopolitical events
- Resource scarcity
- Globalization
- Climate goals

Producing economically:

- Capturing process fluctuations
- Adjusting parameters
- Creating uniform manufacturing conditions
- -Reducing wear & increasing service life



Capture order quantities, **classify** them process-specifically & **optimize** their settings

Methods for capturing consumption quantities

Conventional solutions for oil film determination



„Calibrated finger“

- Visual gloss level inspection
- Manual surface touch
- Offline, cost-effective
- User-dependent, not calibratable



Gravimetry

- Weight measurement with precision scale of oiled, cleaned surfaces
- High accuracy of oil quantity
- Offline, sampling required
- No info about spatial distribution



Flow measurement

- Measurement of transported oil volume flow
- Online, no sampling required
- Consideration of distribution & reflection



Fluorescence measurement technique

In cooperation with the Fraunhofer Institute

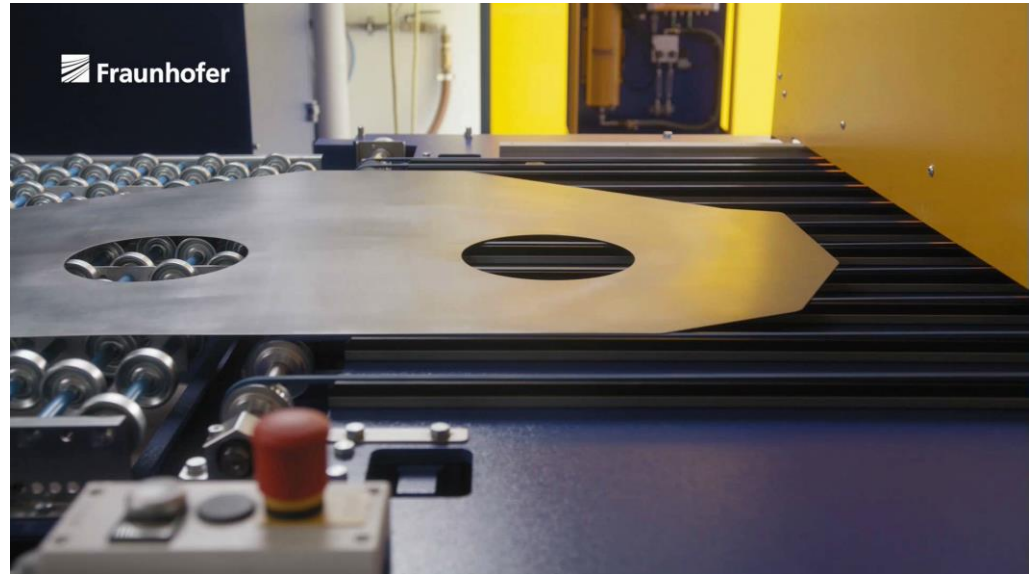
Issue:

Manufacturing problems due to uneven pre-oiling in the forming process

Solution:

By UV excitation of the material surface, the existing oil quantity is detected.

Based on the recorded data, adjustments can be made and optimal post-oiling can be performed.

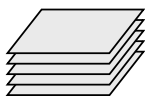


Fluorescence measurement technology

Practical application

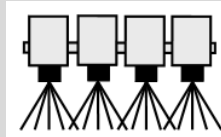
Ordering coils or sheets for the stamping and forming process with pre-oiling from the manufacturer

