

# VT ElektroPlast

ONE COMPANY – INFINITE POSSIBILITIES

—  
PIM

TECHNOLOGY

DYNAMISM

PROGRESS

STABILITY

# HISTORY

- ISO 9001 (1992)
- 13 PIM machines
- start of plastic consumption
- lighting products



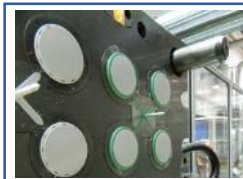
**1990-1995**



**1996-2000**

- 32 PIM machines
- first household appliances (1998)

**tampo printing**  
**hot stamping**  
**laser welding**  
**ultrasonic welding**



**2001-2005**

- ISO 14001 (2001)
- ISO TS 16949 (2002)
- 61 PIM machines
- first automotive products
- first personal care products
- fi-relays, respirators
- automatized assembly lines

**2K moulding**  
**insert moulding**



**2006-2010**

- ISO 13485 (2008)
- 87 PIM machines
- first floorcare products
- first premium products



**2011-2016**

- 91 PIM machines
  - purchasing of new machines
  - first skin care products
  - first mother&childcare products
  - sub-assembly
- infrared welding**  
**3D printing**



**2017-2023**

- 100+ PIM machines
- improving and rejuvenation of PIM machines
- on-line data collection system<sub>2</sub>

# RAW MATERIALS

**PPA PPS PSU PMMA PES**

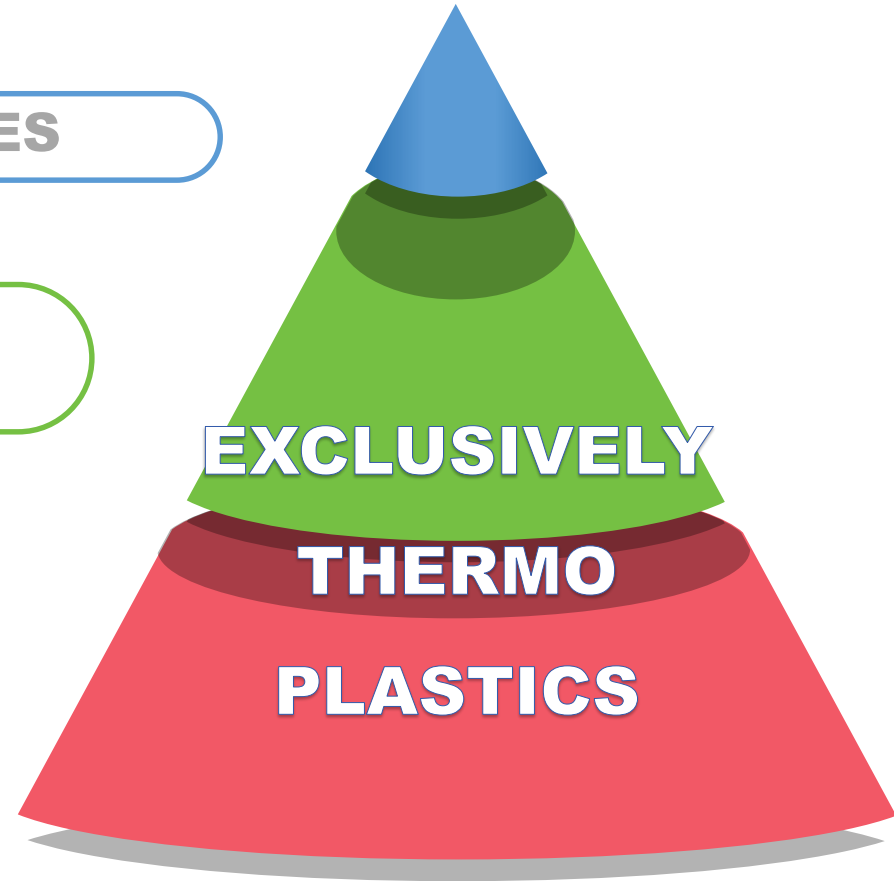
Top quality plastics

**PC PA PBT POM PFA**  
**PET TPE ASA+PC**

Engineering plastics

**ABS TPU PVC SAN PP**  
**PPE + PS**  
**HDPE LDPE**

Industrial plastics



# PIM MACHINES

Machines sizes according to their clamping force:

