

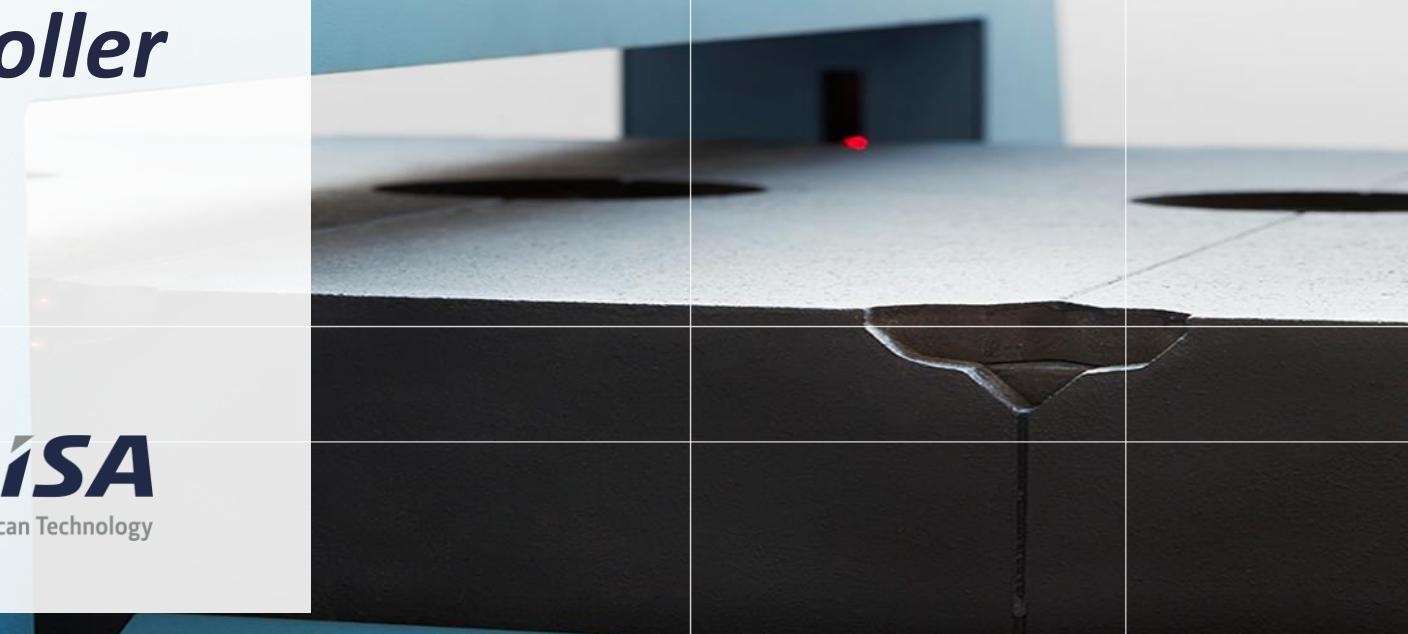
# *Mould Accuracy Controller* **DISA MAC**

