emco

EVERY NETWORK IS ONE OF A KIND. SO ARE OUR SOLUTIONS.



EMCONNECT & DIGITAL SERVICES

Connectivity for optimal workflows & increased productivity

EMCONNECT

- / Full networking with all information and applications
- / Intuitive user interface optimized for touch operation
- / Ongoing expansion of available apps
- / Customized applications are possible
- / Optimized for the EMCO machine portfolio
- / Easy update and upgrade options



All required information and systems can be centrally accessed from the machine

HIGHLIGHTS

- / EMCONNECT stands for connectivity and networking of the production environment. It enables functions such as:
  - Access to office computers and CAD / CAM systems
  - Web browser for accessing information and IT systems
  - Interfaces for seamless integration into the operating environment
  - Remote diagnostics and maintenance of the machine
- / Innovative online services for optimised machine operation based on machine data
  - Machine status and evaluations always and everywhere in view
  - Expanded diagnostic options for reducing downtimes and service visits
  - Maintenance management to support use-dependent predictive maintenance
- / EMCONNECT creates the prerequisite for the paperless workstations at machinery
- / Clear display of monitoring of the current machine status and production data ensures a structured production process
- / EMCONNECT is designed as an open platform for machine integration into the production environment
- / EMCO's modular system is ideal for the flexible implementation of applications designed for customer and project-specific requirements
- / Consistently available for all current controls (SINUMERIK 840D sl/One, Heidenhain TNC 640/TNC 7, FANUC 31i-B) depending on the machine type as well as training software (Concept machines, programming stations) and virtual programming workstations (SINUMERIK Run MyVirtual Machine)

APPLICATIONS FOR OPTIMAL ASSISTANCE, CONTROL AND OVERVIEW



DASHBOARD

Clear and compact - machine status, machine data and operating mode at a glance.

- / Depending on the machine configuration and active mode (JOG, MDA, AUTO)
- / All relevant data such as active program, selected tool, axis positions, etc. at a glance
- / Colored visualization of the current spindle utilization and override values



MAINTENANCE MANAGER

Support for usage-based predictive maintenance based on the online evaluation of machine data.

- / Information about upcoming maintenance activities for the operator at the control
- / Acknowledgement of maintenance activities carried out by authorised users
- / Log book with all maintenance activities carried out



CUTTING CALCULATOR

Support for the operator in optimising of cutting data.

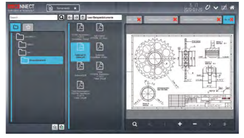
- / Consideration of tool geometry, material tables and machining methods
- / Full screen or sidebar mode with direct transfer of the values to the control



DIGITAL SERVICES

Online services with extended possibilities for optimised machine operation.

- / Evaluations of machine operation
- / Automatic notification in the event of machine standstill and malfunctions
- / Machine data and evaluations for a predictive maintenance of the machine



DOCUMENTS

The digital collection of documents, which can be expanded to meet your individual requirements, provides important information directly at the machine at hand.

- / Direct access to production and workpiece documentation for a paperless production, without travel times
- / Machine documentation incl. service and spare parts documentation
- / Programming guide



REMOTE DESKTOP

Allows direct access from the machine to the office PC - without interrupting the production process.

- / Access to all applications and data on the office PC
- / Use of CAD / CAM systems
- / Access to e-mail



WEB BROWSER

Direct access to information and IT applications saves legwork and the installation of individual PC workplaces in the production area.

- / Access to leading ERP and production control systems
- / The time recording system can be used directly at the machine
- / Information on the intranet and selected websites (e.g. tool manufacturers) depending on the IT configuration



REMOTE SUPPORT

For simple remote diagnostics and remote maintenance of the machine, the EMCO helpdesk team connects remotely to the machine on request.

- / Accelerates problem analysis and resolution
- / Extended diagnostic options based on machine data in conjunction with the EMCONNECT Digital Services
- / Reduces costly machine downtimes



Other applications:

- / MACHINE DATA: Machine data for determining OEE values
- / NOTES: for storage of important notes, e.g. at shift change
- / THREAD REFERENCE: Interactive thread table (metric, UNC, ...)
- / CALCULATOR: pocket calculator with extensive trigonometric functions
- / etc.

Standard-Apps

- Control
- Dashboard
- Machine Data
- System
- Maintenance Manager
- Digital Services
- Remote Desktop
- Settings
- Web Browser
- Remote Support
- TeamViewer
- Service
- Cutting Calculator
- Calculator
- Notes
- Backup & Restore
- File Import
- Documents
- GD&T
- EMCO TechSheet
- Thread Reference
- Tricalc

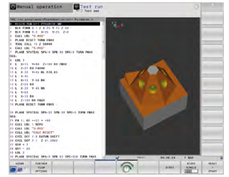
Optional

- Shopfloor Management

MACHINE CONTROL AND EMCONNECT







EMCONNECT offers situation-specific options for operation

- **The familiar CNC control as the heart of the machine – the usual machine operation is retained**
- **With EMCONNECT, the machine control console becomes the central platform for access to all the required functions and data**
- **With just one click you can switch between EMCONNECT and the CNC control at any time**
- **The sidebar facilitates quick access to your apps, which can also be used simultaneously with the control**
- **Innovative and user-friendly hardware: clear, modern 22" multi-touch display, industrial PC and keyboard with HMI hotkeys**

INDUSTRIAL SECURITY WITH EMCONNECT

When it comes to networking and integrating production machines into the operating environment, IT security is of central importance. The protection against unauthorized access is carried out at EMCO by activation of whitelisting and use of a firewall, amongst other things.