- 40-650t

**ARBURG**

**ENGEL**

**Battenfeld**  
Injection Molding Technology

 **Chen Hsong**

 **VIDEOTON**



# INJECTION MOULDING

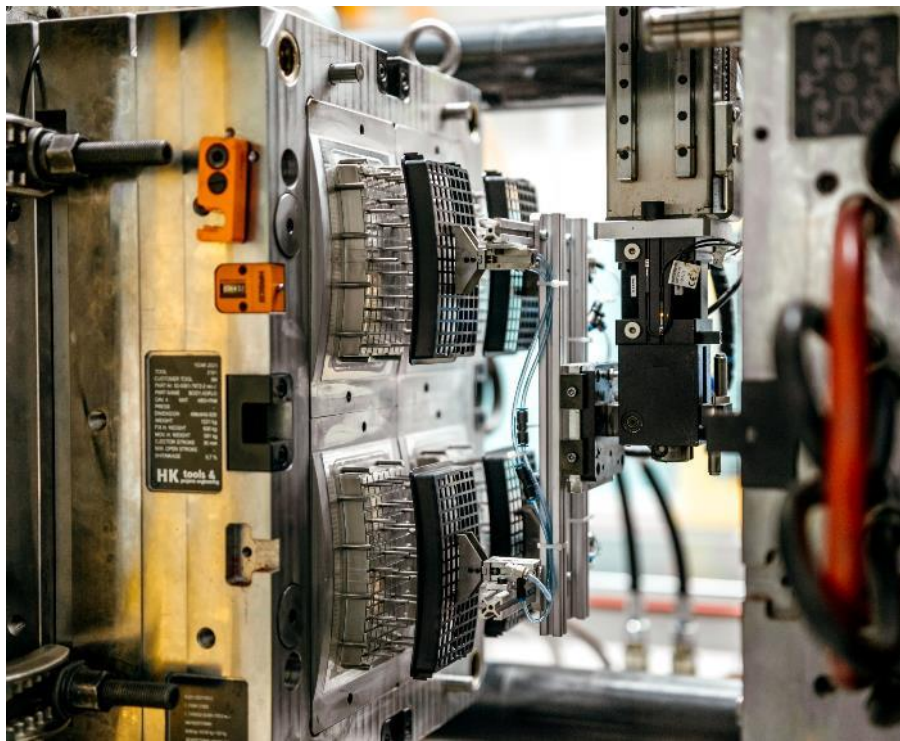


## Max capacity:

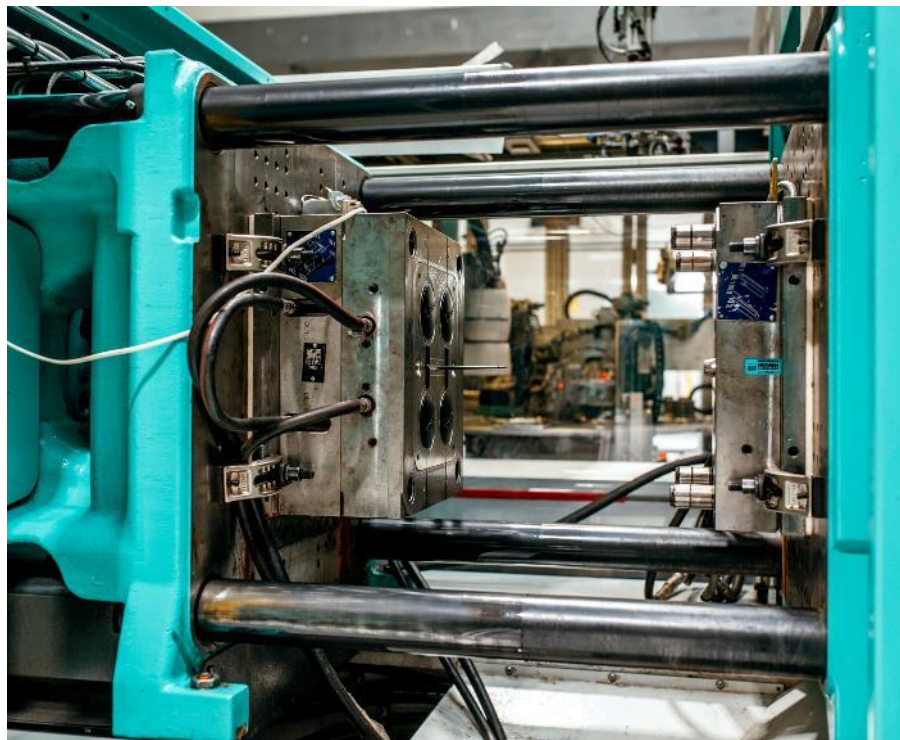
- **270** sorts of resin and masterbatch, from **75** suppliers
- **2600** tons of resin processed per year
- **4,5 - 5** million plastic components per week
- **900** active tools



