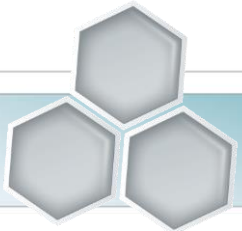




1. **Key Note: Precision Parts & System**
2. Industry 4.0
  - *Software Tool Leader*
  - *Reasons for the emergence*
  - *Advantages of the Software*
3. Break
4. Software Tool Leader Live Demo
5. Software QAM Live Demo
6. Lunch
7. Company Tour Focus MPS
8. Individual Customer Meeting
9. Transfer to Hotels
10. Get-Together City Hotel
11. Dinner at City Hotel



# Mühlbauer Parts & Systems



# INTRODUCTION

- owner-managed group
- international market leadership in the fields of
  - Parts & Systems
  - Semiconductor Related Products
  - Document Solution Related Products
  - TECURITY® Solutions
- the Mühlbauer Group's philosophy: Our customers are our partners!





## BASIS

- 3,500 employees at 35 sites worldwide
- 400 engineers in R&D
- 400 trainees
- excellent sustainability standards



## INVESTMENTS

- annual investments (approx. 15 million EUR) in
  - latest technologies
  - infrastructure
  - systematical & logical completion of the product chain



## MARKET POSITION

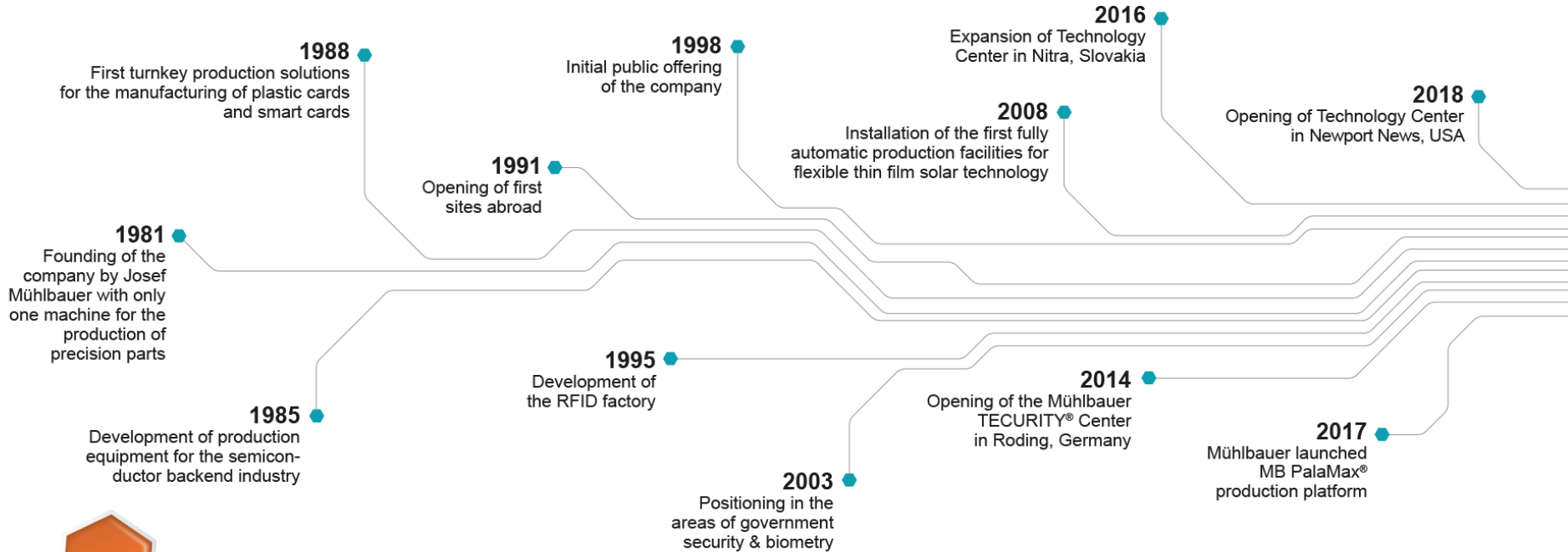
PARTS & SYSTEMS – intersectoral parts manufacturing

AUTOMATION – market leader in the areas of RFID, semiconductor backend and Smart Card

TECURITY® – system partner for global technology- and know-how-transfer in the area of SmartID



# HISTORY



# INTERNATIONAL SITES



- 35 production & service locations
- technology centers in the USA, Slovakia, Serbia, Malaysia and China
- inhouse precision-part production
- provision of
  - high-end semiconductor & RFID systems
  - reliable vision inspection technologies
  - innovative ID document end-to-end-solutions
  - secure access & border control systems