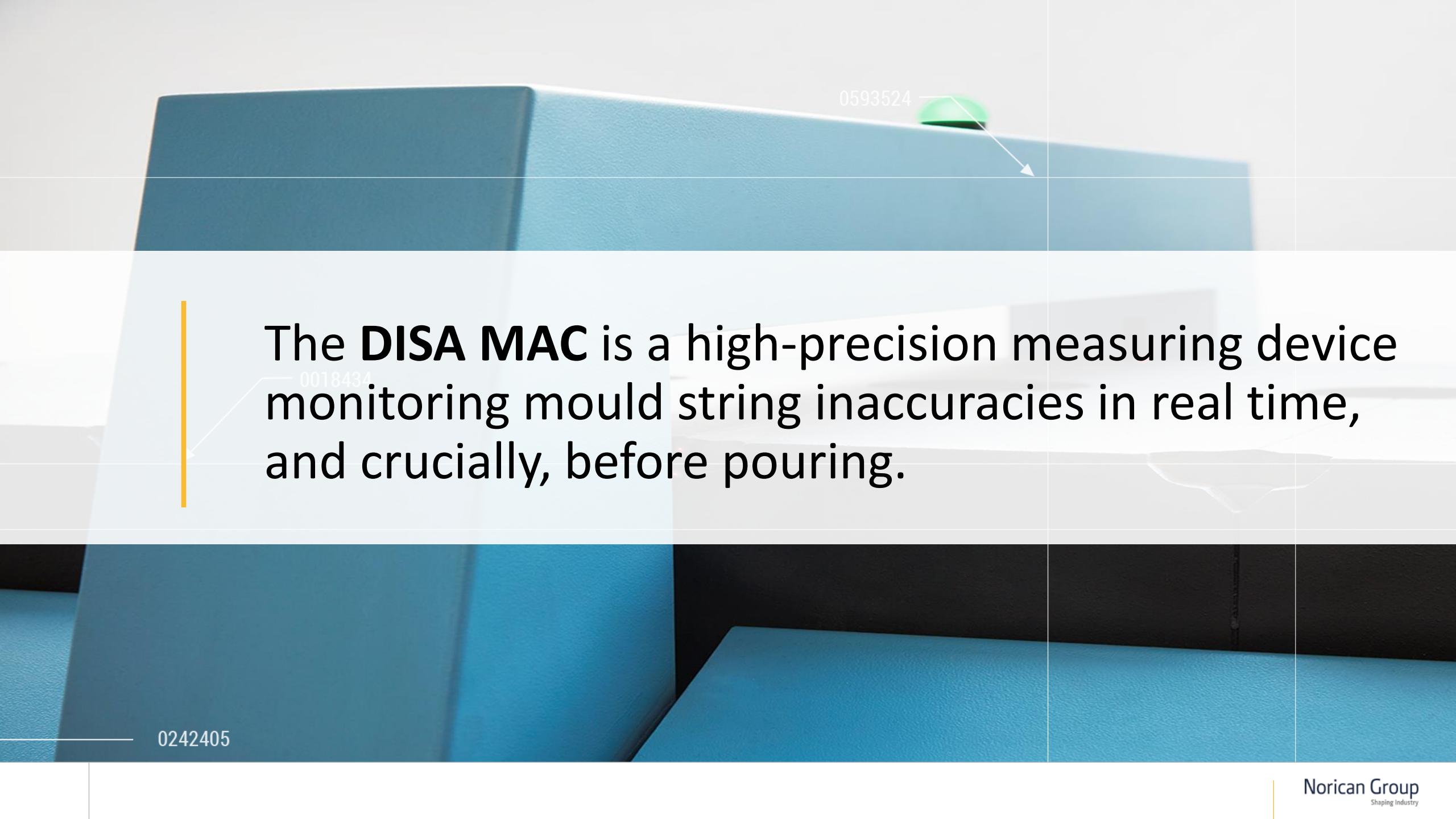
*A new dimension in castings*

**DISA**  
A Norican Technology

0242405

0593524

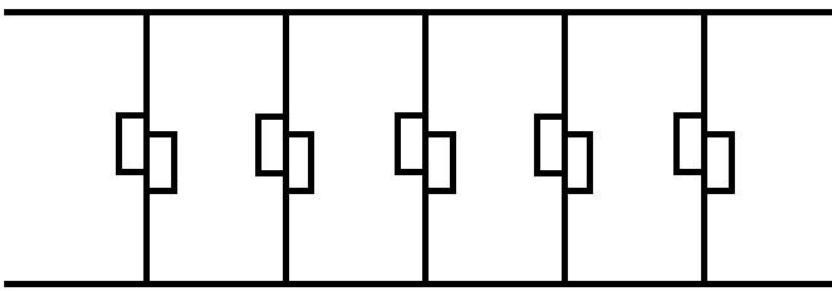




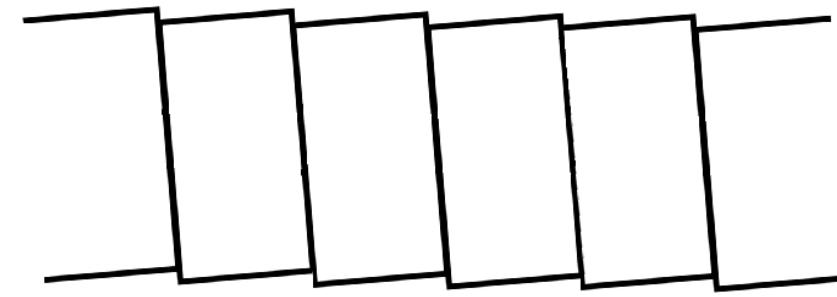
The **DISA MAC** is a high-precision measuring device monitoring mould string inaccuracies in real time, and crucially, before pouring.

