

ECKELMANN

E°Control CNC The brain of your machine





Control **intelligently**

The Eckelmann E°Control CNC offers all functions for virtually any machine type. Based on a reliable hardware, coupled with comprehensive, high performance software it achieves an extraordinary performance range for a host of application areas.

More than **standard**

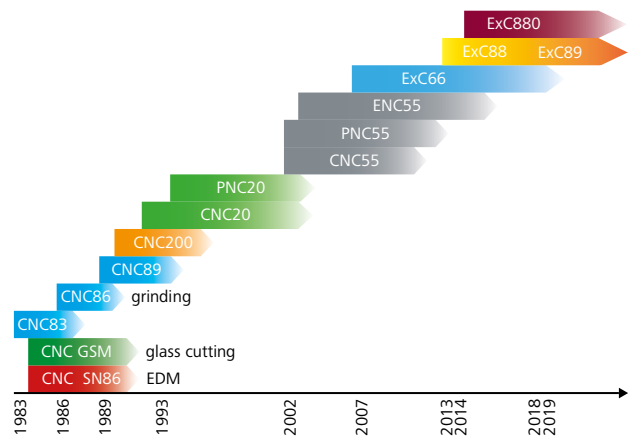
Complete in-house development and production of hardware and software ensures maximum availability, reliability and flexibility. Established development and production processes as well as standards that exceed the common industrial requirements, ensure a high and consistent hardware and software quality. Additionally the controller is predestined for adaptations and extensions according to technology and customer requirements, thanks to its open modular-designed structure. Thus, a standard controller transforms into a perfectly matching command centre for your machine.

Customisation

The E°Control CNC covers a broad range: We create the control package most suitable for you, starting from the simple 2-axes machine to the complex machining centres with many axes and special kinematics. And best of all: All controllers and components are compatible with each other. Consequently, upgrading is possible at any time, without having to forego existing components or needing to create any new ones. You only choose, what you require!

However, not only the CNC functions determine the performance of a machine. You will find a fair amount of know-how in the machine control. Here, the integrated, powerful sequence control (PLC) offers with its exceptionally expansive interface to NC and its comprehensive libraries the best prerequisites for optimum utilisation.

Benefit from over 35 years of **experience**



The E°Control **CNC** through the ages

Eckelmann's experience with CNC controllers reaches back to its founding years. Following an initially strong customer and technology specific phase, the company changed its focus during the course of the years to universal controllers to cover a broad application range. Beyond creating individual solutions for customers, close customer relationships continue to be important to us. Therefore, customer specific extensions and functions continue to be a strength of our controllers.



1983: Grinding machine controller CNC83



2019: High-performance controller E°EXC 89

The **Controllers**

For the use in long-lasting machine tools, a control basis with long availability is required. To achieve this, it needs to be largely independent of the IT industry and its short innovation cycles. For our E°EXC controller families this is a given, the same as the adaptation to the often challenging environmental conditions and compliance with all relevant industry standards.

E°EXC 66

- Embedded controller family up to 16 CNC axes
- Drive interfaces optionally: Analogue, CANopen®, EtherCAT®
- Stackable local bus modules for I/O interfacing (digital, analogue, serial, PWM)
- Additional interfaces: Ethernet, RS 232, USB, slot for SD cards, watchdog output
- PLC programming with CODESYS V2
- Also available as export variant (no BAFA export licence required)



E°EXC 89

- Embedded controller up to 32 CNC and 64 Motion axes (combinable)
- PLC programming with CODESYS V3
- OPC UA server for Industry 4.0 connectivity
- Drive und I/O interfaces via EtherCAT® and CANopen®
- Modular fast E°UBM I/O modules also available for distributed operation
- Interface for safety controller, slot for SD card and USB interface



E°EXC 880 / 882

- Compact Controller up to 32 CNC and 64 Motion axes with integrated digital and analogue inputs and outputs
- Drive interfaces: CANopen®, EtherCAT® and optionally analogue
- 1 x Ethernet, 3 x serial interfaces, port for safety controller
- PLC programming with CODESYS V3
- Also available as export variant

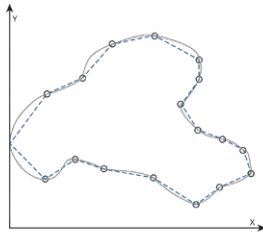




Range of functions

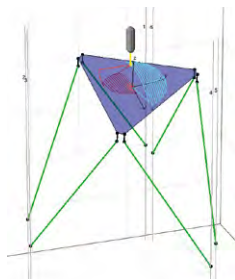
Interpolation types

- Straight line, circle
- Spline and polynomial interpolation



Transformations

- 6-axes transformation (RTCP)
- Shell-type transformation
- Rotation-axis transformation
- Transformation for hexapod and tripod kinematics
- Transformation for articulated arm robots kinematics
- 6-axes transformation for rotary table kinematics (RTCP)
- Cartesian polar transformation