- Corrosion protection
- Dry lubricant
- Hot melt



No reuse of pre-oiling possible

-> Cleaning of the material

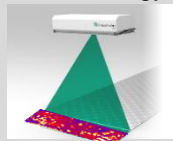


Oiling of the material with suitable lubricant



Reuse possible, but
Made difficult by diffuse pre-oiling

→ Capture of current state through
measurement technology



Oiling of the material at the
required locations for
homogeneous surface wetting

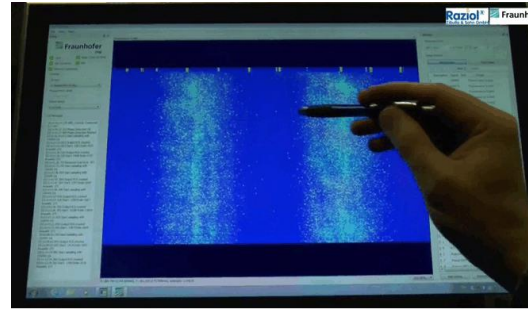


Fluorescence measurement technology

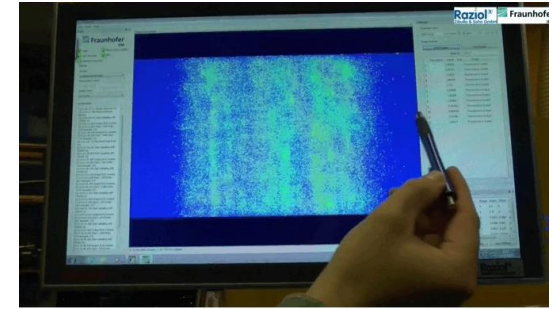
Practical application



Setting the required oiling
with the oiling editor



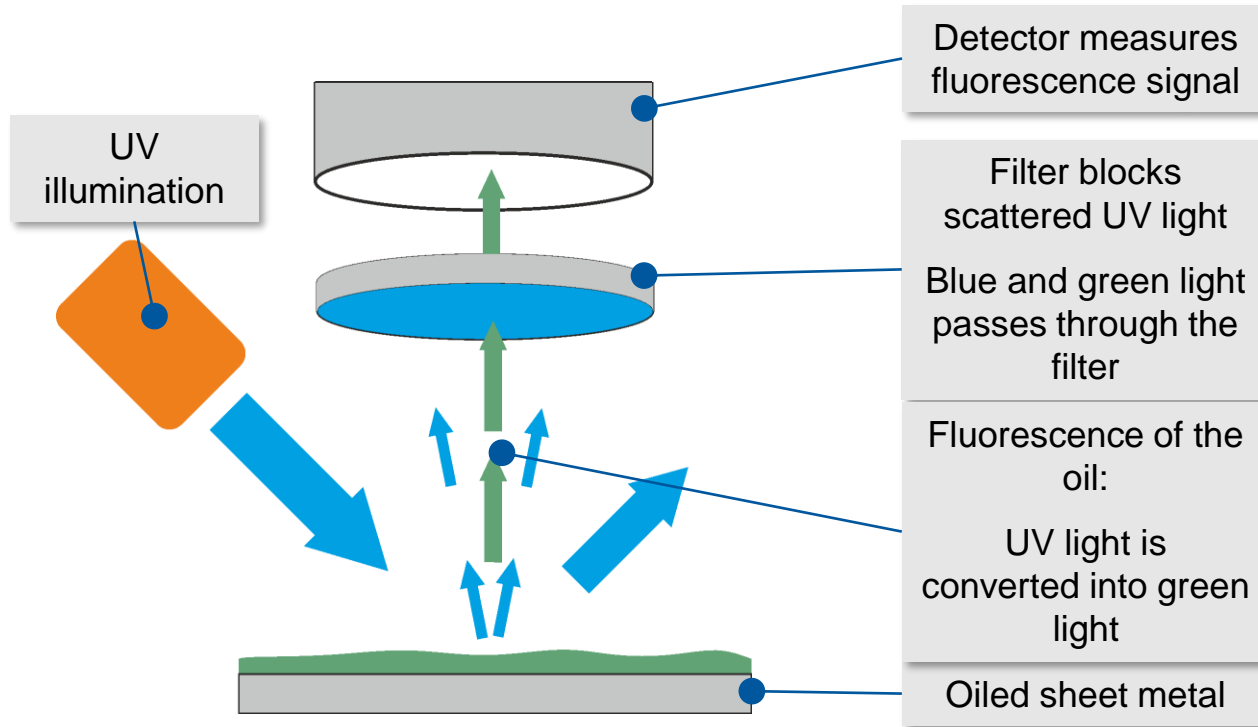
Detection of pre-oiling using
fluorescence measurement
technology

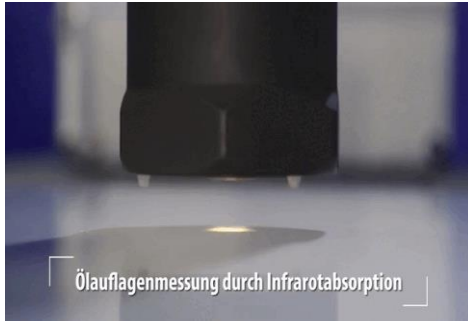


Adjusting and creating the
required oiling depending on
the pre-oiling

Fluorescence measurement technology

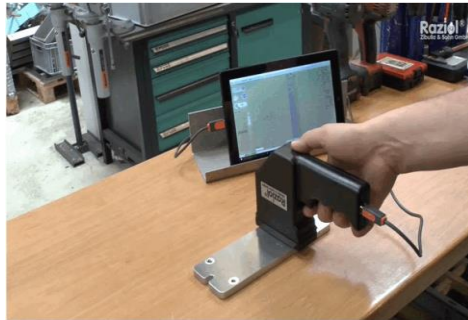
Functionality - Oiled material surface





Coating thickness gauge:

- Commonly used in the field
- Suitable for checking oiling and correct application quantity
- 0.1 - 5 g/m²
- Single & average measurement



Raziol hand scanner:

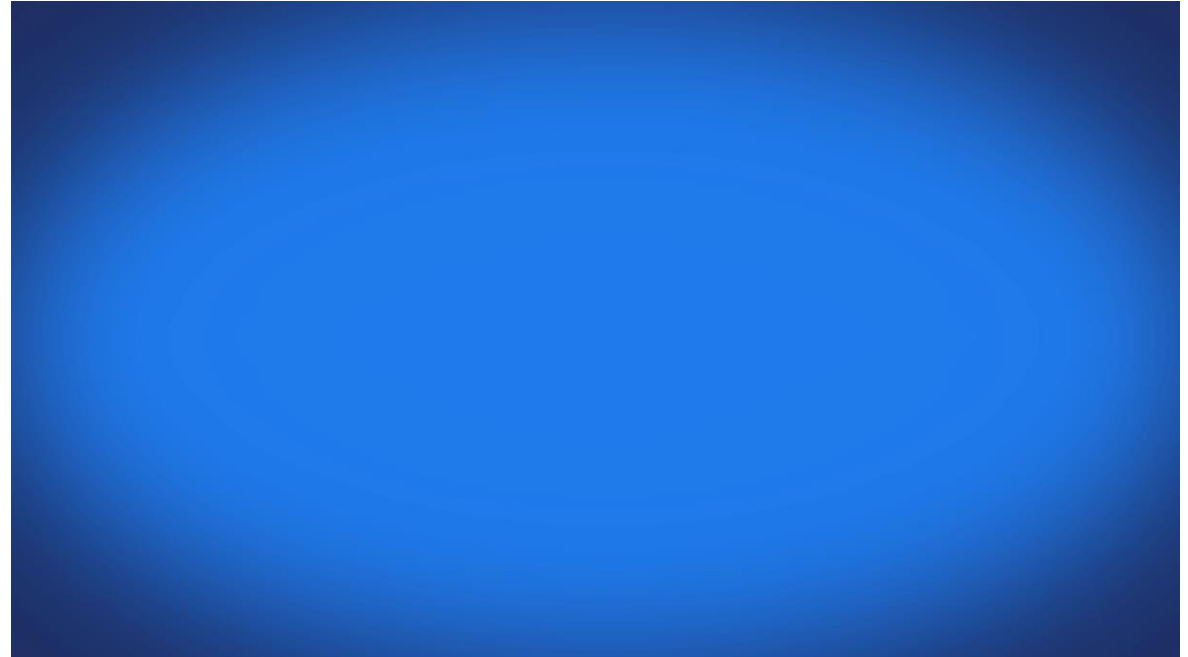
- Fluorescence detector for fatty substances
- Efficient, fast, sample-based detection of possible contaminants
- Mobile, compact design and visualization on the tablet enable simple ergonomic inspection

Dosing and **cleaning** technology in the **press shop**

Quantum leap in nozzle technology with the Einstein Nozzle

Servo controlled nozzle flow

- Patented precision
- Apply very small amount of lubricant at slow progression or transfer speeds just as it can for high quantities, high speed applications
- Independently from the viscosity
- Speeds at 3m/s with freely adjustable settings per nozzle
- Significantly reduced air consumption

