



Technologie mit Weitblick

# Automated DecoCheck

## Technology Overview - Use Cases overview

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Podpořeno z projektu OP VVV „Partnerská síť v oblasti výzkumu a vývoje zobrazovací a osvětlovací techniky a optoelektroniky pro optický a automobilový průmysl“, registrační číslo: CZ.02.1.01/0.0/0.0/17\_049/0008422.



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# SKIPPING DECO CHECK

- Fully stable process needed,
- If DecoCheck -> Only 1x

## Automated DecoCheck Introduction & Content

Operational Standard –precise technical documentation with respect to all used technical solutions and with respect to all potential application will be provided

DFMA – DecoCheck is stand alone solution/station and this needs to be combined with other topics (Manipulation, Packaging,...). Only this synergy enable the full power and potential of DecoCheck.



Palacký University  
Olomouc



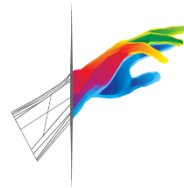
Technical background: Most complex and sensitive part of automation project. Critical combination of Illumination system, Camera Systems and SW for Evaluation. Various technical solutions exist, but reliability and robustness of them are questionable.

StandAlone solution: In case of positive technical evaluation, roll-out will fully depend on capa of VMK. If VMK is not possible to support at least of FIRST after-pilot equipment, we will need local integrator, detailed description of technical background will be provided.

# BALLUFF

### CONTENT

1. OS Documents – Status
2. Overview of DecoCheck
3. Price Indication
4. Detailed Information
5. Calculation of Savings



ROSSUM  
integration

# KEYENCE



# COGNEX vision





# Complete Automation Chain in Preproduction


## 4 main areas to investigate


### Leader Automation Preproduction: Pavel Tucek

#### Technology Leaders:

 P. Tucek HAN

 Jernej Lajevec

 Thomas Hansmeyer

 Martin Eickenbusch

Solutions

1. KAS / RCL inspection
2. Thick wall Lens inspection
3. Lightguides & Radoms
4. Decorative plus functional metallized parts
5. **SKIPPING DECO CHECK**

1. Tray feeding station with lift in HSS
2. Gripper solution in Plant 2
3. Further Pilot in HSKF

1. Chain head deburrers and brushes
2. Granulate blasting
3. Cleaning by air or dry ice
4. Perspectively: CO<sub>2</sub>-pellets

1. Vertical and Horizontal "Quick Change planets" (FoiK in HSKS-B)
2. Reorganization of layout / process flow
3. "Line Met" new metallizing Machine

Pilots



1. Deco Check



Pilots



2. Automated Packaging



Pilots



3. BMC / LPP Deburring



Pilots



4. Metallization

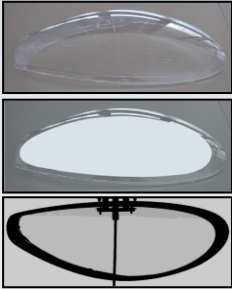





More complex, cross-functional linked use-cases  
**>> Integrated System solution increasing <<**

# Deco-Check at HELLA

## Overview of current Prototypes

Development of universal inspection software – Fraunhofer, SW for VMK equipment A-LOOK, Cognex Vision, Keyence VISIO

1	2	3	4
<b>Deco KAS, 2K KAS and RCL</b>	<b>Optical Lenses</b>	<b>Radomes</b>	<b>Lightguides plus Thickwall</b>
1K-KAS, 2K – KAS Fraunhofer System	Lens inspection Fraunhofer System	Radomes inspection Fraunhofer System	LG plus TW Cognex and VMK
			
<b>10/2020</b>	<b>06/2019</b>	<b>09/2019</b>	<b>09/2019</b>

# Deco-Check at HELLA

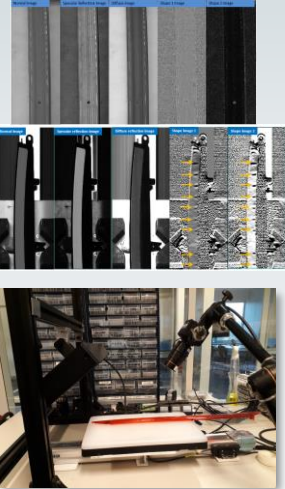
## Overview of current Prototypes

Development of universal inspection software – Fraunhofer, SW for VMK equipment A-LOOK, Cognex Vision, Keyence VISIO

✓

### Inspection system KEYENCE

- 5
- RCL  
Transparent parts  
Non-transparent parts



10/2019

✓

### Inspection System BALLUFF

- 6
- Transparent optical  
Parts and black  
Molded parts



10/2019

✓

### Inspection System COGNEX

- 7
- COGNEX VISIO  
system for metallized  
parts



05/2020

✓

### Integrated Solution M.A.I.

- 8
- Easy to apply  
solutions  
BUILT FOR  
Keyence, Cognex,  
FRH

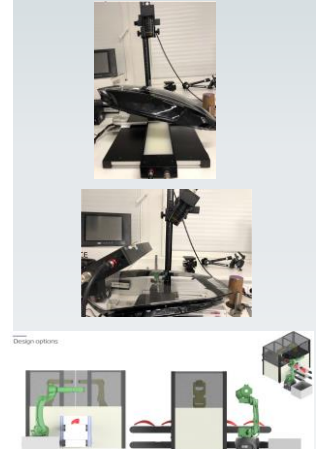


10/2020

✓

### Integrated Solution Rossum

- 9
- Rossum integration  
system with Keyence  
cameras



10/2020

# DecoCheck – Operational Standard Status

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## DecoCheck – General OS Document

- Description of DecoCheck inspection preconditions, skipping DecoCheck, general overview of available technical solutions. Evaluation matrix for technical solutions. Precise approach step by step, how to introduce DecoCheck to the IMM, Metallizer, Final Station, etc.

## There will be other five OS devoted to

### - **Lenses inspection (almost finished)**

Based on FRH inspection system and SW. Already fully available solution. Full inspection system. Other inspection systems based on Keyence and Cognex vision inspection systems are described based on different Deco approach.

### - **KAS and RCL inspection (started)**

Based on FRH inspection system and SW. Both pilots already available, but need to be discussed with respect to other available solution from MAI concept with Cognex and Keyence vision inspection systems.

### - **Lightguides and Thickwall optics (started)**

Fully developed solution by VMK at HAN. Inspection systems from Keyence and Cognex available. Could be switched to other.

### - **Metallized parts in Metacircle (started)**

Available just for MetaCircle and LineMet metallizers. Feasibility study with Cognex and Keyence systems available at HAN. First application just started.

### - **Nonmetallized parts (started)**



Technologie mit Weitblick

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**Podpořeno z projektu OP VVV „Partnerská síť v oblasti výzkumu a vývoje zobrazovací a osvětlovací techniky a optoelektroniky pro optický a automobilový průmysl“, registrační číslo: CZ.02.1.01/0.0/0.0/17\_049/0008422.**



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