Digital Motion Control Services
We digitalize your production and keep it running!

Aditya Ramkrishna – Head of Sales
Digital Factory – Motion Control Services
Motion Control: Geared motors, Motors, Drives and CNC systems for machine tools and manufacturing industries

<table>
<thead>
<tr>
<th>SIMOGEAR Geared Motors</th>
<th>SIMOTICS Motors</th>
<th>SINAMICS Drives</th>
<th>SINUMERIK 840D sl</th>
<th>SINUMERIK 828</th>
<th>SINUMERIK 808</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIMOGEAR Geared motors for all industries</td>
<td>SIMOTICS Motion Control motors for all industries</td>
<td>SINAMICS low-voltage drives for all industries</td>
<td>CNC solutions for modular machine tool concepts</td>
<td>CNC solutions for standard machine tool concepts</td>
<td>Entry level solution for machine tools</td>
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Customer Service for Motion Control (worldwide ~ 1500 employees)
Motion Control Services – Our service portfolio at a glance

Ensure availability

Increase productivity

Create sustainability

Reduce costs

Optimize Asset Management

Ensure availability

Increase productivity

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Optimize Asset Management
Identifying and optimally using all potentials – Our digital services for a connected world of machines

We are there as a skilled partner to assist you on your path to digitalization.

Consulting
Discovering potentials

Digitalization Check as a Service
Gaining transparency & certainty

Digitalization Preparation
Creating the preconditions

Implementation
Connecting machine tools

Data and Process Analysis
Deriving optimization activities

Optimization
Improving manufacturing processes

Maintenance
Ensuring availability of your IT system
Digital Motion Control Services – Consulting

Description of the Service

Discovering potentials

- Identify and clarify your goals
- Focus on optimization of your production
- Result is a concept tailored to suit your needs, including
  - technical review
  - determination of potentials
  - identification of suitable modules of our digitalization software

Our offerings

**Digital Consulting**
We identify the specific opportunities that digitalization offers to you. The result of this workshop is a requirement specification that can be used to create quotations. Available for CNC Shopfloor Management software modules: AMP, MMP, MMT, MMM, or SFI RM.

**Starter Workshop Analyze MyCondition (AMC)**
We introduce the functionality of AMC, including the creation of a sample machine.

**Industrial Security Assessment**
We evaluate the current security status of your Industrial Control System (ICS) environment

Benefits

- Comprehensive consulting tailored to your needs
- Concrete recommendations on how to utilize your opportunities of digitalization
Digital Motion Control Services – Digitalization Check

Description of the Service

Gaining transparency and certainty

• Comprehensive data inventory and assessment of your hardware
• Concrete recommendations to ensure that your machines can be optimally connected to the IT system

Our offerings

Digitalization Check as a Service
The service is provided on-site by the Siemens organization. Data inventory and assessment of your hardware are evaluated standardized by a trained Siemens technician and without downtimes. After that, one of our experts evaluates the ability of your machine park to be digitalized. The final report gives you a transparent overview of how to connect your machine park.

Benefits

• Detailed overview of the digitalization capabilities of each machine
• Greatest possible transparency of the incurred costs for the digitalization preparation
• Clear digitalization roadmap for each line of machines by year and investment
Digitalization Check as a Service
- the blue-print for networking your shopfloor and for planning ahead

Gaining transparency & certainty

Customer report & recommendations
Digital Motion Control Services – Digitalization Preparation

**Description of the Service**

**Creating the preconditions**
- Update to state-of-the-art technology
- Get your machine tools ready for digitalization, using software updates, hardware upgrades or retrofitting

**Our offerings**

**Digitalization Preparation – Software Update**
Digitalization Preparation includes an offering for software updates to create the preconditions to connect the machines to SINUMERIK Integrate or MindSphere.

**Retrofit for machine tools**
If the mechanical components in a machine tool are still in good shape, but the machine in the current state cannot be connected, we get it ready for digitalization with a retrofit. In addition, this can significantly reduce cycle time and improve quality.