- Effective blocking of malicious software
- Preventing unauthorized access from the network
- No execution of unknown programs on the machine

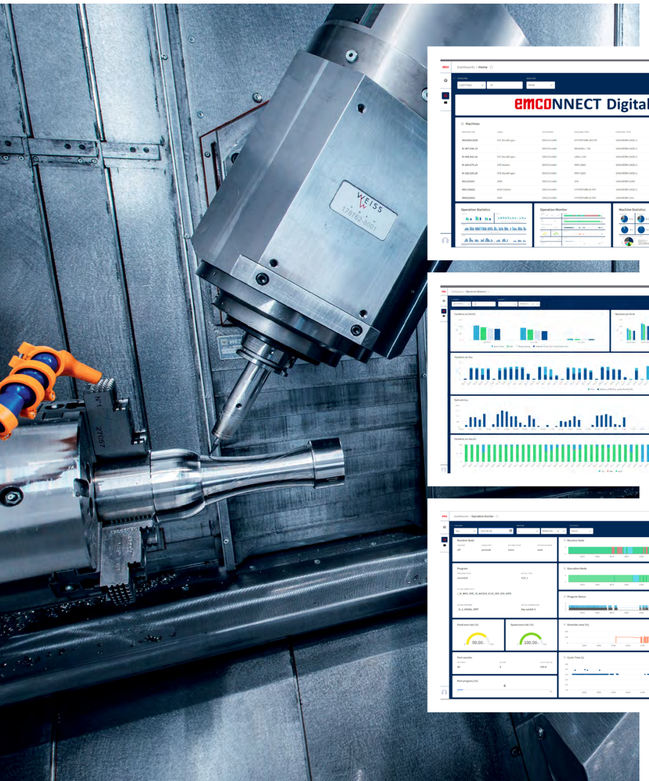
ONLINE SERVICES: KEEP AN EYE ON THE MACHINE STATUS ANYWHERE AND AT ANY TIME

The EMCONNECT Digital Services form the basis for a wide range of online services for optimised operation and maintenance of the machine. The user has the status of the machine in view anytime and anywhere. The automatic notification of the responsible employees in the event of malfunctions or machine standstill, as well as the extended possibilities for remote maintenance, reduces downtimes to a minimum.

HIGHLIGHTS

- Online services for condition monitoring and optimized machine operation
- Machine status and evaluations always and everywhere in view
- E-mail notification in the event of faults and limit values being exceeded
- Remote maintenance with extended diagnostic capabilities to reduce unplanned downtimes
- Maintenance management to support use-dependent predictive maintenance
- Future-proof equipment through continuous further development of online services

TYPICAL EVALUATIONS AND VIEWS



Machine overview

with current operating status of the machines as access to the specific dashboards with detailed views and evaluations

Operation Statistics

with an evaluation of availability, productive operation and produced quantities of the machine

Operation Monitor

with current machine status and all important information about the operation of the machine as well as production progress

- / Machine and programme status incl. chronological progression
- / Piece counts and cycle times
- / Alarm history



Machine Statistics

Spindle running times with speed and load profiles enable evaluations about the use of the machine and form an important basis for predictive maintenance



Maintenance Manager

supports use-dependent predictive maintenance of the machine

- / Display of upcoming maintenance activities incl. remaining running times
- / Log book with all maintenance activities carried out
- / Information for all affected users as well as the operator directly on the control system



Condition Monitor

with the chronological progression of speeds, loads and temperatures of the drives as well as the history of the alarm messages – optionally available as detailed view on the machine status

MACHINE EQUIPMENT AND DATA PROVISION

To support the extended online services and access to the data required for them, the machine is equipped with appropriate hardware and software for a secure connection, independent of the company network.

Machine equipment:

- Hardware and software that automatically generates and stores unprocessed machine-internal information and data about the operation of the machine (machine data).
- Mobile modem incl. SIM card for secure connection of Digital Services independent of the company network.

Data provision:

The Digital Services are based exclusively on machine-internal status and diagnostic data depending on the machine and control type. This includes, for example, operating mode/times, speeds, loads, current consumption, temperatures, axis travels, alarms, messages, states, and machine and control parameters. There is explicitly no recording and transmission of sensitive personal, customer or order data or NC programs.



System requirements:

- Machine control: Sinumerik One/828/840D sl, Heidenhain TNC 640 and Fanuc 31i in preparation
- Access to EMCONNECT Digital Services: Current version of Google Chrome on any end device (PC, tablet, mobile).