0242405

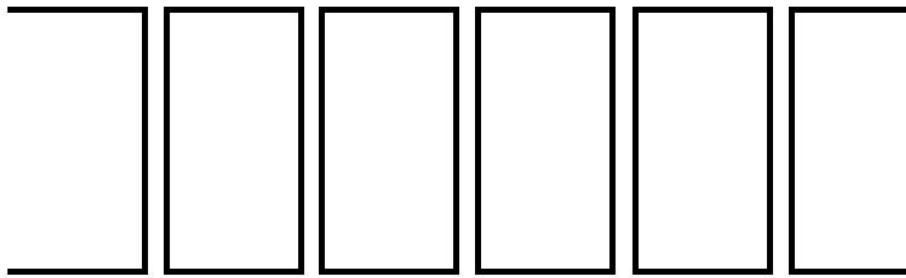
**Mismatch**



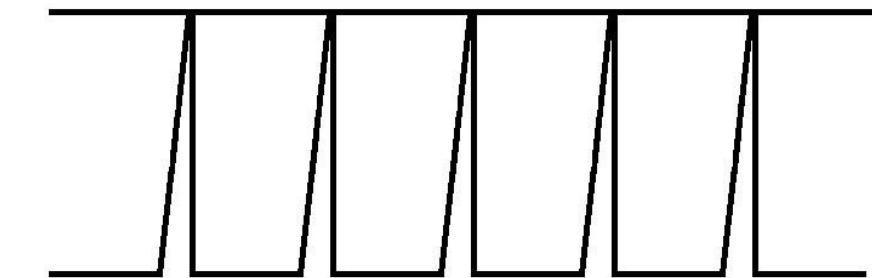
**Step**



**Gaps**



**Parallelism**



## *DISA MAC – Warnings*



**Warning when moulds are out of tolerance**  
(minimize scrap production)

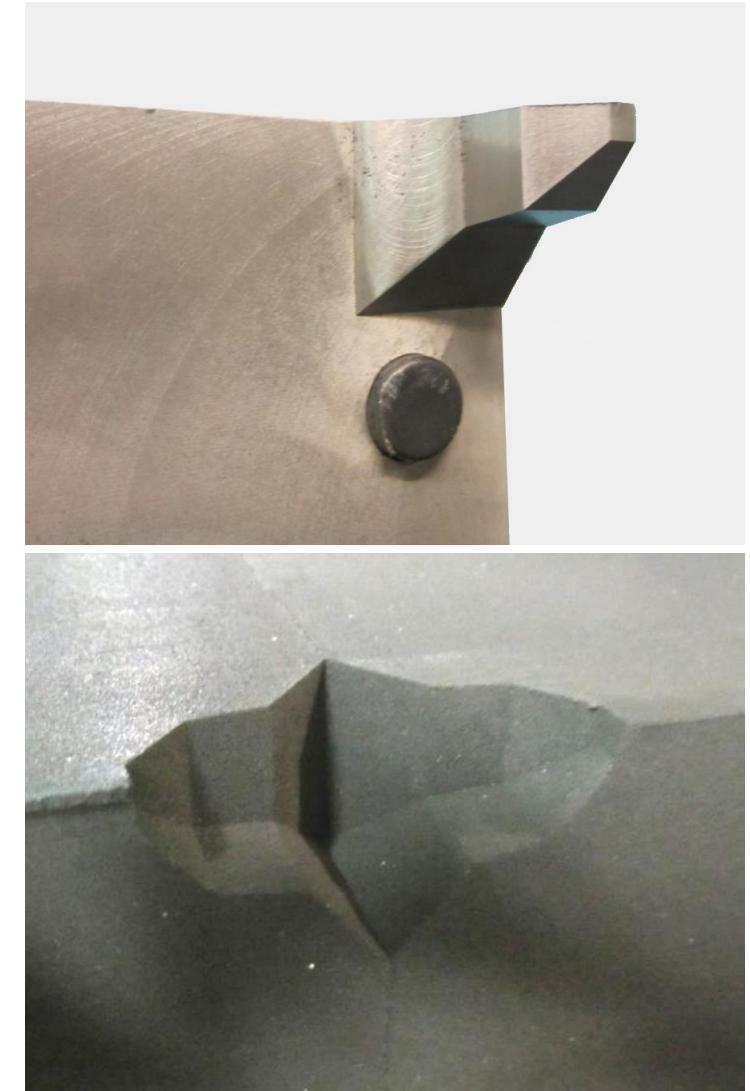


**Prevents pouring moulds with gap**  
(minimize downtime and scrap)

# *Application*

## MAC Pattern Blocks

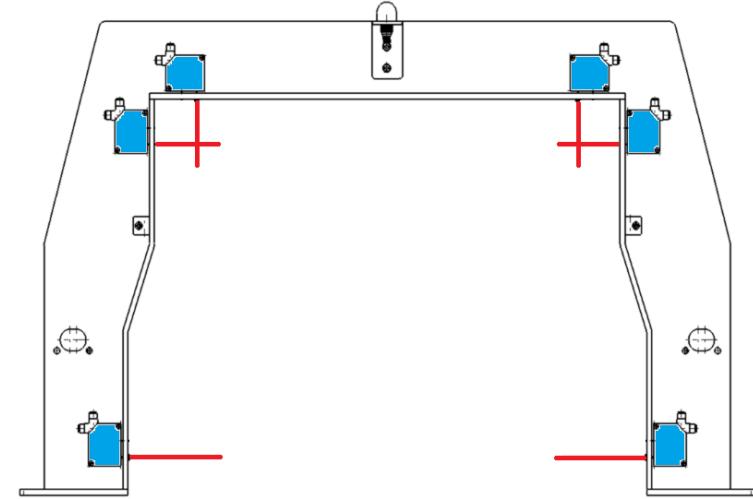
- MAC blocks are added to the SP and PP patterns, one in each corner - 8 in total
- Mould impressions are visible from outside the mould
- Block positions can be determined very precisely in relation the casting cavities
- Compensation for misalignment of blocks is possible by typing in true positions
- Blocks are designed with easy stripping and high-quality surfaces
- Worn blocks are easy to replace



