Digitalization in Machine Tool Manufacturing at EMO 2017

Uwe Ruttkamp | Head of Machine Tool Systems
July 25, 2017 | Bad Neustadt (Saale)
Press conference prior to the EMO 2017
Our holistic approach
Specific for end customers and machine builders

Product manufacturer perspective

Product design | Production planning | Production engineering | Production execution | Services
1 | 2 | 3 | 4 | 5
Machine concept | Machine engineering | Machine commissioning | Machine operation | Machine services

Machine builder perspective
Our holistic approach
Specific for end customers and machine builders

Product manufacturer perspective

1. Product design: Machine concept
2. Production planning: Machine engineering
3. Production engineering: Machine commissioning
4. Production execution: Machine operation
5. Services: Machine services

Machine builder perspective
Our holistic approach
Specific for end customers and machine builders

Product manufacturer perspective

Machine builder perspective
Design and simulate the product

NX CAD/CAE/CAM
NX Mold Design
Design and simulate the product

NX CAD/CAE/CAM
NX Mold Design
Our holistic approach
Specific for end customers and machine builders

Product manufacturer perspective

Machine builder perspective
Production planning for part manufacturing

Plan and validate your production process

NX CAM
Our holistic approach  
Specific for end customers and machine builders

Product manufacturer perspective

Machine builder perspective
Production Engineering

Process planning and job preparation

NX CAM
Sinutrain
VNCK
Our holistic approach
Specific for end customers and machine builders

Product manufacturer perspective

1. Product design
2. Production planning
3. Production engineering
4. Production execution
5. Services

1. Machine concept
2. Machine engineering
3. Machine commissioning
4. Machine operation
5. Machine services

Machine builder perspective

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Production execution

Setting the benchmark with smart solutions in machine operation

SINUMERIK Operate Sidescreen
Production execution

Make your production more efficient and flexible

Analyze MyPerformance
Our holistic approach
Specific for end customers and machine builders

Product manufacturer perspective

1. Product design
2. Production planning
3. Production engineering
4. Production execution
5. Services

Machine builder perspective

1. Machine concept
2. Machine engineering
3. Machine commissioning
4. Machine operation
5. Machine services
Take over the control of your down-time and service costs

Analyze MyCondition In line

Services
Services

Full transparency over your machines everywhere, at any time

Manage MyMachines for MindSphere
Our holistic approach
Specific for end customers and machine builders

Product manufacturer perspective

1. Product design
   - Machine concept

2. Production planning
   - Machine engineering

3. Production engineering
   - Machine commissioning

4. Production execution
   - Machine operation

5. Services
   - Machine services

Machine builder perspective
MindSphere

Dr. Ralf Michael Wagner | COO MindSphere
July 25, 2017 | Bad Neustadt (Saale)
Press conference prior to the EMO 2017
MindSphere drives new business opportunities

Quickly and easily connecting real things to the digital world.

Creating a strong partner ecosystem with Open Platform as a Service (PaaS)

Enabling unmatched closed-loop innovation with complete digital twin

Driving business success with powerful industry applications and digital services
MindApps – MindSphere – MindConnect

MindApps
Asset transparency and analytical insights into machines, plants, fleets and systems

MindSphere
Various cloud infrastructures: Public, private or on-premise

MindConnect
Secure plug and play connection of Siemens and third-party products
MindConnect

Connecting Products, Plants, Systems and Machines with MindConnect

Open standards for connectivity, e.g., OPC UA

Plug and play connection of Siemens and 3rd party products

Secure and encrypted data communication
MindSphere enables customers to get started quickly

STEP 1 CONNECT
Get MindSphere user account, receive and integrate directly with Sinumerik or integrate Connector Box into machine / equipment

STEP 2 CONFIGURE
Configure data acquisition, connectivity and Visual Analyzer via MindSphere

STEP 3 GO
Monitor e.g. health status of all assets and drill into details using MindApp Manage MyMachines or Fleet Manager
Open interfaces for development of customer and industry specific apps

Leading Cloud Infrastructure: SAP, AtoS, Microsoft Azure and Amazon Web Services offered as public, private or on-premise
Delivering value with asset transparency and analytical insights into machines, plants, fleets and systems

Open Partner Ecosystem with application marketplace
Fleet Management

Always up to date
The key data for your connected components and systems
Product Intelligence

Automate insight from product performance data to create actionable intelligence with the complete digital twin (PLM / IoT integration)

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MindSphere Open Partner Ecosystem

Exemplary Set of Partners

- bluvision
- FUJITSU
- Amazon Web Services
- IBM Watson
- Atos
- accenture
- chemtech
- Capgemini
- Intel
- Orange
- Business Services
- PwC
- HCL
- Deloitte
- Microsoft Azure
- Tata Consultancy Services
- OMNITRIC
- Siemens