# BUSINESS LINES

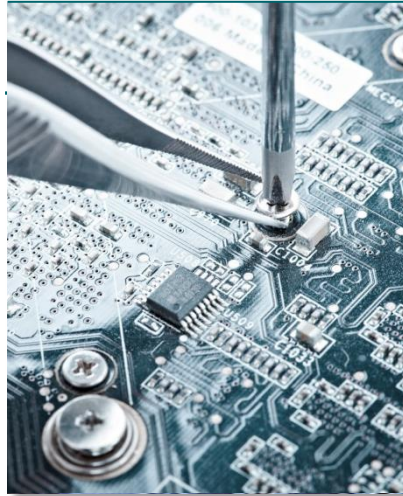
## PARTS & SYSTEMS

Precision Parts  
for Aerospace, Automotive,  
Semiconductor & Engineering



## AUTOMATION

Machines & Solutions  
for SRP & DSRP



## TECURITY®

Solutions  
for Governments



# THE INNOVATION PLATFORM

## SEMICONDUCTORS

intelligence for security and communication



## RFID

smart label technology for SECURITY & IOT



## FLEXIBLE SOLAR

efficient solution for clean energy everywhere



## LED

energy-saving light for the future



# SECURITY & QUALITY CERTIFICATES

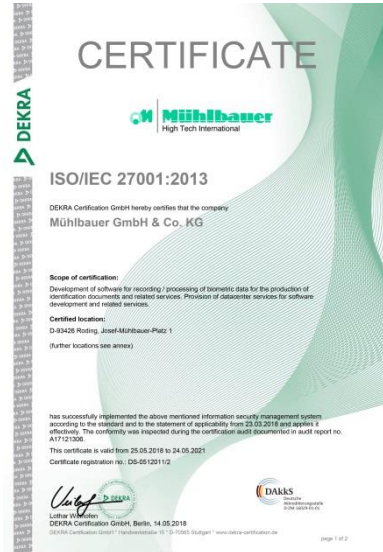
## Security Printer



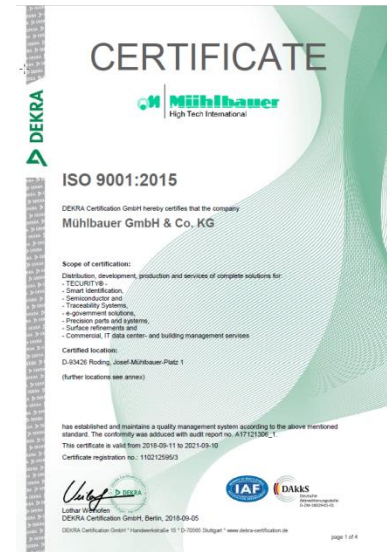
## Security Supplier



## IT Security ISO IEC 27001



## QM System ISO 9001:2015





## MEMBERSHIP IN GOVERNMENTAL INITIATIVES, WORKING GROUPS AND COMMITTEES

- German-African Business Association
- Ghorfa Arab-German Chamber of Commerce and Industry e.V.
- IATA Strategic Partner
- INTERPOL Project S-Print
- Operation Genesis  
U.S. Department of Homeland Security



# VALUES

WER WERTE HAT,  
KANN WERTE GEBEN.



MENSCHEN  
MENPOWER



IF YOU'VE GOT VALUES,  
YOU'R ABLE TO GIVE VALUES.



PRÄZISION  
PRECISION



DIE MPS MARKENWERTE  
THE MPS BRANDVALUES



SCHNELLIGKEIT  
SPEED



MEMBER OF **MÜHLBAUER GROUP**





## LOCATIONS

- over 1,111 employees
- 3 locations



## CAPACITIES

- 24/7 a week
- over 1 mil. hours per year



## PRODUCTION

- 30.000 m<sup>2</sup> area
- invested over 65 mil. € since 2009



## MATERIAL STORAGE

- over 2,000 m<sup>2</sup> large
- 4.5 mil. € value
- 90% of the standard in stock



## SUPPORT

- development support
- design support
- delivery processing
- warehouse management



## TRANSPORT SERVICES

- own department for delivery logistics, own vehicles and drivers
- worldwide office, through all business lines



## ASSEMBLY

- 2,800 m<sup>2</sup> area
- clean room class 7
- expansion in planning



# LOCATIONS

MPS Roding  
GmbH



MPS Stollberg  
GmbH



Muehlbauer  
Technologies s.r.o.