# Technology

## Laser Sensor

- Six high resolution non-contact distance sensors using laser technology
- The sensors scan the outer visible surfaces and impression when passing by on the AMC



# *Retrofit solution*

## Operator Panel Cabinet

Retrofitting DISA MAC to existing moulding line\* includes a MAC operator panel cabinet:

- Siemens 15" touch screen for operating
- Siemens industrial PC for collect and store data
- Power supply and UPS battery
- DISA RAC (Remote Access Connection) for remote support and troubleshooting
- Air cooling unit under the cabinet
- Cables and other various electrical components



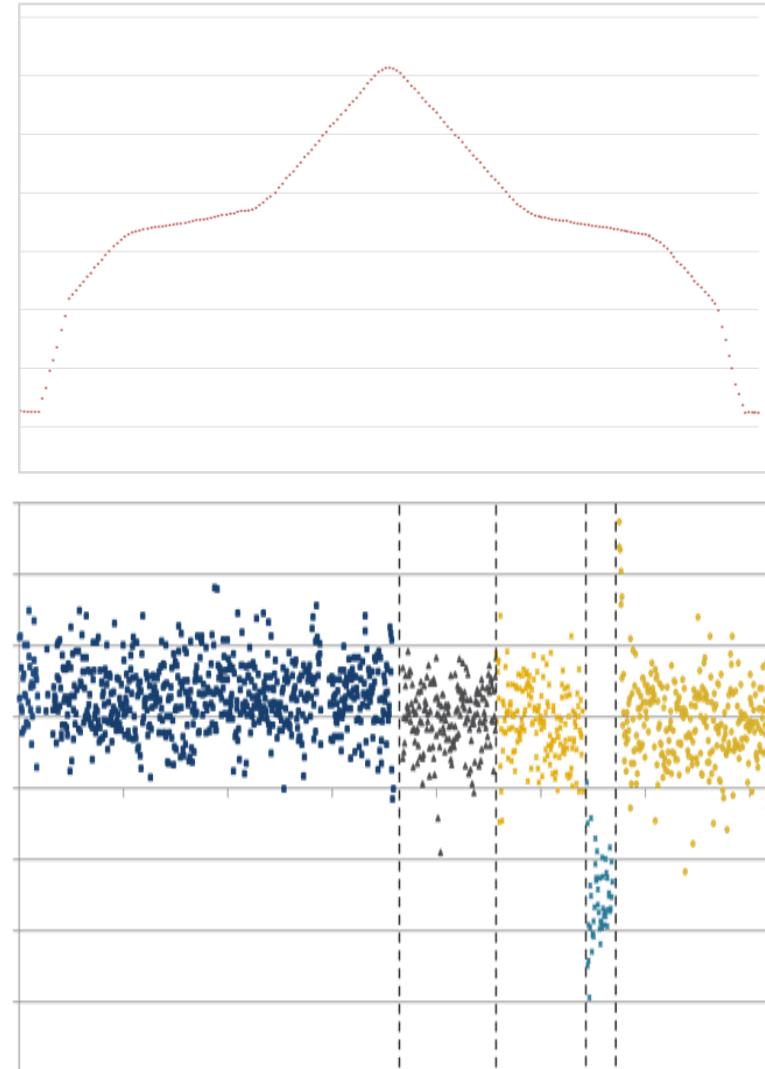
600H x 600 W x 300D

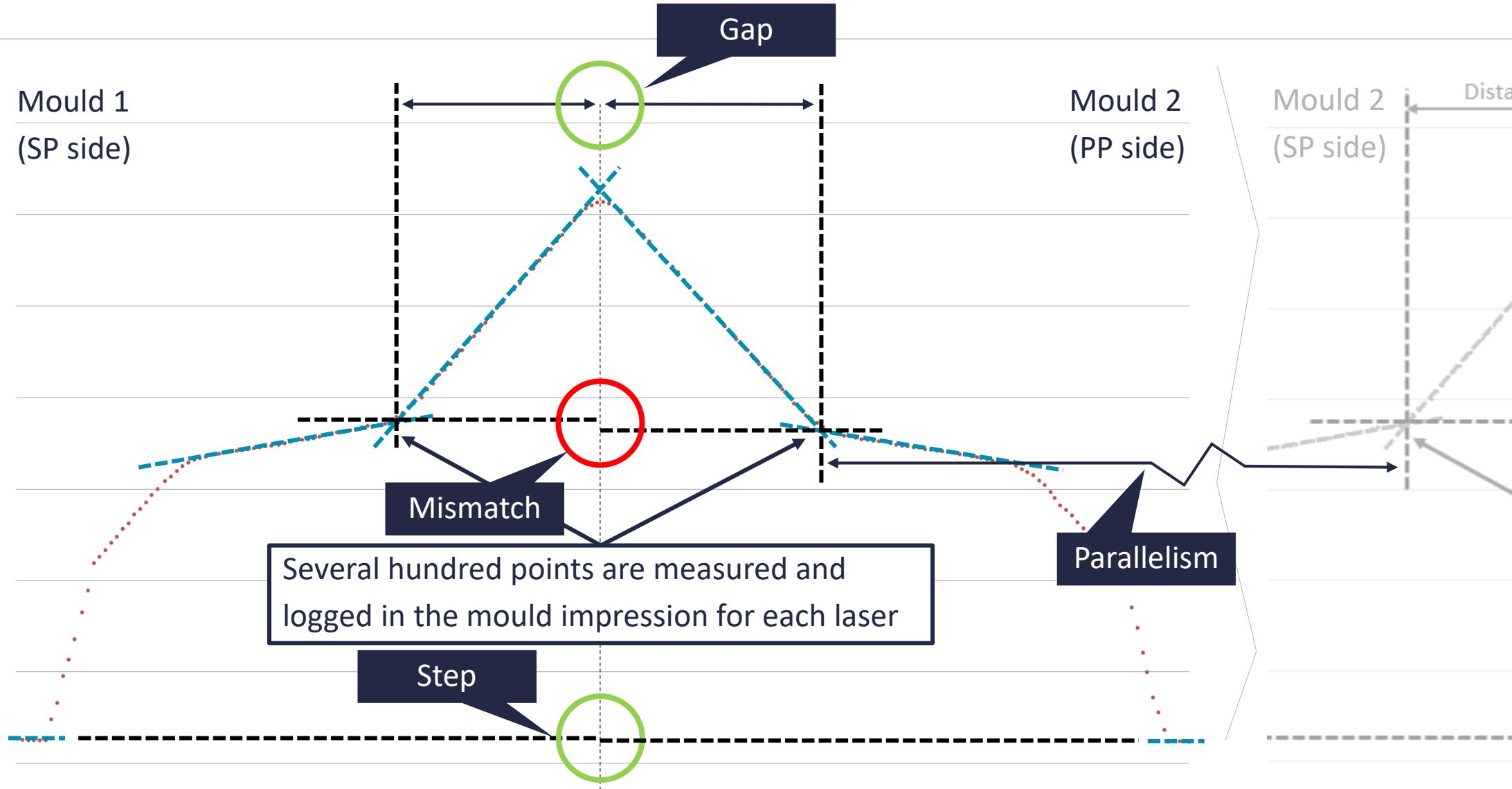
\* DISA MAC is integrated into DISAMATIC D3 control system and does therefore not require a additional operator panel.



# *Analysis*

- Sensor data is saved and calculations are made live by MAC software
- Calculations result in measurement parameters
- Measurement parameters are displayed on the VDU (live) and in Monitzer | CIM (historical)