# 1 COMPONENT INJECTION MOULDING I.



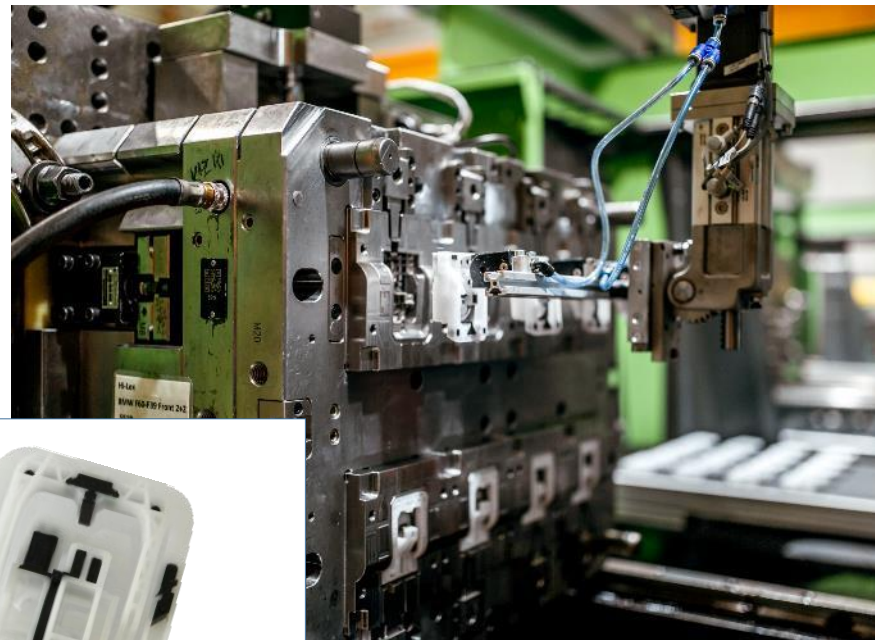
# 1 COMPONENT INJECTION MOULDING II.