**Benefits**
- Machine compatibility with SINUMERIK Integrate and MindSphere
- State-of-the-art technologies for reasonable investment
- Right connection strategy even for your oldest machines
Migration of CNC control to state of the art technology enables digitalization

Famous Metal Ltd. in India

- Upgrade control systems from 810D & 802D to 828D
- Connection of new CNC to MindSphere cloud platform
- Next step: transparency to reduce scrap & rework, increase utilization
Digital Motion Control Services – Implementation

Description of the Service

Connecting machine tools

- Customized connection concept including server, machines and user stations
- Connect machines to higher-level IT system (on-premise or cloud)
- Implement management platform to enhance IT security
- Make data accessible at any time to create transparency for further analysis
- Installation, configuration and implementation of software modules from CNC Shopfloor Management Software Suite
- Get your manufacturing more efficient and profitable
- Trainings will make you familiar with the software

Our offerings

- Server installation and configuration
- Additional user stations
- Machine installation
- Whitelisting for SINUMERIK 840D/840D sl
- Application configuration for MMP/AMC/MMM/MMT/MMT
- Connection for presetter
- Training for AMP/MMT/MMM/MMT/MMC
- Administrator training

Benefits

- Quality implementation done by experts with many years of experience for fast start
- High transparency of machine data enables you to run your machines more efficiently and profitable
- Comprehensive training modules enable you to utilize the full potential of our applications
Our services leverage proven software solutions:
the Siemens CNC Shopfloor Management software suite

### Analyze MyPerformance (AMP)
- **Transparency**
  - KPI, OEE
  - Determination of optimization potentials by utilizing machine data

### Analyze MyCondition (AMC)
- **Maintenance**
  - Condition based monitoring for efficient service and predictive maintenance

### Manage MyPrograms (MMP)
- **DNC**
  - Storage, fast and safe up- and download of NC programs

### Manage MyTools (MMT) and Resources
- **Tools and Shopfloor Resources**
  - The right tool at the right time at the right place, paperless.
  - *in connection with Teamcenter

### Manage MyMachine (MMM)
- **Monitoring**
  - Easy machine integration in MindSphere – the cloud for industrial applications

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Long-standing, reliable and innovative system for the global machine tools world.
Reference: HEMA ENDÜSTRİ A.Ş. - TURKEY

Solution

AMC and AMP Installation on DMG milling machine
- Transparency analysis of machine with Sinumerik Digitalization tools
- Condition-based monitoring to maintain machine parts before damage
- Define OEE measures to increase productivity

Benefits
- Condition based maintenance: Getting information from AMC system allows counter measures to avoid that machine parts are being damaged
- Maximize machine availability while minimizing maintenance time, maintenance cost and monitoring of machine condition
- The customer estimates a productivity improvement of up to 9,0% with the new transparency over production due to AMP

Targets

Ensure availability

Create sustainability

Increase productivity

- Ensure availability by reducing failure rates
- Create sustainability by NC Controller SINUMERIK 840D sl (NCU 730.0)
- Increase productivity of up to 9% with transparent analyze with AMP
Digital Motion Control Services – Data and Process Analysis

Description of the Service

**Deriving optimization activities**

- Discover potentials for optimization and improve your OEE (overall equipment effectiveness)
- Performance of entire data analysis
- Recommendations for action to extend machine service life, save costs and improve quality

**Our offerings**

**Data and Process Analysis**

As part of this service, we will provide support in customizing the SINUMERIK Integrate modules AMP* and/or AMC* for the production process. Subsequently, we will work with you to analyze the data and define actions for continuous improvement. The implementation and effect of the recommended actions will be evaluated in ten subsequent sessions within a period of three years and documented in a service logbook.

**Benefits**

- Optimal usage of software modules AMP* and AMC* identifies optimization measures
- Reliable avoidance of unscheduled machine downtimes
- Early recognition of bottlenecks and improvement of machine utilization
- High transparency due to the service logbook
Customer need
"Increase reliability and avoid unplanned downtime"
- Reduce risk of unplanned downtime
- Avoid possible damage on valuable workpiece

Siemens solution
- SINUMERIK Integrate Analyze MyCondition on a Mill-Turn SINUMERIK 840 D solution line
- Monitoring and regular axis tests by the maintenance team

Benefits
- Identification of emerging breakage pattern
- Faster diagnosis and timely order of replacement part
- Planned maintenance
- Avoided workpiece damage
Digital Motion Control Services – Optimization

Description of the Service

Improving manufacturing processes

- Optimization of production system by leveraging potentials of your machine fleet
- Utilization of our modernization and classical service portfolio as a basis for continuous improvement

Our offerings

- **Service contracts**
  Short response times and the fastest possible repair by qualified service specialists

- **Spare part and repair services**
  We are offering end-to-end spare part strategies to deal with outages – or to improve your spare part management preventively.