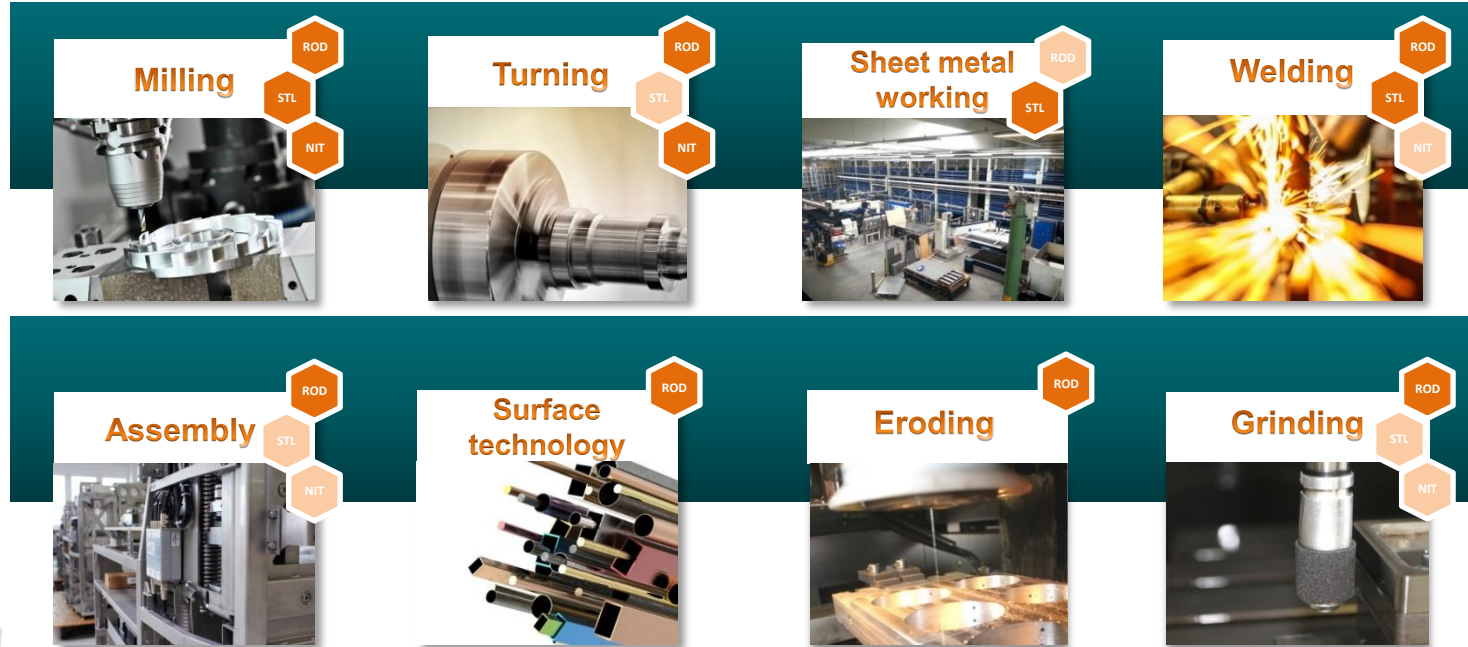


MBO GmbH.



# PRODUCTION PROCESSES

The deciding element builds the **diversity of our technological possibilities** that are all concentrated **under one roof**.



The image displays eight production processes arranged in two rows of four. Each process is represented by a central photograph, a title, and three material icons (ROD, STL, NIT) in hexagonal shapes. The top row includes Milling, Turning, Sheet metal working, and Welding. The bottom row includes Assembly, Surface technology, Eroding, and Grinding. The background is a dark teal color.

- Milling**: Shows a CNC mill cutting a metal part. Icons: ROD, STL, NIT.
- Turning**: Shows a lathe turning a metal shaft. Icons: ROD, STL, NIT.
- Sheet metal working**: Shows a factory floor with sheet metal equipment. Icons: ROD, STL.
- Welding**: Shows bright sparks from a welding process. Icons: ROD, STL, NIT.
- Assembly**: Shows an assembly line with machinery. Icons: ROD, STL, NIT.
- Surface technology**: Shows various metal rods and tubes. Icons: ROD.
- Eroding**: Shows an electroerosion process. Icons: ROD.
- Grinding**: Shows a grinding wheel on a workpiece. Icons: ROD, STL, NIT.



We are able to **react flexibly to market fluctuations** through the broad industry orientation and the unification of all technologies under one roof..