# 2 COMPONENT INJECTION MOULDING I.

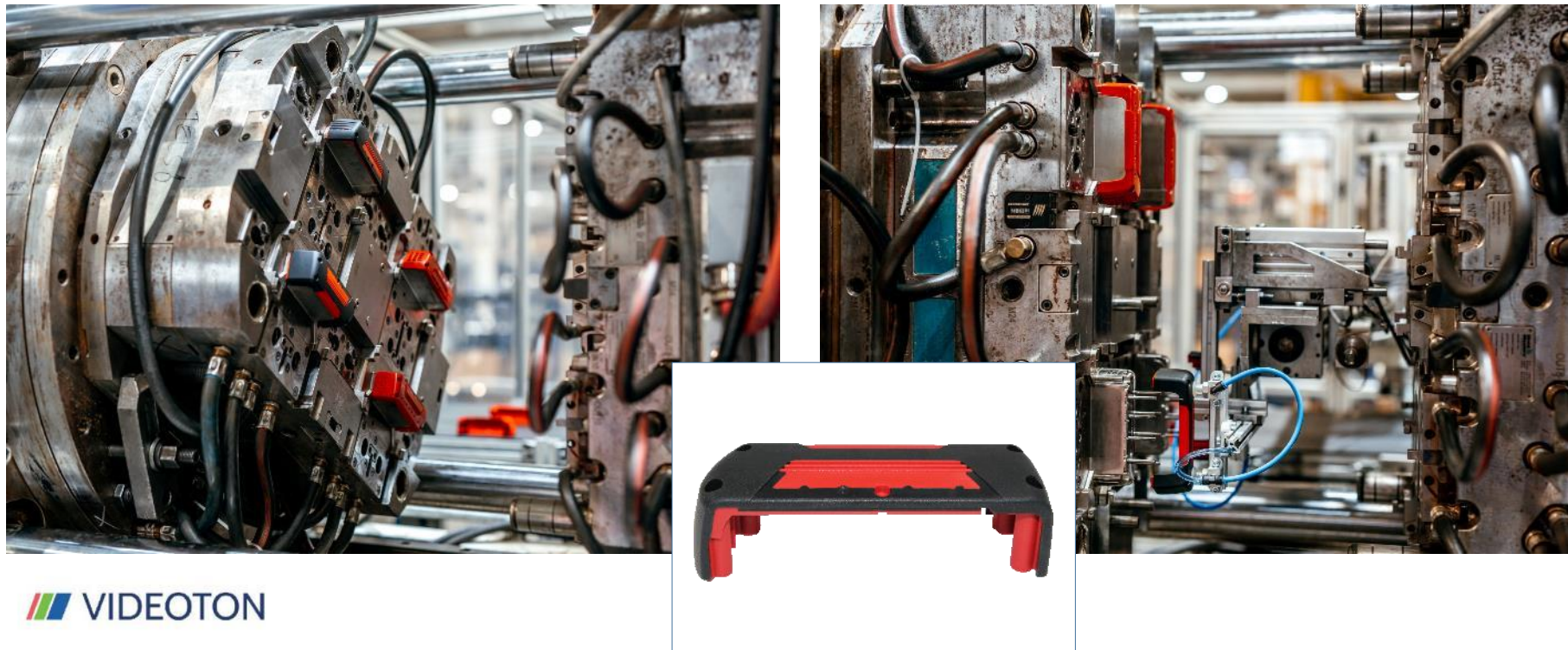
- index plate moulding





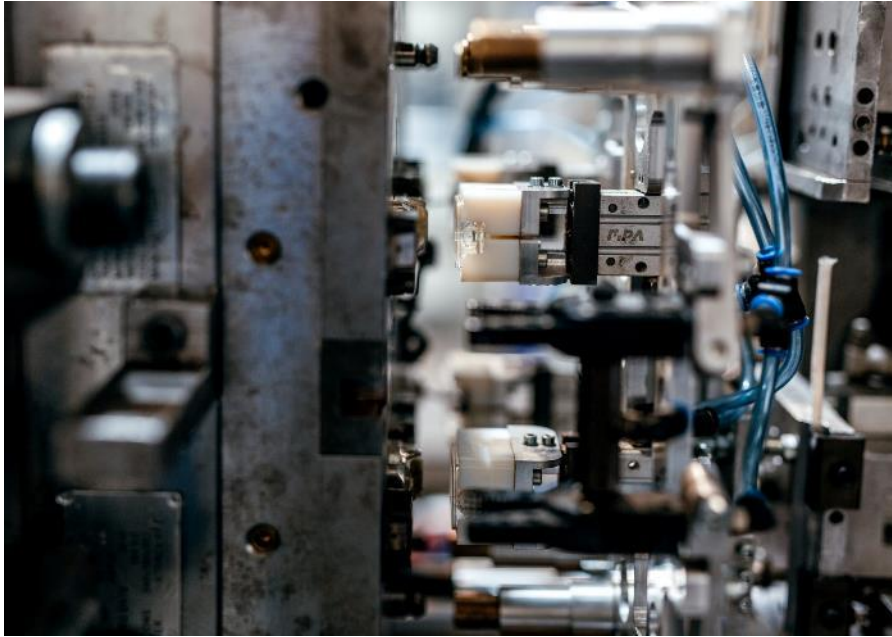
## 2 COMPONENT INJECTION MOULDING II.

- rotary plate moulding



## 2 COMPONENT INJECTION MOULDING III.

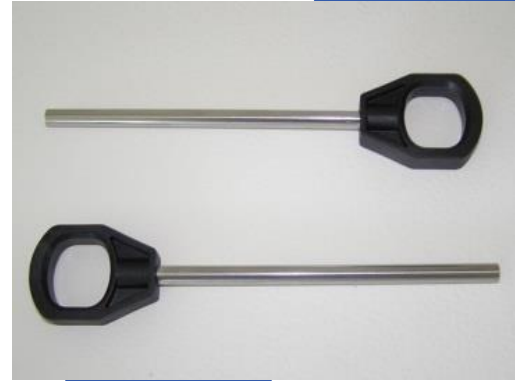
- robot-assisted moulding



# OVERMOULDING I.

## Moulding onto metal

- rods
- nuts

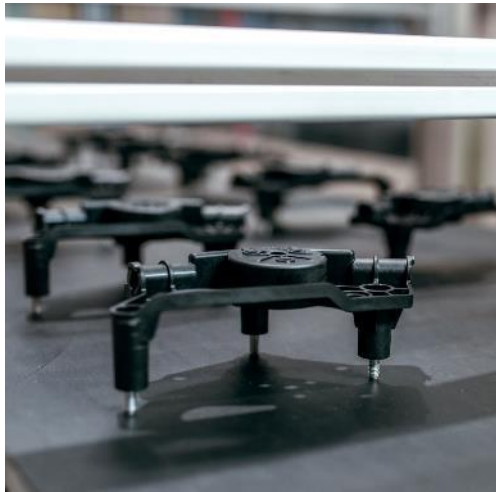




# OVERMOULDING II.

## Moulding onto metal

- threaded pins, contact pins



# TAMPON PRINTING I.

- complete tampon printing lines
- single and multicolour printing
- open and closed system
- on different raw materials (PP, ABS, PBT, SAN)
- on flat and curved surface
- pre-treatment – flaming, crowning
- JIG making



# TAMPON PRINTING II.

- metal parts

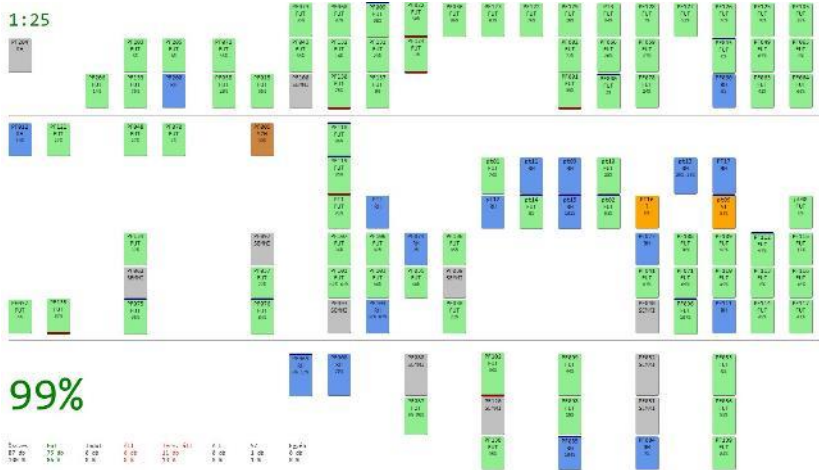




# INDUSTRY 4.0 – OUR DEVELOPMENTS I.

## On-line terminals

- work instruction / training materials
- technologies
- reporting number of products
- status code updates of injection moulding machines