- An alarm will be sent if calculations are uncertain, which could be due to poor laser sensor data or if measurement parameters are out of limits
- Explore and expand knowledge about the moulding machine and sand preparation process stability
- Greater understanding of the stability and capability





***DISA MAC – Historical analysis at Monitizer | CIM***

Monitzer | CIM DASHBOARDS OVERVIEW PERFORMANCE RECIPES SERVICE 150202 - DISA D3 Guest en-GB 13:13

Builder MAC kapm (+) New

Production Time: 20 Feb 2017 09:08 20 Feb 2017 09:33 Pattern Key: [ ] Batch ID: [ ]

Pattern Plates Batches Mismatch Gap Step Parallelism CIM-3 Settings CIM-3 Moulds

**Batch**

2017-02-20T09:08:51+01:00 2017-02-20T09:33:16+01:00

**MAC - Mismatch**

mm

0.75  
0.5  
0.25  
0  
-0.25  
-0.5  
-0.75

15:10 15:15 15:20 15:25 15:30 15:35 15:40 15:45 15:50 15:55 16:00 16:05

Vertical Mismatch Left (Blue line with circles) Vertical Mismatch Right (Green line with diamonds)

**Mismatch**

**MAC - Gap**

mm

10  
5  
0  
-5  
-10  
-15  
-20  
-25

15:10 15:15 15:20 15:25 15:30 15:35 15:40 15:45 15:50 15:55 16:00 16:05

Gap Left (Blue line with circles) Gap Right (Green line with diamonds)