Predefined Partner Roles

- Consulting/Strategy Partners
- Connectivity Developer
- Application Developer
- Technology Provider
- System Integrator
- IaaS Provider

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Dr. Ralf Michael Wagner | Siemens AG | COO MindSphere | EMO press conference | July 25, 2017
Thank you.
Our holistic approach
Specific for end customers and machine builders

Product manufacturer perspective

1. Product design
   Machine concept

2. Production planning
   Machine engineering

3. Production engineering
   Machine commissioning

4. Production execution
   Machine operation

5. Services
   Machine services

Machine builder perspective
Our holistic approach
Specific for end customers and machine builders

Product manufacturer perspective

1. Product design
2. Production planning
3. Production engineering
4. Production execution
5. Services

Machine concept
Machine engineering
Machine commissioning
Machine operation
Machine services

Machine builder perspective

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Machine concept

Design and simulate the machine concept

NX Mechatronics Concept Designer
Our holistic approach
Specific for end customers and machine builders

Product manufacturer perspective

1. Product design
2. Production planning
3. Production engineering
4. Production execution
5. Services

Machine builder perspective

1. Machine concept
2. Machine engineering
3. Machine commissioning
4. Machine operation
5. Machine services
Machine engineering

Reduce the footprint of your machine with higher power density

SINAMICS S120
Booksize motor modules
24A, 45A, 60A

- 33%
- 50%
- 19%
Machine engineering and PLC code generation for TIA Portal

Sizer and Step7 / TIA Portal
Save up to 50% of your engineering time

SINUMERIK 840D sl
TIA Portal
Safety Integrated plus
Our holistic approach
Specific for end customers and machine builders

Product manufacturer perspective

1. Product design
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3. Production engineering
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5. Services

Machine builder perspective

1. Machine concept
2. Machine engineering
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4. Machine operation
5. Machine services
Virtual Commissioning

Mechatronics Concept Designer

Hardware in the Loop

SIMIT
Machine commissioning

Validate the machining process in the virtual world

NX Virtual Machine
Run MyVNCK
Our holistic approach
Specific for end customers and machine builders

Product manufacturer perspective

1. Product design
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Machine concept
Machine engineering
Machine commissioning
Machine operation
Machine services

Machine builder perspective
Proven automation solution & technology competence

SIMATIC, SINUMERIK, SIMOTION, SIMOTICS, SINAMICS and SIRIUS
Machine operation

The new dimension in the human machine interface

SINUMERIK blackline plus panels

1 2 3 4 5

15" 19" 22" 24"
Make your machine unique
Faster to your own machine interface

SINUMERIK
Create MyHMI / WinCC
Machine operation

Make your machine unique
Faster to your own machine interface

SINUMERIK
Create MyHMI / WinCC

1 2 3 4 5
Machine operation

Make your machine unique

Turn-key solutions

SINUMERIK
Customized operator panels
Excellent surface quality in shorter machining time

**SINUMERIK**
Nodding compensation

**Without Nodding compensation**

**With Nodding compensation**
Machine operation

The armor for your machine with incredible usability

SINUMERIK Collision Avoidance ADVANCED
Get the best out of your machine tool:

- Surface quality
- Machining time

Analyze MyWorkpiece/ Toolpath
Our holistic approach
Specific for end customers and machine builders

Product manufacturer perspective

1. Product design
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Machine concept
Machine engineering
Machine commissioning
Machine operation

Machine builder perspective

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Building an open and attractive ecosystem hosting different kind of applications from different players

Integrated, open and future-oriented digitalization platform

CNC Shopfloor Management Software

- MindSphere
  - In Cloud
    - On/Off customer site
- SINUMERIK Integrate
  - In Line
    - On customer site
- SINUMERIK
  - In Machine
    - Device/In-Field
- SINUMERIK
  - Edge

Already 42 Software applications available
SINUMERIK Edge and IoT connectivity

High speed data processing enables new business opportunities

SINUMERIK Edge

MindSphere

Siemens MindApps

OEM / 3rd Party MindApps

Low frequency data

NEW

Synchronized high frequency data

Siemens EdgeApps

OEM / 3rd Party EdgeApps
All digital, technology and automation highlights for EMO 2017 are lined up along the digitalization value chain.

Objectives:
- 1. Product design
- 2. Production planning
- 3. Production engineering
- 4. Production execution
- 5. Services

Product manufacturer perspective:
- Product design
- Production planning
- Production engineering
- Production execution
- Services

Machine builder perspective:
- Machine concept
- Machine engineering
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- Machine services

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Experience Digitalization in Machine Tool Manufacturing

a new dimension in

machining
machine tool operation
machine tool engineering
Thank you.