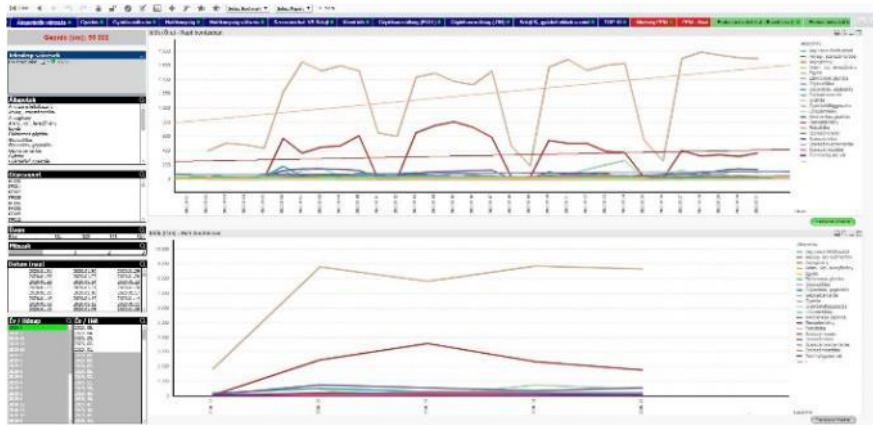


# INDUSTRY 4.0 – OUR DEVELOPMENTS II.



## Data evaluation system

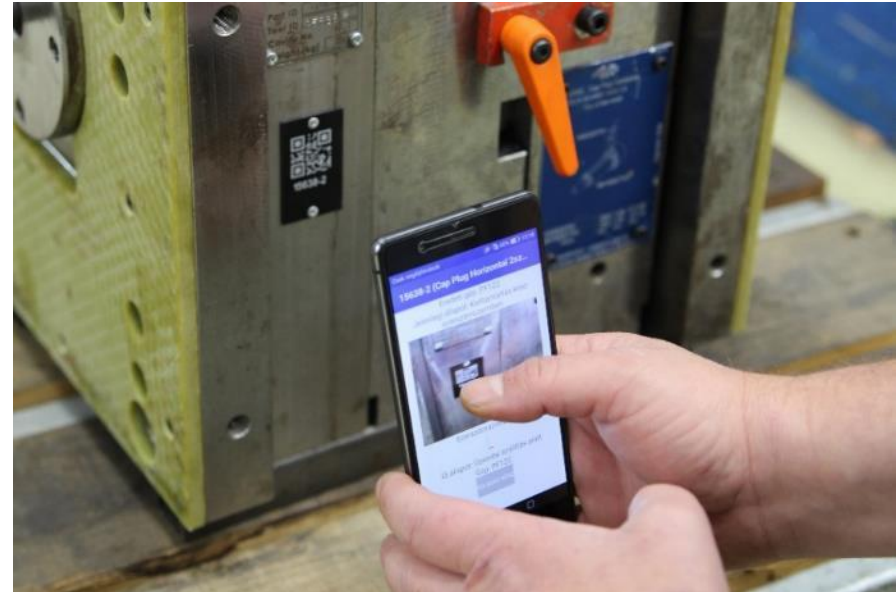
- complex information about existing data of production
- comparisons, data analysis, optimization of efficiency, downtime etc.
- production featured KPIs based on extracted data



# INDUSTRY 4.0 – OUR DEVELOPMENTS III.

## Tool positioning tracking system

- mobile application
- proper on-line information about the state and the physical place of tools
- barcode identification of tool
- tool repair / maintenance prioritization
- options evaluation system (efficiency improvement)
- downtime optimization