**Settings**

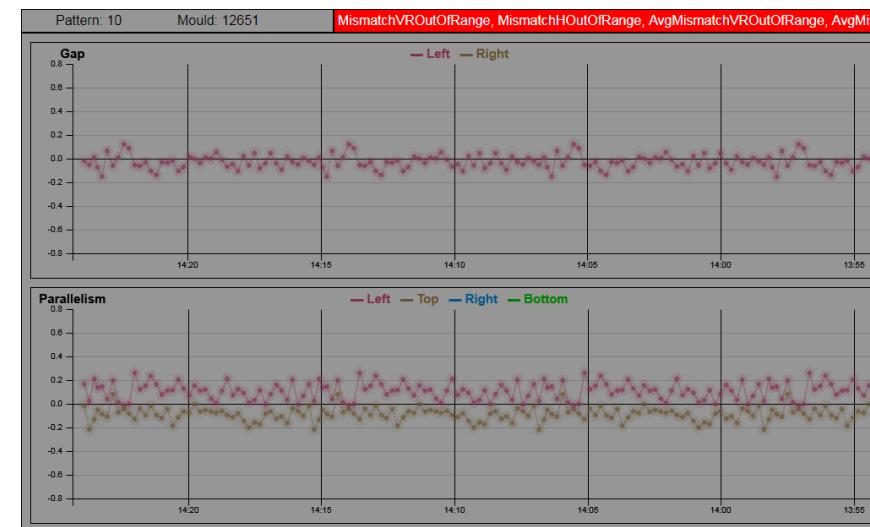
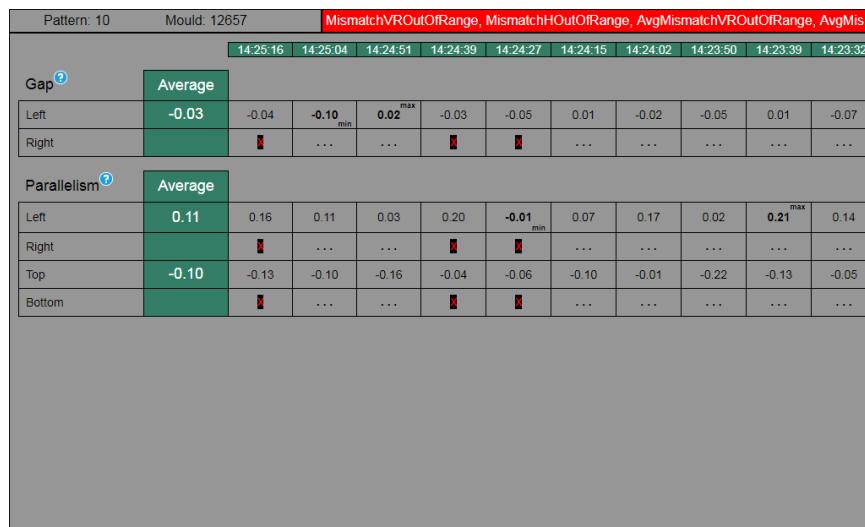
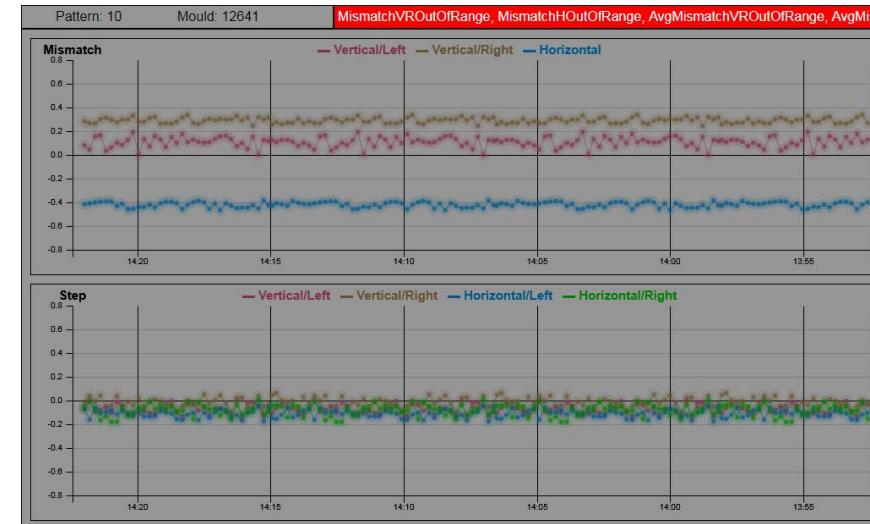
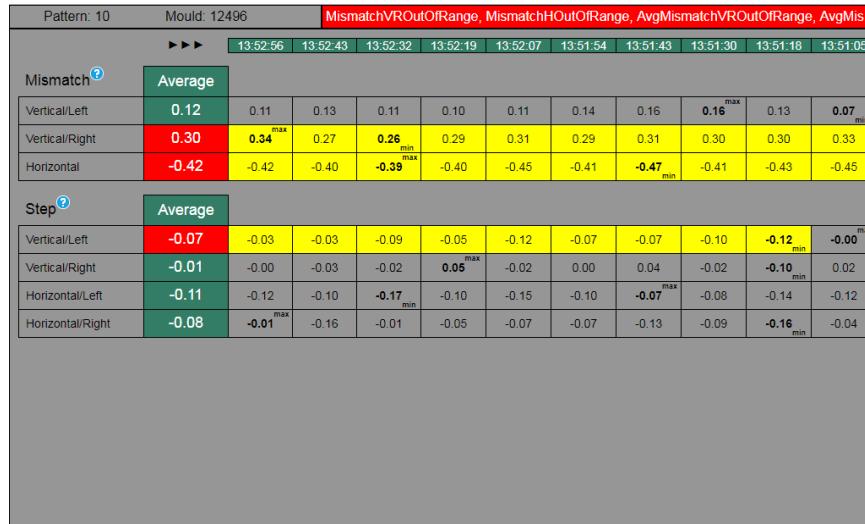
2017-02-20T09:08:51+01:00 2017-02-20T09:33:16+01:00