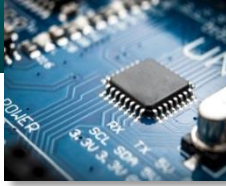
**Mechanical engineering**



**Environmental and energy industry**



**Semiconductor industry**



**Food & Beverage industry**



**Aerospace industry**



**Medical industry**



**Mobility**



**Motorsport**



**Defense industry**



**Tool and mold making**



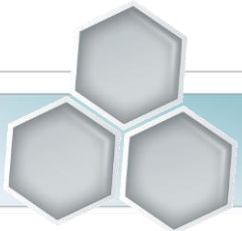
**Industrial measurement technique**



1. Key Note: Precision Parts & System
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# Mühlbauer Parts & Systems





**MÜHLBAUER**  
**TECH WEEK 2018**  
08 - 12 OCTOBER 2018 RODING, GERMANY

# Tool.LEADER & Quality Assurance Management

**Marek Dian**

Team Leader Software Engineering  
Muehlbauer Technologies s.r.o

**Torsten Ertl**

Team Leader Quality Assurance  
MPS Roding GmbH

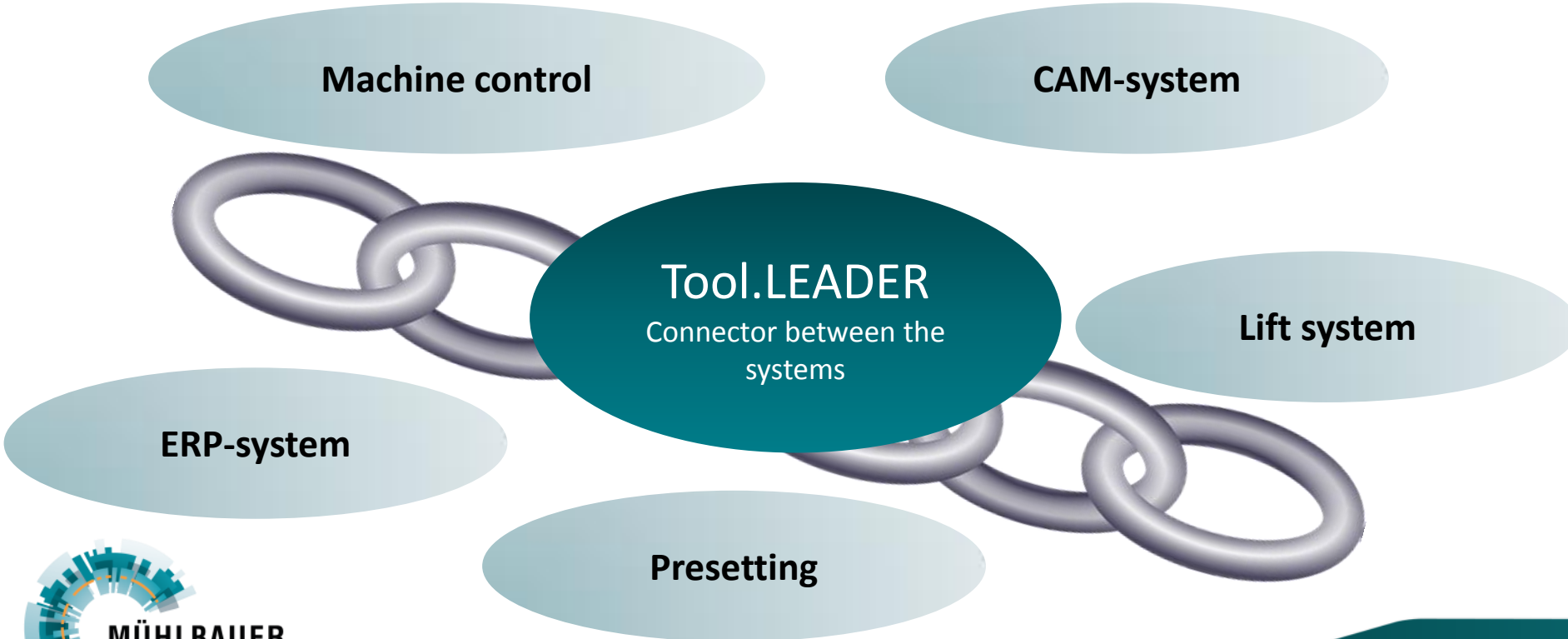
# Where does the requirement come from?





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# Tool.LEADER



# Tool.LEADER CAD/CAM Programming

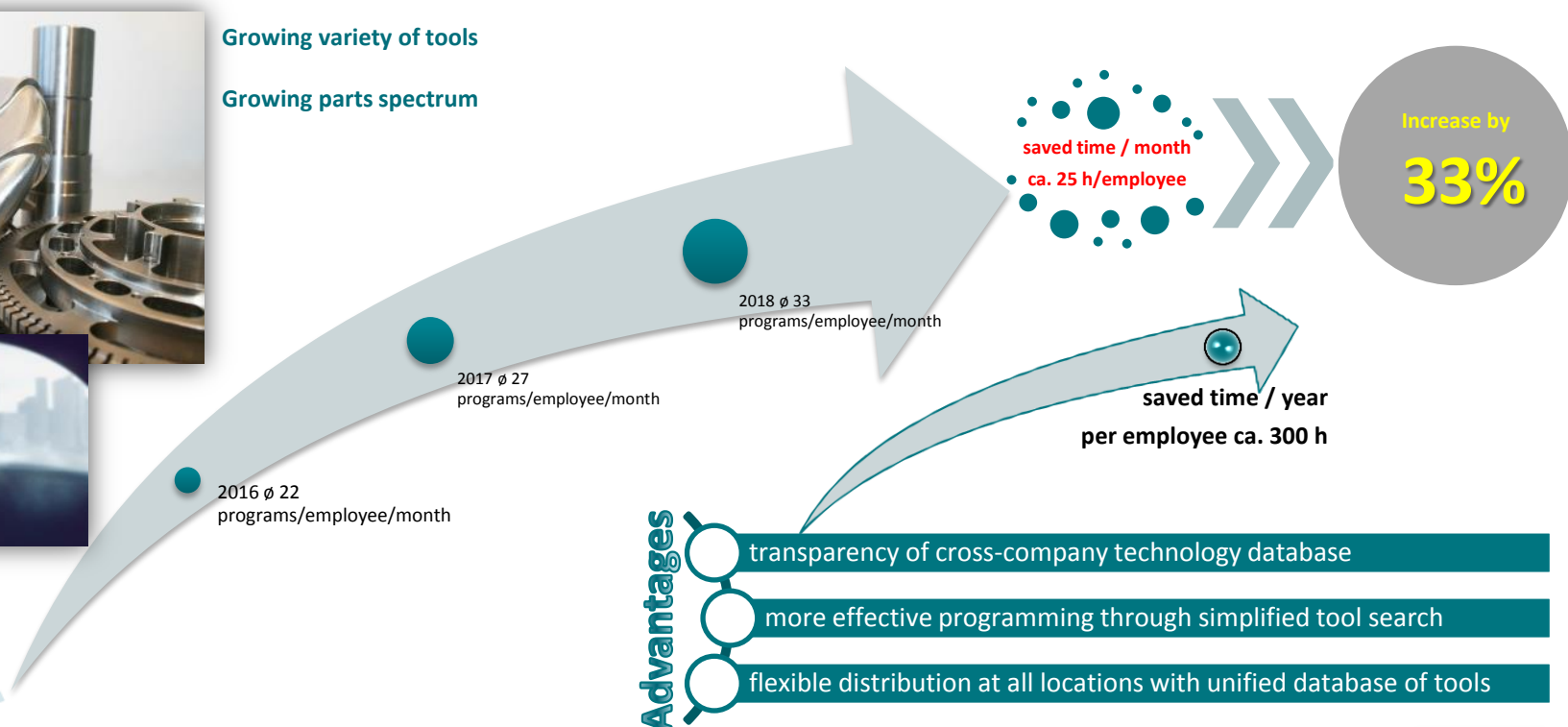


Growing variety of tools

Growing parts spectrum



Shorter delivery time



## Advantages

- transparency of cross-company technology database
- more effective programming through simplified tool search
- flexible distribution at all locations with unified database of tools