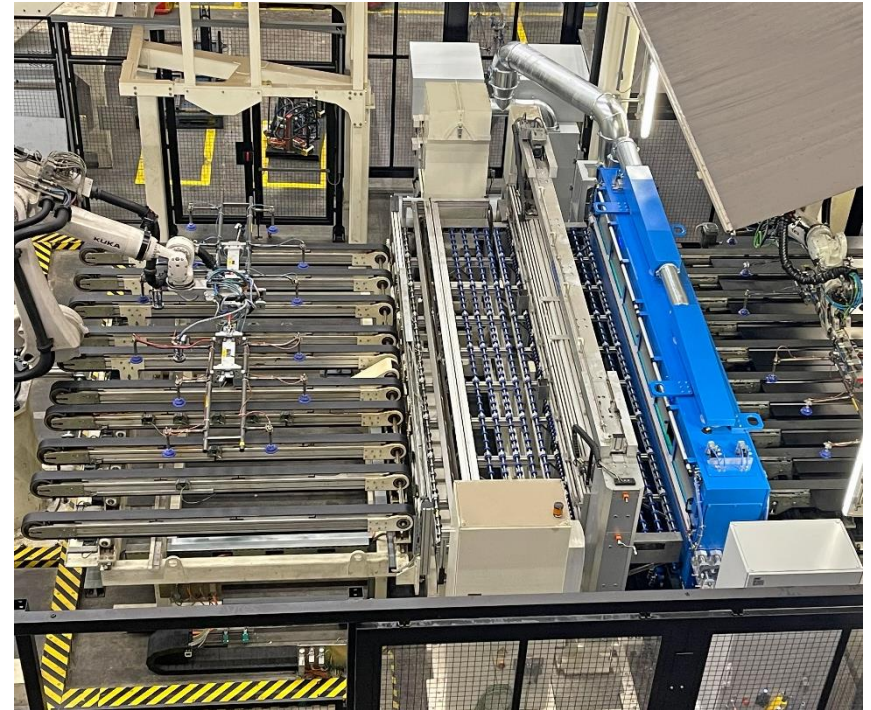


Quantum leap in nozzle technology with the Einstein Nozzle

The new technology is already successfully contributing to improving energy efficiency, reducing used oil, and maintaining a clean machine environment at automotive suppliers.

The extraction ensures an oil mist-free press shop.

In combination with belt cleaning immediately before the spraying system, the blanks are prepared ideally for forming.



Oiling system with upstream cleaning brush



Entry and exit from the press line for oil-free production and optimal accessibility during maintenance work.

Simplified by automatic coupling of the efficient extraction concept.

Depending on the requirements profile, the extraction can also be integrated directly into the system.

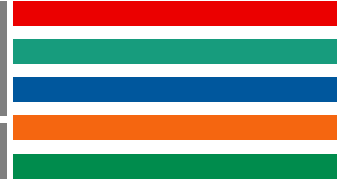
Entry and exit-side wiper blades

In addition to structural drainage channels, this significantly increases the prevention of droplet formation.

Media recirculation



Oiling system with upstream cleaning brush



Enclosed supply unit for reduced maintenance effort and security against unauthorized access.

All important indicators and instruments in view.

Easy monitoring and quick troubleshooting.

A "digital twin" of the system enables user-friendly control and monitoring of the system via a control PC or service handheld device.

Ready for all digitalization requirements using the OPC UA interface.



Oiling system with upstream cleaning brush



Creating lubrication patterns based on imported .dxf files.

Influencing material flow by partially adjusting the application quantity.

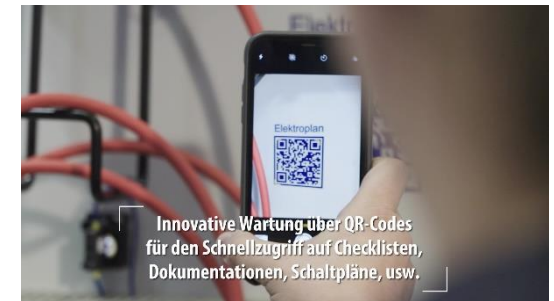
Savings of lubricant in areas of components that do not require oil.

Utilization of existing oiling recipes is also possible across different manufacturers

Utilization of QR codes for innovative maintenance.

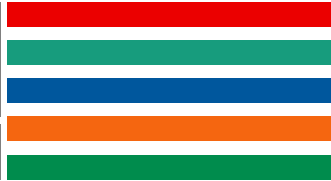
Enabling quick access to documentation, checklists, and schematics for efficient upkeep.

Contribution to sustainable, paperless manufacturing.



Overview of Your Benefits

- Simplified maintenance
- Longer tool lifespans
- Better workpiece quality & reduced scrap
- Reduced lubricant consumption
- Optimal starting point for subsequent processes



Thank you very much for your attention!

Děkuji vám velmi za vaši pozornost!

Vielen Dank für Ihre Aufmerksamkeit!