SECURE CONNECTION THROUGH A MULTI-LAYER SECURITY CONCEPT

A multi-layer security concept ensures a secure connection of the online services as well as effective protection against unauthorized access to data and machine.

- The connection of the machine for the provision of the online services takes place via a mobile network modem installed in the machine, completely independent of the connection of the machine to the customer's company network.
- Ongoing cellular charges are included in the package with online services and are covered by EMCO.
- It is already ensured at the level of the cellular connection that the connection to the machine is completely separated from the public Internet and thus cannot be reached by unauthorized access.
- In addition, a firewall guarantees the highest security standards to reliably protect machine and company network
- The use of the online services is only possible for registered users of the Customer and authorized employees of EMCO.
- The online services are operated in the data center of MICROSOFT Azure Germany and thus meet the highest standards of data protection. Microsoft Azure Germany meets the international certification standard for information security management systems (ISO 27001) and the protection of personal data in public clouds (ISO 27018)
  cf. https://news.microsoft.com/de-de/microsoft-azure-deutschland-iso-zertifizierungen



Options

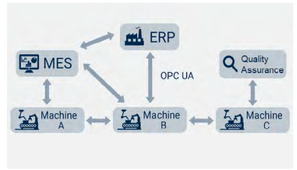




SHOPFLOOR MANAGEMENT

Manufacturing Execution System (MES) for the comprehensive organization of all machinery-related processes

/ Machine Data Collection (MDC), Production Data Collection (PDC)
/ All machine and production states at a glance
/ Detailed planning for optimized production utilization
/ Machine and manufacturer-independent thanks to cooperation with a renowned partner

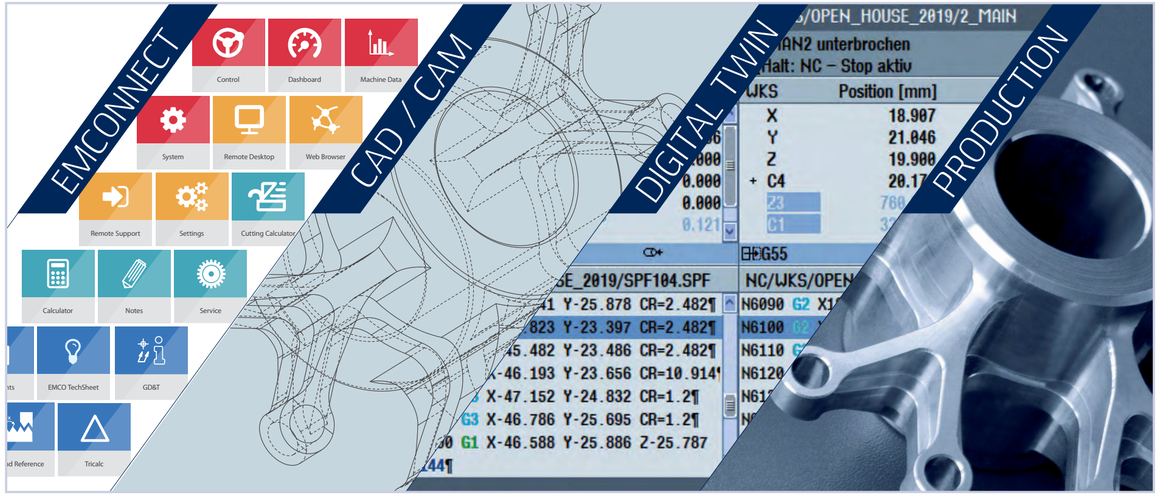


OPC UA

Interface for connection to MDC/PDC systems (basic MDC/PDC data are included by default)

/ Machine, program and alarm states
/ Information about quantities, loading/bar change & programmable signal

VIRTUAL MACHINING PROCESS

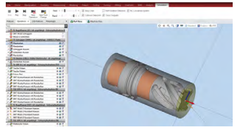


Anyone who wants to design scenarios for what is to come needs as much information as possible from different sources. The EMCO's digital workflow makes it possible to plan, simulate and optimise production processes virtually. The testing of processes and the training of skilled workers can thus be done without any machine downtime.

- **From drawings to good parts in a fast and straightforward way**
- **Consistent digital process chain in cooperation with an experienced partner**

A CONSISTENT PROCESS CHAIN AS A PREREQUISITE FOR DIGITAL PRODUCTION





CAM PROGRAMMING

Program each and every EMCO machine:

- Quick and easy programming of milling and multi-channel turning machines
- Quick and easy learning
- High-performance strategies for roughing operations
- Knowledge-based machining with partially or fully automated programming
- Data import from any CAD system
- Certified post-processors



CPS PILOT

The machine's digital twin ensures workshop-oriented programming during industrial engineering

- 100% identical with the machine including its control and machine-specific parameters
- Original virtual control (Siemens, Heidenhain)
- Reliable collision detection and identification of errors prior to production
- Interfaces for many CAM systems
- Reduced risk and setup times
- Maximized machine utilization



PRODUCTION

- Reduced setup costs
- Reduced downtimes
- Reduced repair costs
- Ideal machine utilization

beyond standard

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