Tool path correction

- Tool radius compensation (WRK)
- Special modules for intermittent operation

Axis correction

- 2D and 3D correction, sag compensation
- Directional height correction
- Spindle pitch error compensation
- Backlash compensation
- Programmable axis configuration

Program interruption or termination

- Interrupt program call
- Storing of the stop position
- Block scan and reverse for random access to the contour

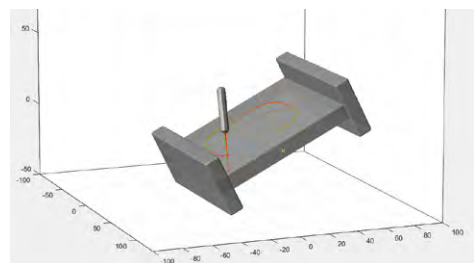
Switching functions on the path

Depending on:

- Distance before M function
- Time before M function
- During acceleration or braking
- Before and after corner

Technology functions

- Inclined axes (e.g. grinding)
- Distance control (e.g. cutting)
- Pairing of axes parallel to the path and rotation axes (e.g. grinding)
- Programming of tool spindles (e.g. grinding, milling)
- Non-cylindrical grinding
- Move to and reverse strategies



Own CNC core

- Complete access to all functionalities
- Individual firmware extension, also exclusive

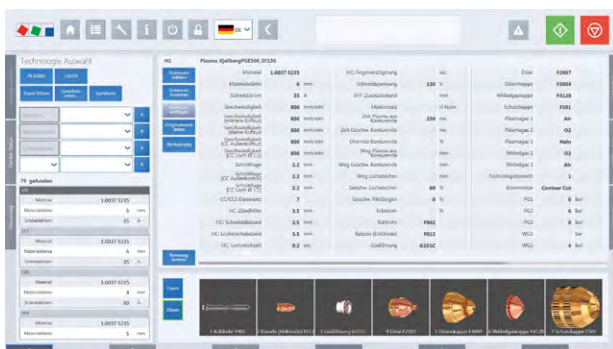
User interface

Operation

A Human Machine Interface (HMI) is well passed being just a machine operation tool. Nowadays, the strategic success factors are ergonomics, flexibility as well as a unique look & feel. Thanks to this, the HMI becomes more and more the business card of the machine and part of the corporate identity of the machine manufacturer.

Our HMI stands out due to its clear design and a quick and intuitive operation.

The user interface offers a clearly structured design with greater user comfort thanks to its simplicity, yet providing intuitive access to all functions of the machine. Additional information can easily be displayed by defining them in a personal dashboard.



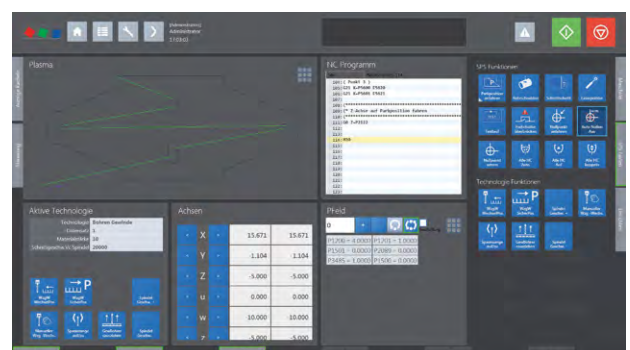
Technology specific

Each Eckelmann CNC comes as standard with HMI Software. Based on this standard, we offer solutions customised for the respective technology. A task-oriented and role-specific approach ensures an easy-to-read layout, as only information and operation elements needed by the operator for the current process step are displayed. The views shown vary and depend on the role and task of the operator.

The visual display depends entirely on the individual user requirements.

Individuality

Would you like to create your own user interface for your machine? In this case, we are happy to assist you as well. Thanks to our solution approaches, independent specifications are possible. We are happy to help you with design and adaptation. The possibilities range from simple visual changes to complete customer and technology specific HMI solutions.





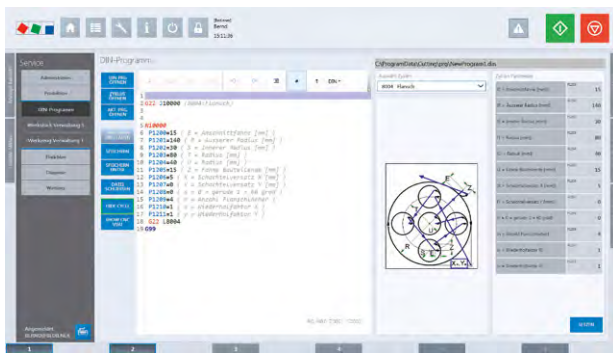
Our **know-how** for your **success**

Whether you use a predefined solution or whether you want to implement your own know-how: With the E°Control CNC everything is possible. We provide you with the right tools as well as our long-term experience in the most varied application areas and help you find the best solution for your machine. And if something is missing to fulfil your individual requirements, we simply build it for you.