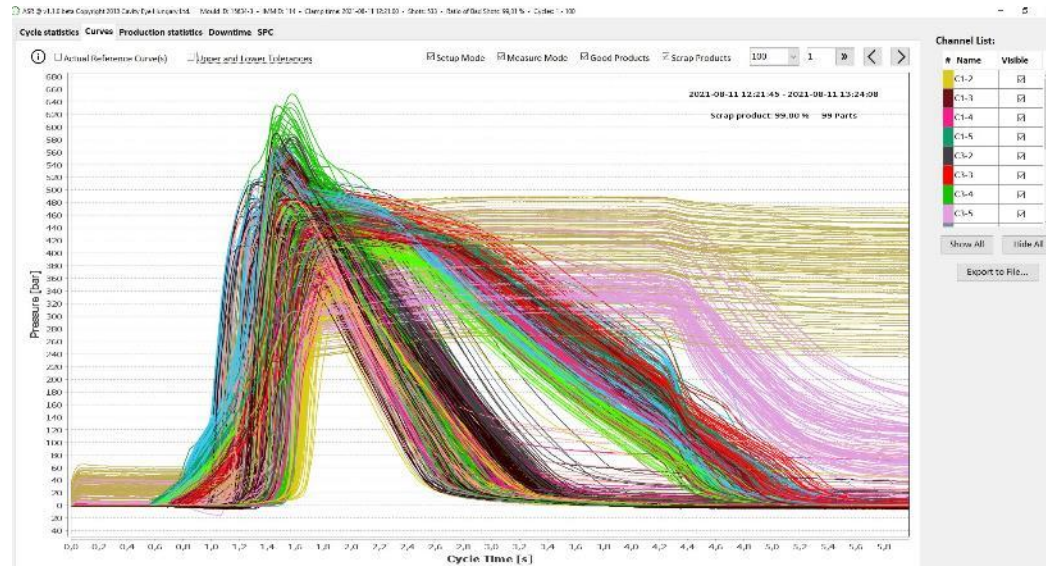




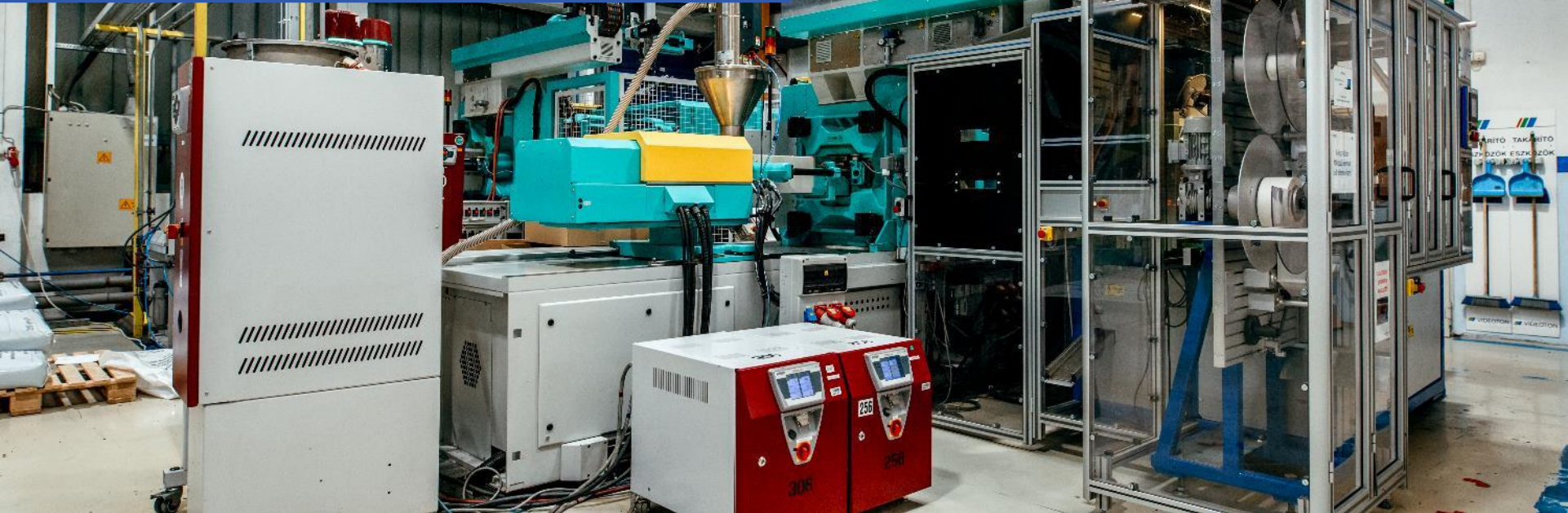
# INDUSTRY 4.0 – CAVITY EYE

## Collection of data in real-time

- direct (real-time) data from injection moulding machines, tools and peripheries
- monitoring parameter changes
- on-line tracking of run status of moulding machines
- quick and efficient warning system
- immediate response
- optimized material flow



# MANUFACTURING CELL



- design and manufacturing
- PIM



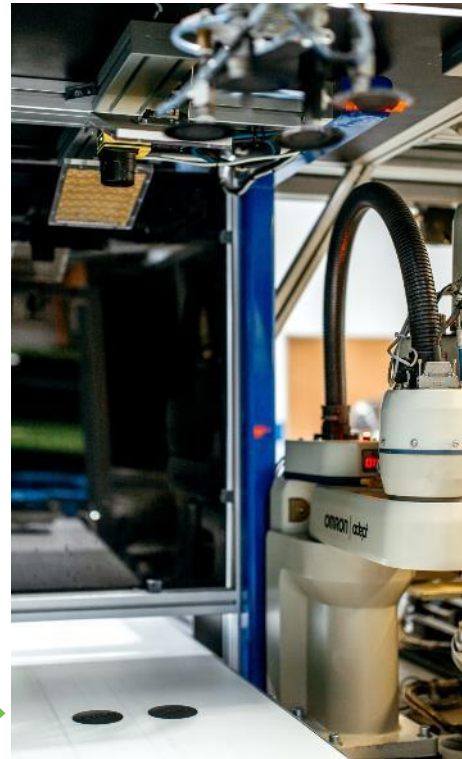
- tampro printing
- labelling



- camera quality control
- automatic scrap selection



# MANUFACTURING CELL PROCESS





# TESTS, MEASUREMENTS

- MFI tests
- 3D touch and optical
- colour
- hardness
- roughness
- torque
- dimensional accuracy
- solidity and material tests
- 3D scanner