# Tool.LEADER

## Tool administration



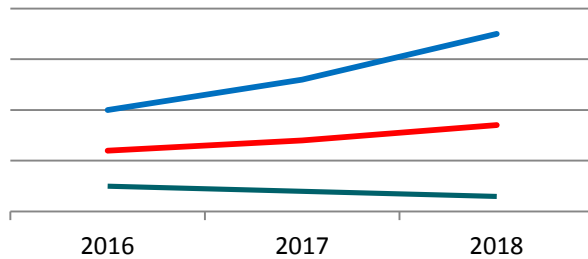
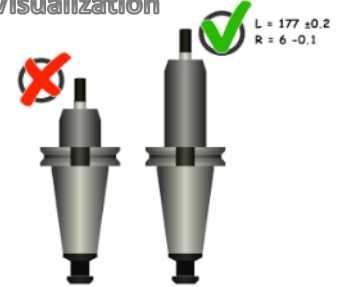
Difficult stock overview

No uniform tool assortment

Growing variety of tools



Visualization



— Turnover  
— Tool costs  
— Tool orders

Advantages

standardization of tools for all locations

automated order suggestions - optimized order process

demand-oriented stock

integration of lift systems - automated warehouse bookings

reliability of tool assembly through clearly defined process-flow & checks by system

safety - due tolerance settings for tool presetting



# Tool.LEADER

## Production single parts & small series

Every minute  
is CASH!



3000 production orders  
per week



machinery of 150  
machines



countless set-up  
procedures



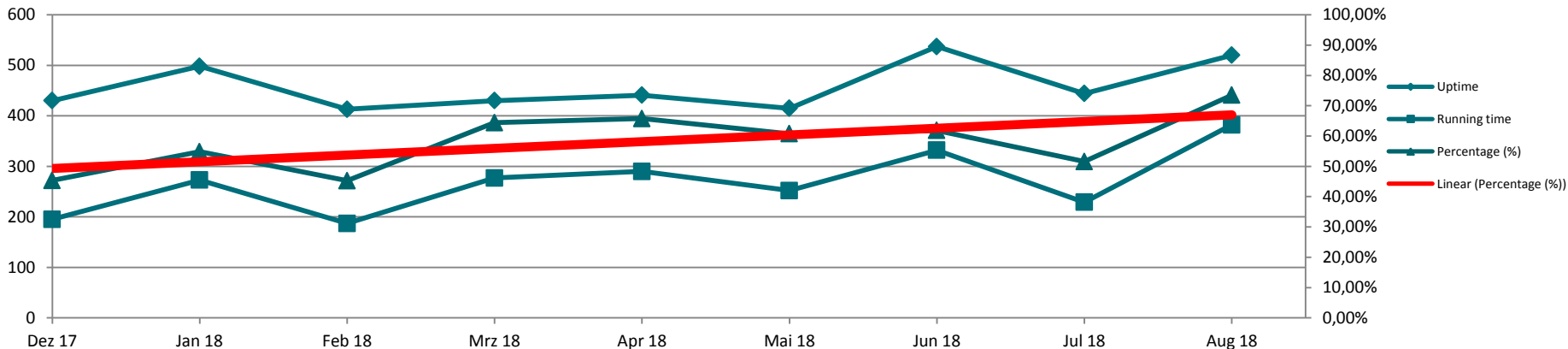
Advantages

- automated machine selection
- transfer of technology data in real time
- process reliability – less collisions
- automated data transfer into machine
- optimized setup processes
- controlled tool requirement on machine -> cost reduction
- flexible planning for all locations with standardization

# Tool.LEADER

## Machine productivity

### STL-C30U C3-3



STL-C40U C3-3										
Month	Dez 17	Jan 18	Feb 18	Mrz 18	Apr 18	Mai 18	Jun 18	Jul 18	Aug 18	Average
Uptime	430	498	413	430	441	415	537	444	520	
Running time	195	273	187	277	290	252	332	229	382	58,13%
Percentage (%)	45,35%	54,82%	45,28%	64,42%	65,76%	60,72%	61,82%	51,58%	73,46%	



**Q A M**

**Quality Assurance Management**



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# Quality Assurance Management

