BPF Industry 4.0 Seminar

June 6th, 2017
Production of Plastics and Rubber Machinery

*Source: VDMA / National Statistical Office

*Estimate

Source: VDMA / National Statistical Office
World Export to UK
Plastics and Rubber Machinery

* World Exports data for 2016 isn’t complete

Source: VDMA / National Statistical Office
World Exports to UK 2016 (2015)
Plastics and Rubber Machinery

Shares in %

- Germany: 35.8 (36.0)
- Italy: 19.4 (16.8)
- USA: 8.2 (8.7)
- France: 6.6 (7.1)
- Austria: 5.6 (7.2)
- China: 4.6 (3.7)
- Luxembourg: 3.2 (2.4)
- Netherlands: 2.3 (0.5)
- Switzerland: 2.1 (5.5)
- Others: 12.2 (12.0)
- others: 12.2 (12.0)

* World Exports data for 2016 isn’t complete

Source: VDMA / National Statistical Office
OECD Leading Indicators

Source: OECD, VDMA
Circular economy

Smart factory

I 4.0

Smart services
- Condition monitoring
- Predictive maintenance
- Remote control
- Central computer
- Smart machine
- Intelligent user interfaces
- Online services
- Remote maintenance
- Data exchange
- Self-optimising
- Virtual machines
- Traceability
- Smart production
- Individualisation
- Smart services
- Remote maintenance
- Traceability
- Smart production
Example Kaeser compressors: „Just buy the air you need“

Operator model
Using of collected date for the optimization of compressed air supply
Service/maintenance
4.0-Practical example

Individualised office scissors

- Pointed and round Scissor blades as inserts
- Additive manufacturing of 3D lettering
- Injection moulding of scissor handles for left and right hands
- Unique part identification with DM code

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Monitoring of one machine
Monitoring of several machines
Monitoring of many machines
Networked monitoring by central computer/mobile access
Networking of machines from different manufacturers?

→ Possible with standardised interfaces!
OPC UA as Basis

Standardised information model for the exchange of data and services

Open manufacturer independent standard

Modular (object-oriented) structure

Extensive possibilities of data exchange
  » Reaction on value changes
  » Definition of Events/Alarms
  » File transfer

Extensible
OPC UA interfaces for plastics and rubber machines

OPC UA Specification (IEC 62541)  Companion Specification for Device Integration

Companion Specification for Industry

CS for Plastics and rubber machines  CS for Robotics  CS for Machine Vision

EUROMAP 77 (Injection moulding machine – MES)  EUROMAP 79 (IMM – Robots)

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Thank you
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