- **Retrofit for machine tools**
  If the mechanical components in a machine tool are still in good shape, but the machine in the current state can not be connected, we get it ready for digitalization with a retrofit.

- **Productivity Improvement**
  This service aims to improve the productivity of machine tools with SINUMERIK 840D. Your productivity can be increased by up to 15%.

Benefits

- Preventive measures to secure your investments
- Maximum quality and safety standards direct from the original manufacturer
- Increased machine availability

Consulting ► Digitalization Check as a Service ► Digitalization Preparation ► Implementation ► Data and Process Analysis ► Optimization ► Maintenance

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Digital Motion Control Services – Optimization
JTEKT TORSEN EUROPE, Strépy-Bracquegnies, Belgium
Component supplier / Automotive Industry

Project Information

Productivity Improvement of hobbing machines

JTEKT Strépy-Bracquegnies / Belgium

Products used

<table>
<thead>
<tr>
<th>Before</th>
<th>Now</th>
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<tbody>
<tr>
<td>SINUMERIK 840 D pl</td>
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</tr>
<tr>
<td>840D NCU 573.5</td>
<td>840D NCU 573.5B</td>
</tr>
<tr>
<td>Software Version 6.4.18</td>
<td>Software Version 6.5.55</td>
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<tr>
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<td>Optimized NC programs</td>
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<td></td>
<td>Optimized parameters of</td>
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<td></td>
<td>the NC controller and</td>
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<td></td>
<td>process</td>
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Challenges

1. Analyzing the CNC programs in terms of the possibility to optimize their cycle times
   - Evaluation of the PI potential

2. Speeding up and optimization of the machine with different parameters thus considering the mechanical impact on the machine
   - Possibility of comparison of the mechanical impact on the machine

3. Optimization of the hardware and software characteristics in the laboratory
   - Optimization of the NC program and drive system
   - Short downtime during the implementing period

Customer benefits

- Clear forecast of increase in performance
- A certainty of investment for the customer
- Productivity increase of 7.3%, 8.0% and 6.3%
- Increased product quantities
- Reduced cost/unit
Digital Motion Control Services – Maintenance

Description of the Service

Ensuring availability of your IT system

- System maintenance contracts for the monitoring of your IT system around the clock
- Data base management and Software Updates

Our offerings

Database Services

A Siemens consultant will support you in backing up, maintaining, and updating the SINUMERIK Integrate database. You decide on how and when the service will be provided both remotely and on-site. Six sessions over a period of three years will be scheduled with you.

Benefits

- Increased system availability and reduced unscheduled maintenance and downtime
- Early recognition of system instabilities
- Reduced start-up cost after database loss
Protection of your machines using whitelisting … by blocking unknown applications

How does **whitelisting** work?

- Plant system with whitelisting application control (version selection based on compatibility)

  ![Diagram](image)

  - Attempt to execute application/software
  - Comparison with whitelist
  - In whitelist: Execution of application **approved**
  - Not in whitelist: Execution of application **denied**
Digitalization Service Center of Competence (SoC) – a network of experts close to our customers
PC-Unit retrofit contains cost while guaranteeing spare-parts and IT Security

Before PCU Retrofit

- MMC103
- PCU 50
- V1/V2/V3/V5
- Windows 95 / NT / XP
- Operating Systems no longer support
- OEM applications
- HMI Pro
- HMI Advanced
- PCU Base

Sinumerik 840D pl NCU with SIMODRIVE 611D/U

After PCU Retrofit

- SIMATIC IPC427 D
- HMI Pro for PCU Retrofit
- HMI Advanced for PCU Retrofit
- PCU Base for PCU Retrofit
- Windows 10
- Upgrade
- Engineering

- OEM applications
- Network integration
- Solution Partners

Commissioning

* cannot always be implemented!
Four good reasons for Siemens Motion Control Services

• Comprehensive one-stop shop for innovative data-based and product lifecycle services
• Setting the path for new digitalized service business models by being part of Siemens driving the Digital Enterprise
• Clear focus on reduced total cost of ownership through prolonged machine and plant lifetimes
• Extensive technology, product, industry expertise, available worldwide, 24/7

Keep your plant running and benefit from the new opportunities digitalization offers
Thank you for your attention

Aditya Ramkrishna – Head of Sales
Digital Factory – Motion Control Services