Incorporate your **know-how!**

The controller offers numerous powerful functions, far exceeding the DIN 66025 requirements. The use of data fields, external information, the option to operate using complex formulae and variables, allow the creation of your own cycles and sequences.

This enables you to master complicated processes as well. And all this without additional tools, such as a compiler or similar.



The heart of every application is its sequence control (PLC). It controls the complete machine and provides the right sequences at the right time. Furthermore, it allows the machine operator to intervene, in close interaction with the HMI.

The **PLC** is an integral part of the E°Control. For the implementation of your solution, the tool CODESYS (version 2.3 or 3.x) is available. Its comprehensive library provides you with important functions for communicating with the NC and frequently required sequences. This way, you are able to create your application very quickly without needing to be overly much concerned about internal processes.

Customise existing solutions!

You do not want to start from scratch? Use one of our already existing solutions and modify it according to your requirements.

We help you find a **solution** for your application

No capacities? We are happy to create individual solutions for you and to provide training for your employees.

Our team has long standing experience in the most varied areas of application. We are always available to answer any questions you might have or if you unexpectedly need help. In addition to phone and email support, we also offer remote servicing. This saves time and money!



Benefit from our **industry know-how**

Our ready-to-use solutions are available for selected technologies:

- Cutting
- Bar processing
- PCB processing

Benefit from **experience** and **diversity**

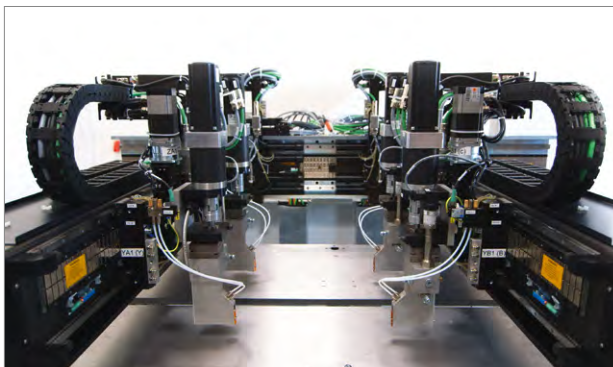
The Eckelmann E°Control CNC is a universal all-rounder. It has already proven itself in many different applications and technologies. And we have the right solution for your machine as well.

Cutting / separating

- Oxy-fuel
- Plasma
- Laser
- Water jet
- Cutting blades
- Wire
- Router
- Saws



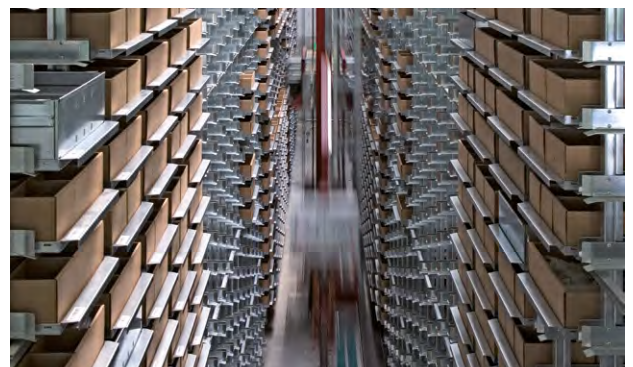
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Joining

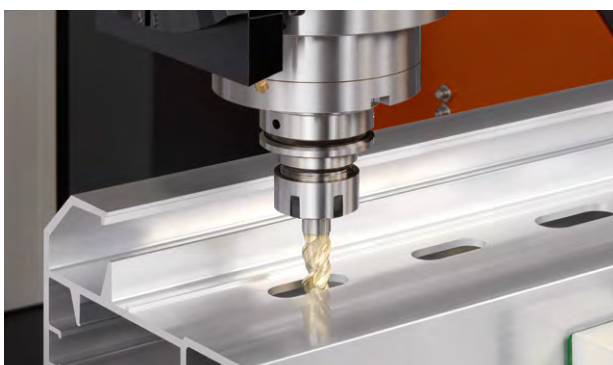
- Bonding
- Plastics welding
- Sewing
- Dosing
- Spraying
- Additive production (3D print)



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Handling

- Transport
- Warehousing
- Placement
- Inspection systems
- Marking
- Separating



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Machine tools

- Milling
- Drilling
- Grinding
- Engraving
- Machining centres
- Deburring, cleaning



Networked intelligence – machine automation@Eckelmann Group

We are always there for you – **globally**. With diverse know-how the experts in machine innovation within the Eckelmann Group offer you innovation partnership as equals.
If you have any questions, **please contact** us.

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