# QUALITY ASSURANCE

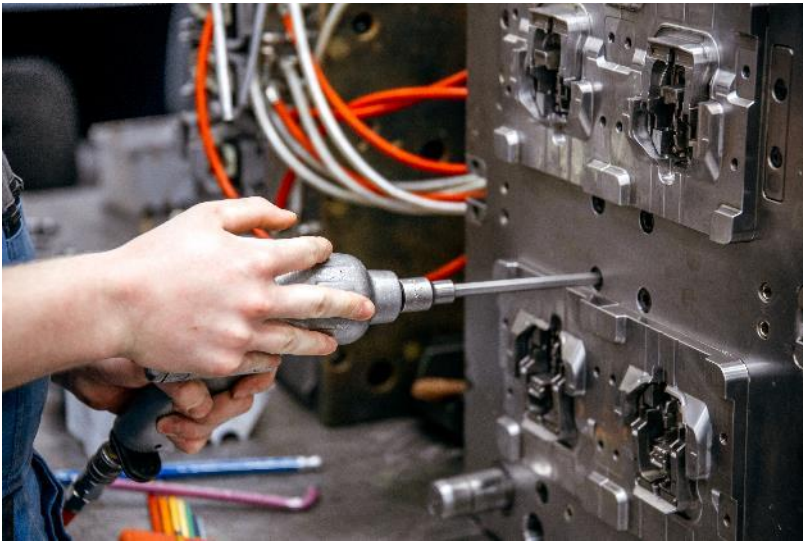
- analyzing root causes, corrective actions
- preparing, maintaining, improving quality documentation (PPAP, checking instruction, work instruction, measuring instructions, failure card)
- tool and raw material trials, first sample tests
- machine capacity and process capacity tests
- R&R tests
- mid-production controls in every two hours – measurements, assembly trials, function tests, SPC tests



# TOOLS MAINTENANCE AND REPAIR

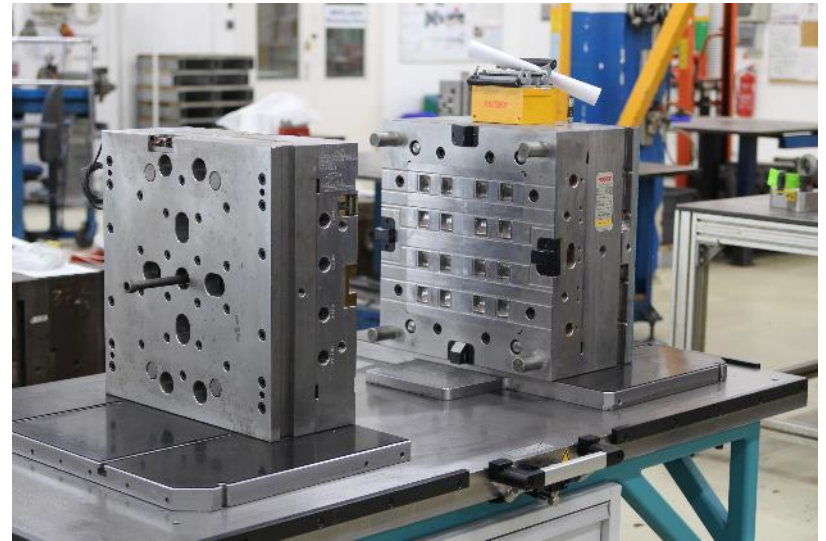
## Internal tools

Maintenance, repair, modification and production of new inserts



## External tools

Maintenance, repair, modification and production of new inserts



# CNC TURNING

## Turning machines

- DMG-Mori ecoTurn 310
- SZIM Hunor PNC 721
- **Max processing range: Ø200 x 500 mm**





# CNC MILLING

## Milling machines

- Mikron VCE 800 Pro
- Hartford VMC
- **Max processing range: 470 x 500 mm**



# EDM

## Block EDM

- AgieCharmiles Form 20
- Mold Master
- **Max processing range: 350 x 450 mm**



## Wire EDM

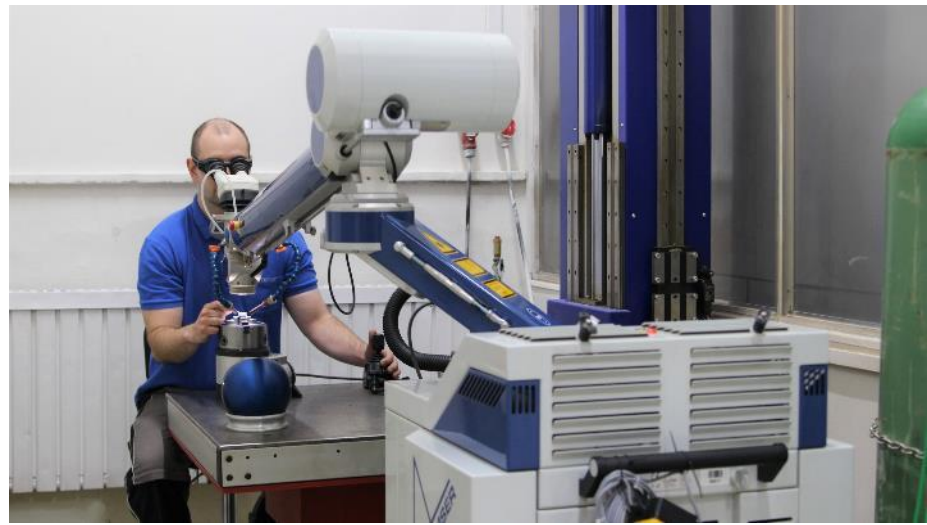
- AgieCharmiles cut 350
- **Max processing range: 250 x 350 mm**