**Batch Overview**

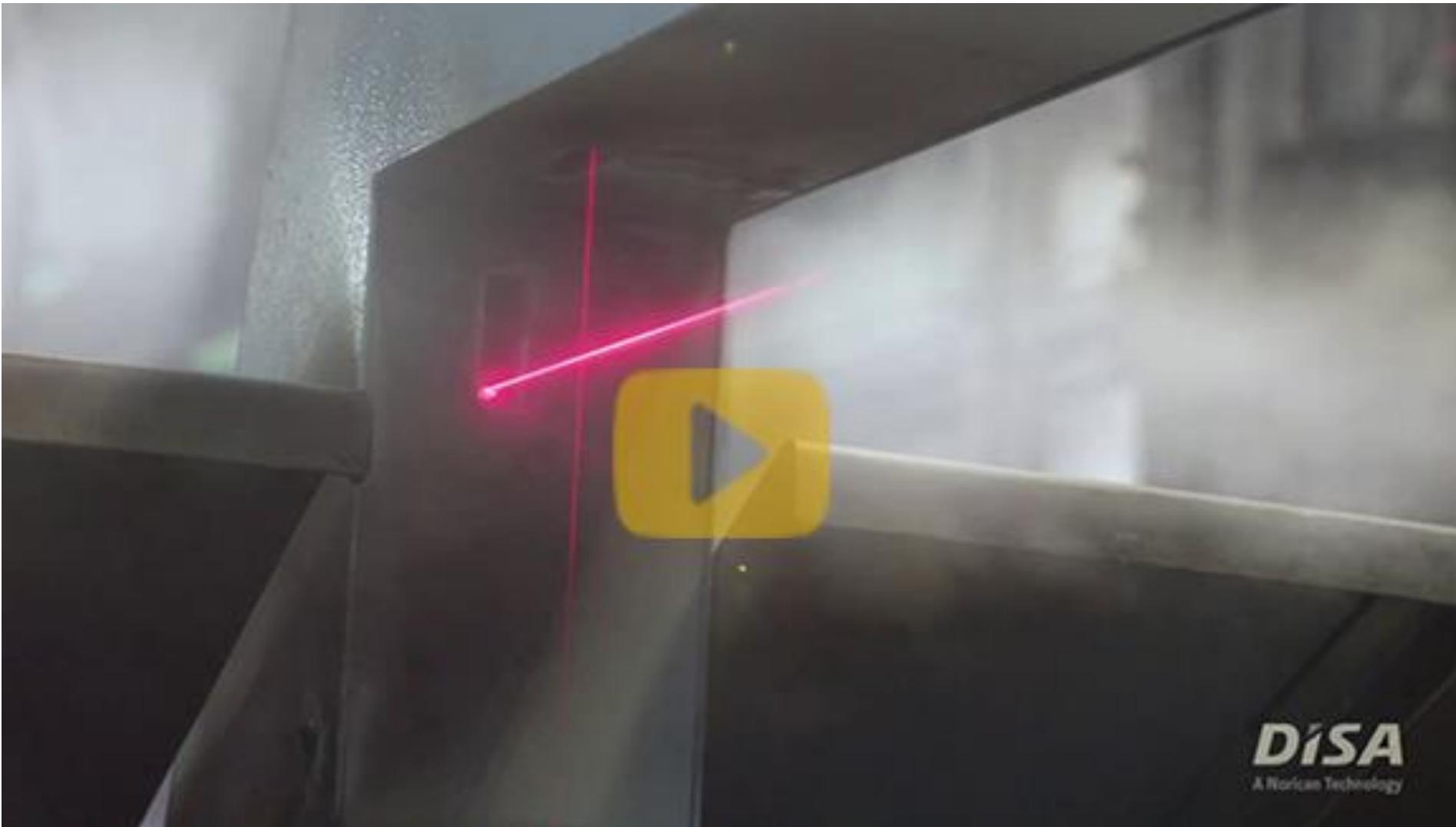
BatchID	minTimeProd	maxTimeProd	PatKey	countMouldIndex	avgVerticalMismatchLeft	stddevVerticalMismatchLeft	minVerticalMismatchLeft	maxVerticalMismatchLeft	avgVerticalMismatchRight	stddevVerticalMismatchRight	minVerticalMismatchRight	maxVerticalMismatchRight	avgHorizontalMismatch	stddevHorizontalMismatch	minHorizontalMismatch	maxHorizontalMismatch
672	2017-02-20T09:08:58+01:00	2017-02-20T09:33:07+01:00	12	134	0.1460833	0.07411066	-0.207161	0.339035	0.2824385	0.2044251	-0.000007629395	0.9129105	0.04762359	0.08508654	-0.188942	0.655921