## What is QAM?

automated customer  
documentation

software for stamping  
„Initial Sample Test  
Report (FAI)“

focus on priorities

**Q A M**

Quality Assurance  
Management

CMM programming

quality improvement  
in production

optimized quality  
inspection

# Quality Assurance Management

## Customer documentation



**Initial sample test report (FAI incl. Forecast)**  
2015 ø 9 per week  
2018 ø 35 per week

various dimensional documentations

**inspection certificates/  
work certificates**  
2015 ø 15 per week  
2018 ø 70 per week

saved time /  
week appx. 15 h

saved time /  
year appx. 800 h

### Advantages

protocol templates automatically created for follow-up-orders

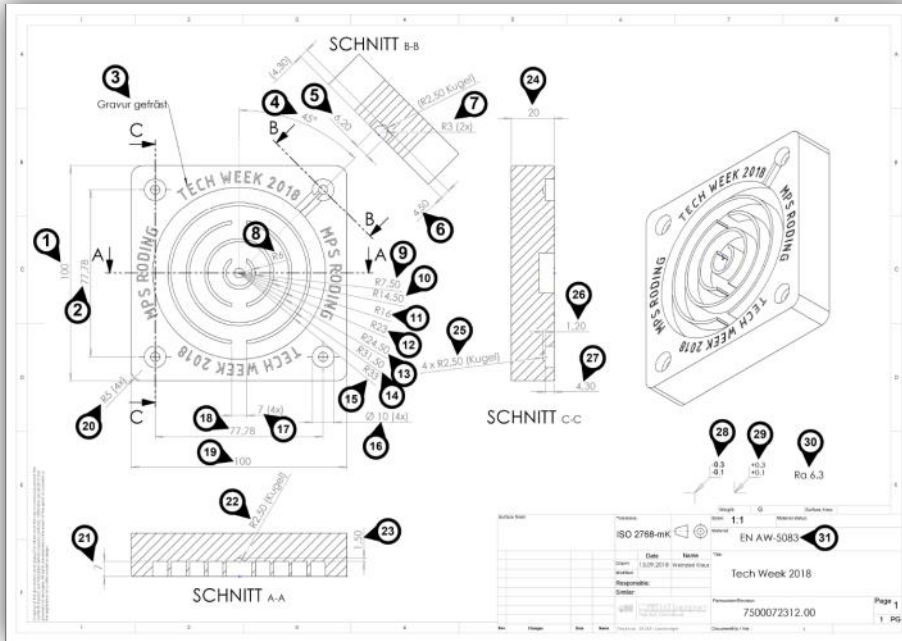
error reduction with data maintenance

databased

saving time through forecast



# Quality Assurance Management Software for stamping FAI



integrated  
stamping software

export of  
inspection items

Advantages

integrated standards and tolerances

increased cleanliness of documents

easier communication through digital form

automated export of inspection data in QAM

for follow-up-orders → only 2-clicks necessary for template creation

waiting time for employees



high downtimes of machines

order control

- most important information always visible
- visual categorization of appointments
- measurement program available, FAI template created etc ...

routing

- simple filtering of new customer orders
- creation of measurement program, parallel to programming and production
- drawing visible with 2-clicks

Advantages

reduced production waiting periods for measurement results  
approx. 50 - 70%

reduction downtimes from production machines

better preparation of the measurement tasks / early consultation of customer

saving time /  
day 2 h

saving time  
/ year 500h

# Quality Assurance Management

## Optimized quality assurance



Customer criterion
<ul style="list-style-type: none"><li>- Roughness must be in tolerance, also after laser-marking</li><li>- Every drawing must be stamped with the "customer-stamp"</li><li>- Pay attention by special instruction for "replacement-deliverys"</li><li>- "Injection-symbol" ==&gt; no unfinished faces!</li></ul>
Product's notes
Attention: Absolute no defects on surface by measurement 54 allowed.



- Advantages**
- dynamic information can be updated quickly, easily and across locations
  - information is displayed automatically for follow-up-orders
  - automated email distribution when changes to criteria

# Quality Assurance Management

## Improvement of quality in production

quality information already available at the start of production

Order data automatically at order creation (Identification)

Which documents must be created in QA?

Mistakes from SAP of previous orders

Special material information from QAM database for follow-up orders?

What does the customer want? Which items must be paid special attention?

Auftragsbegleitende Material-Informationen **MPS**  
Parts & Systems

Auftrags - Informationen aus SAP			
Materialnummer	12524789	Auftragsnummer	1295191
Zeichnungsnummer	12000301-205-05-200A	Index	01
Auftrag - Projekt	133337943	Kunden-Bestellnummer	1234-5678
Geplantes Werk	1250	Est.-End-Termin	30.01.2017
Kunde	0		
Stanzmenge	10		
Auftragsmenge	15.000		

Geforderte Kundendokumentationen aus SAP			
X Werkbescheinigung 3.1	X FAU	Menge	3,00
X Werkzeugnis 2.3	Fertigungsprotokoll		
X Anwesenheitskarte 3.1	MPS-Protokoll		
X Materialbestätigung	MPS-CPP-Protokoll		
X Materialkennzettel			

Informationen zum Material			
Reklamationen zum Material			
Reklamationsnummer	Quellnr.	Fehlerart	Beschreibung
200010607	13.03.2013	Maßabweichung	Passung 12H7 um 0.012mm zu groß
200010630	27.03.2013	fehlende Oberfläche	Schneidkante zu groß
Schneidkante bei 60µm / ist 70µm			

coming soon....

Customer criterion
<ul style="list-style-type: none"><li>- Roughness must be in tolerance, also after laser-marking</li><li>- Every drawing must be stamped with the "customer-stamp"</li><li>- Pay attention by special instruction for "replacement-deliverys"</li><li>- "Injection-symbol" size: no unfinished faces!</li></ul>

Product's notes
Attention: Absolute no defects on surface by measurement 54 allowed.

