FA Service

Industry 4.0 by Trumpf

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FA Service
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Processing Alone is No Longer the Cost Driver

An example of a customer order XY (2x20 punch parts)

- Accept order
- Create customer data
- Store CADs
  **Inquiry** Duration 10min

- Understand order
- Read CAD
- Input to calculation tool
- Market-ready pricing
  **Calculation** Duration 15min

- Convert drawing
- Check drawing
- Nesting
- Technology
  **Programming** Duration 15min

- Create work plan
- Plan order
- Create production order
- Create paper-ware
  **Order Preparation** Duration 10min

- Assign machine to order
- Set priority (situation-aware)
- Monitor order
  **Shift control** Duration 2min

- Read set-up plan
- Search for tools
- Prepare tools
- Load tools into machine
- Assign material
  **Set-up** Duration 10min

- Move sheet
- Do punching work on machine
- Separate parts
- Sort parts to pallet
  **Punching** Duration 5min

- Get new transport pallet
- Take out parts
- Commissioning
- Create piles
- Transport
  **Intralogistics** Duration 10min

- Assemble customer order
- Create shipment documentation
- Pick & pack
- Signal readiness
  **Shipment** Duration 10min

- Order documents; record feedback
- Compare to quote
- Invoice
  **Invoice** Duration 10min

Sum: 97min (5min being used for punching/production)
Smart Factory Management

Black-box handling of production complexity

- Orders
- Material
- Resources

SMART FACTORY

Finished goods

Production Planning  Shift Planning  Remote Service  Intralogistics

Manuf. Execution  Maintenance Plans  Condition Monitoring  …
Business Platform
Core promise and goals

Key success factor: Maximal efficiency for production companies

- Initially full focus on production processes
- … but also taking advantage of horizontal integration

… but also: Software platform

- ONE platform (cloud)
- MANY partner solutions
- Initially for sheet metal processing, later extended range
Business Platform AXOOM

AXOOM focuses on increasing efficiency throughout the value chain

1. Online order and customer acquisition
2. Digital and efficient order management
3. Fast, integrated material procurement
4. Automatic optimization of the shop floor
5. Cost efficient logistics
6. Full transparency in everyday business

Maximum efficiency throughout the entire production value chain
Connecting software, machines and processes with the individual human in the focus

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<tr>
<th>Platform</th>
<th>„Excellence“-Services</th>
<th>„Professional“-Services</th>
<th>„Basis“-Services</th>
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<td>▪ Hosting of business processes</td>
<td>▪ Mobile Interactions</td>
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<td>▪ Marketplaces &amp; communities</td>
<td>▪ Maintenance Module</td>
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App-Store as a core element
Partner Applications on the AXOOM Platform

TRUMPF as partner who develops own applications
Data Services:
Highly Secure and Scalable Data Transmission

Components are used as heterogeneous data sources (e.g., gas pressure)

Special Software transmits data of the OPC server securely into factory and cloud

Example TRUMPF Condition Guide: Machine consumes OPC server data.

OPC server as a normalized interface to data sources
Factory Gate: Central Coordination Point in the Factory
Detailed access control within the factory and towards the outside

- Machine access remote and mobile
- User interface for feedback and control
- No unsecure incoming connections
- Compliant with enterprise IT policies
Condition Based Services
Consulting services in connected manufacturing

In-House analysis can show the road to a smart factory

➡️ First step:
Process analysis right at the customer’s shopfloor

➡️ Second step:
Recommendations for implementing specific solutions
### Examples for Industry 4.0 implementation at TRUMPF

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<th>Punching tools</th>
<th>Sheet metal fabrication</th>
<th>Milling</th>
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<td>System for Schedule Management – Scheduling – Logistics</td>
<td>Digital networking in milling processes</td>
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Thank you!