# DISA MAC – Real-time analysis at VDU/HMI



## ***DISA MAC – Product video (From OSCO Industries)***



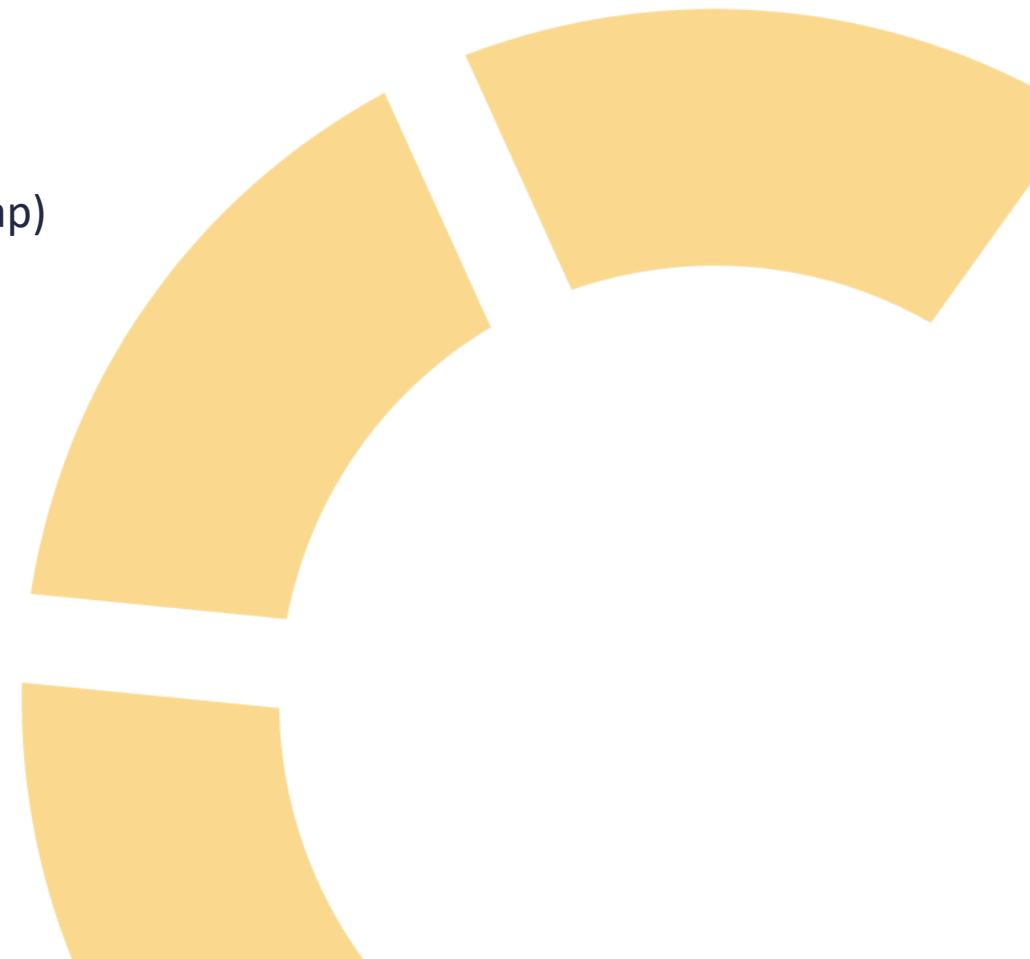
# *DISA MAC demo*



# ***Advantages***

## Overall casting quality

- Warnings when moulds are out of tolerance (minimize scrap)
- Prevent pouring moulds with gap (minimize downtime and scrap)
- Explore and expand knowledge about moulding machine and sand preparation process
- Greater understanding of the stability and capability
- Eliminates long production runs with scrap
- Supply parts with tighter tolerance requirements
- Reduce scrap and minimize rework
- Improve overall casting quality





*Thank you*

**DISA**  
A Norican Technology