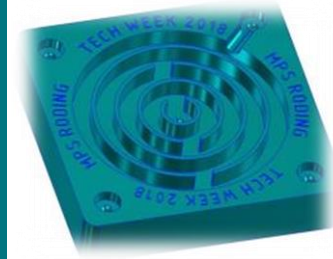
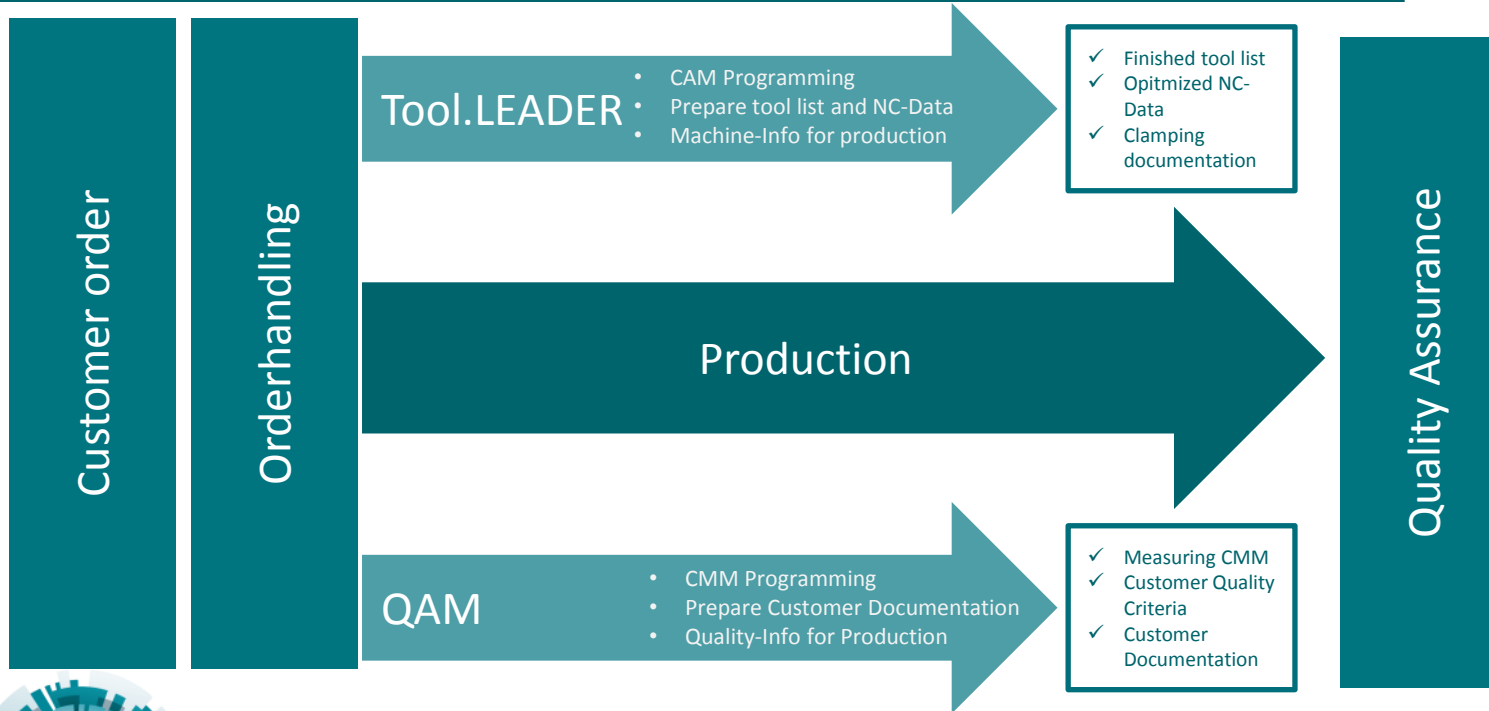