# LASER WELDING

## Laser welding machine

- Alpha laser ALM 300





# GRINDIG

## Cylindrical grinding

- Cylindrical grinding KU
- **Max processing range: Ø200 x 700 mm**

## Surface grinding

- SEEDTEC 618 / SEEDTEC 1636
- Okamoto
- **Max processing range: 800 x 400 mm**

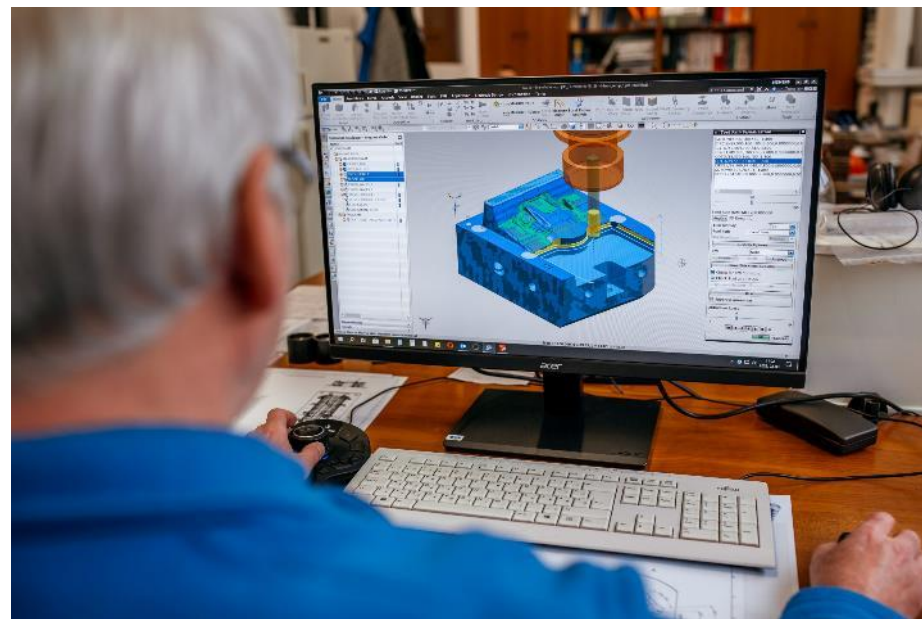
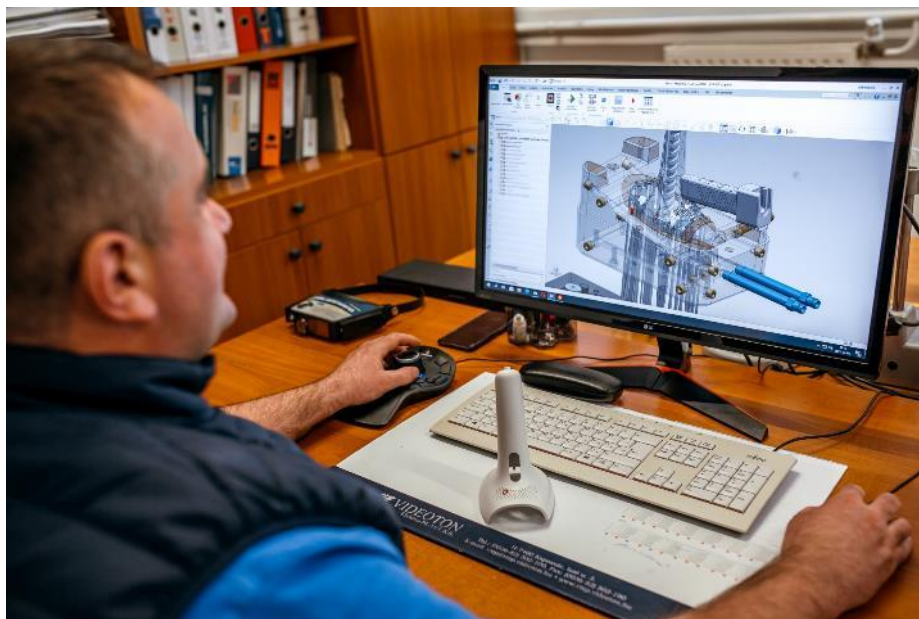




# CAD-CAM DESIGN

## Software

- Siemens NX 10



# THANK YOU!

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