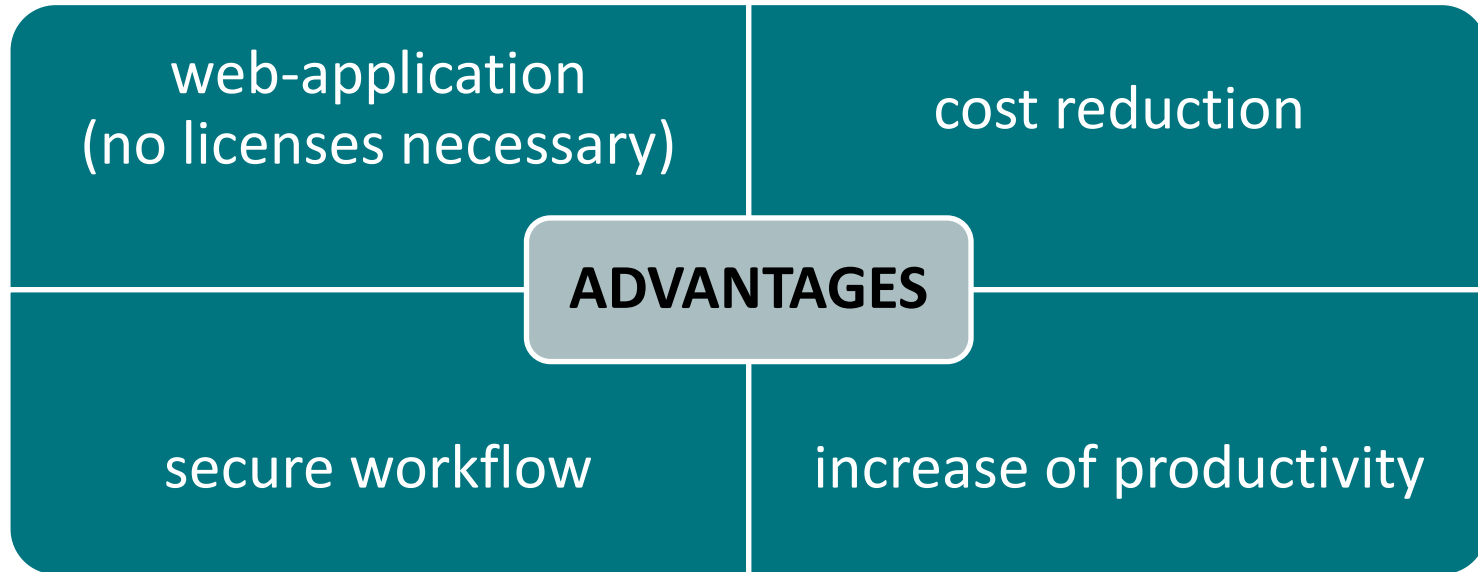
# Numbers, data, facts

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# Numbers, data, facts

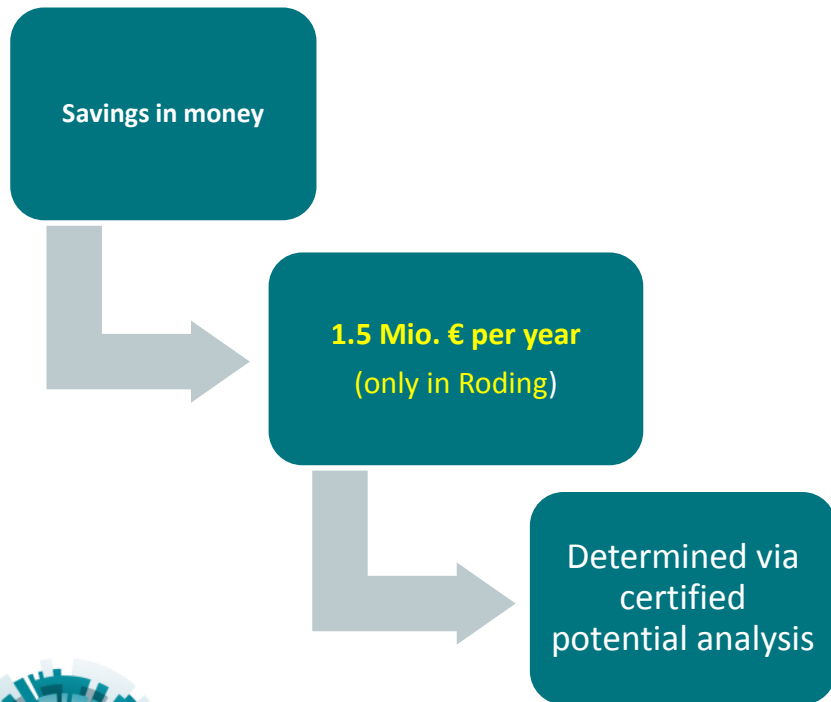
## Life-cycle of order „MPS-Labyrinth“





# Numbers, data, facts

## Savings



Kapitel / Rolle:	Qualitativ						Quantitativ	
	Nutzen-Bewertung						Einsparung pro Jahr in Std.	Einsparung pro Jahr in Euro <sup>3</sup>
	Produktqualität (weniger Ausschuss)	Prozessqualität (weniger Fehler)	Terminreue	Flexibilität	Transparenz	Standardisierung		
2. CAD/CAM NC-Programmierung	50	70	60	25	55	60	2.866,71 Std.	47.300,71 €
3. Werkstattorientierte NC-Programmierung	22	28	21	15	26	23	4.304,45 Std.	58.869,94 €
4. Schichtführer	0	10	15	15	20	10	1.210,85 Std.	21.795,32 €
5. Lagerist	5	10	10	0	5	10	1.032,55 Std.	13.216,62 €
6. Werkzeuglager <sup>4</sup>	0	0	0	0	4	0	–	232.000,00 €
7. Werkzeug-Einsteller	5	14	24	19	19	14	2.793,03 Std.	35.664,94 €
8. Maschinenpark	51	81	82	43	62	88	59.604,93 Std.	891.834,55 €
9. Qualitätssicherung	3	8	8	8	13	8	440,00 Std.	6.600,00 €
10. Produktions-Controlling	0	0	0	0	15	15	–	191.304,52 €
11. Service-Abteilungen	0	3	5	5	8	3	36,67 Std.	550,00 €
<b>Summe</b>	<b>136</b>	<b>224</b>	<b>225</b>	<b>130</b>	<b>227</b>	<b>231</b>	<b>72.289,19 Std.</b>	<b>1.499.136,59 €</b>



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Thank you for your  
attention!