HEIDENHAIN

TNC7: Enter a new level

www.heidenhain.com

TNC7 : Enter a new level

The future has arrived

CNC controls from HEIDENHAIN stand for convenient operation, versatile usability, and high performance. The TNC7 takes this legacy to the next level, combining it with a state-of-the-art user experience, intelligent assistance, and powerful functions:

- User-friendly operation with a short learning curve
- Intuitive visualization of the work envelope and machined part
- Solutions designed around real-life machining challenges
- Advanced machining operations and cutting strategies
- Functions for greater process reliability and process optimization

The TNC7 combines familiar Klartext programming with our all-new graphical programming technology, allowing users to select their preferred programming method and tackle their machining challenges with greater flexibility.

Users also receive assistance throughout the machining process, from initial design to the first in-spec part. The TNC7 is easy to adapt to the full range of machining use cases. No production batch is too large or small, and no part too simple or complex.

Continuously improving

The technologies and functions of the TNC7 are not static. Every enhancement aims to optimize your manufacturing ecosystem and to make machine operation as easy as possible.

High-performance hardware

Quality technology and ergonomics, designed for real shop floors

The TNC7's hardware is built to withstand the challenges of everyday life on the shop floor. Its high-performance components, precision craftsmanship, and ergonomic design contribute to greater user convenience and efficiency, even during challenging jobs.

- Optimized for the shop floor, the Full HD, anti-reflective display is available in 19-inch and 24-inch variants.
- High-performance CPU for fast calculations and graphics processing
- Smooth, highly responsive touchscreen operation
- New keyboard with improved mechanical design and optimized key resistance

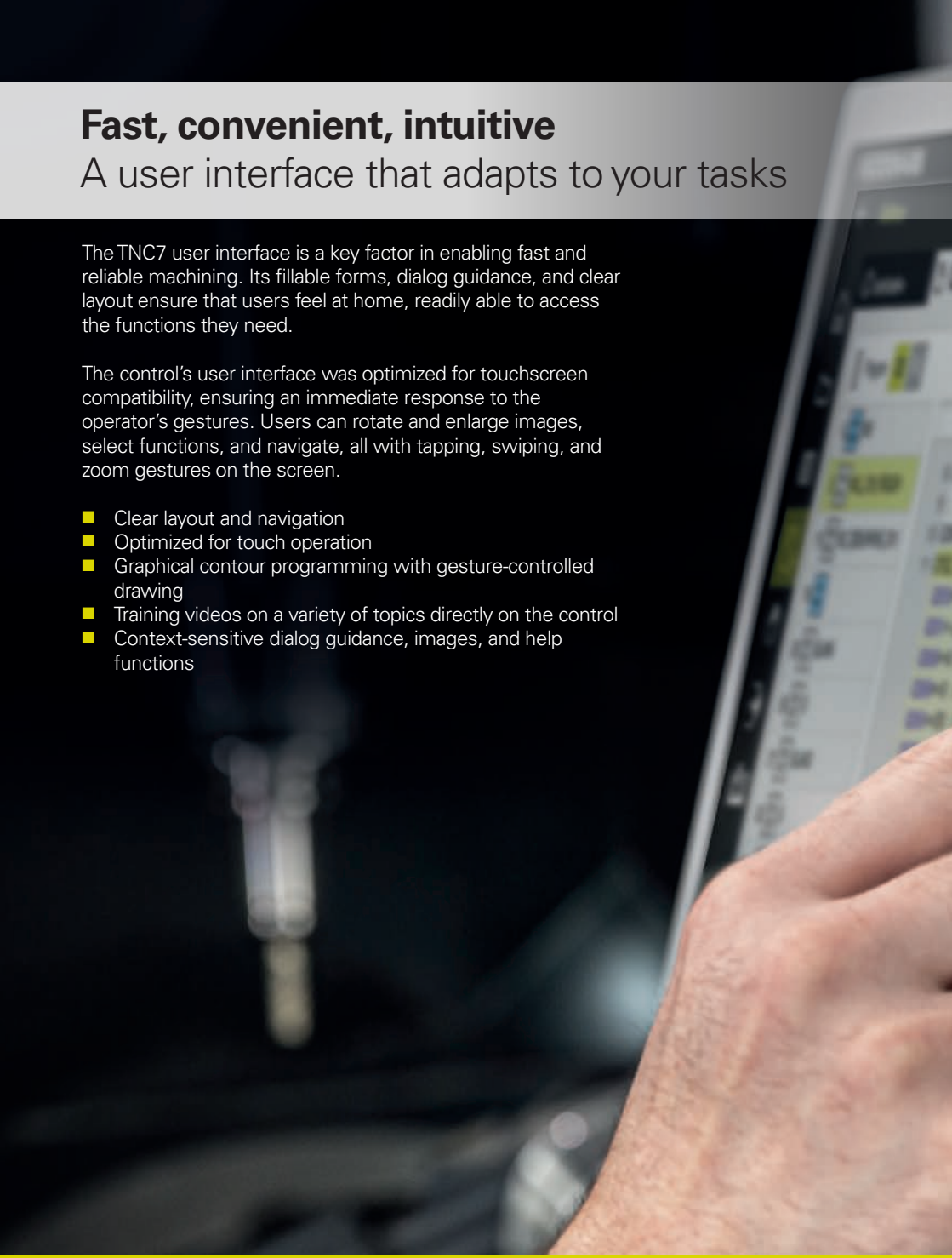
***TNC7*: Enter a new level**

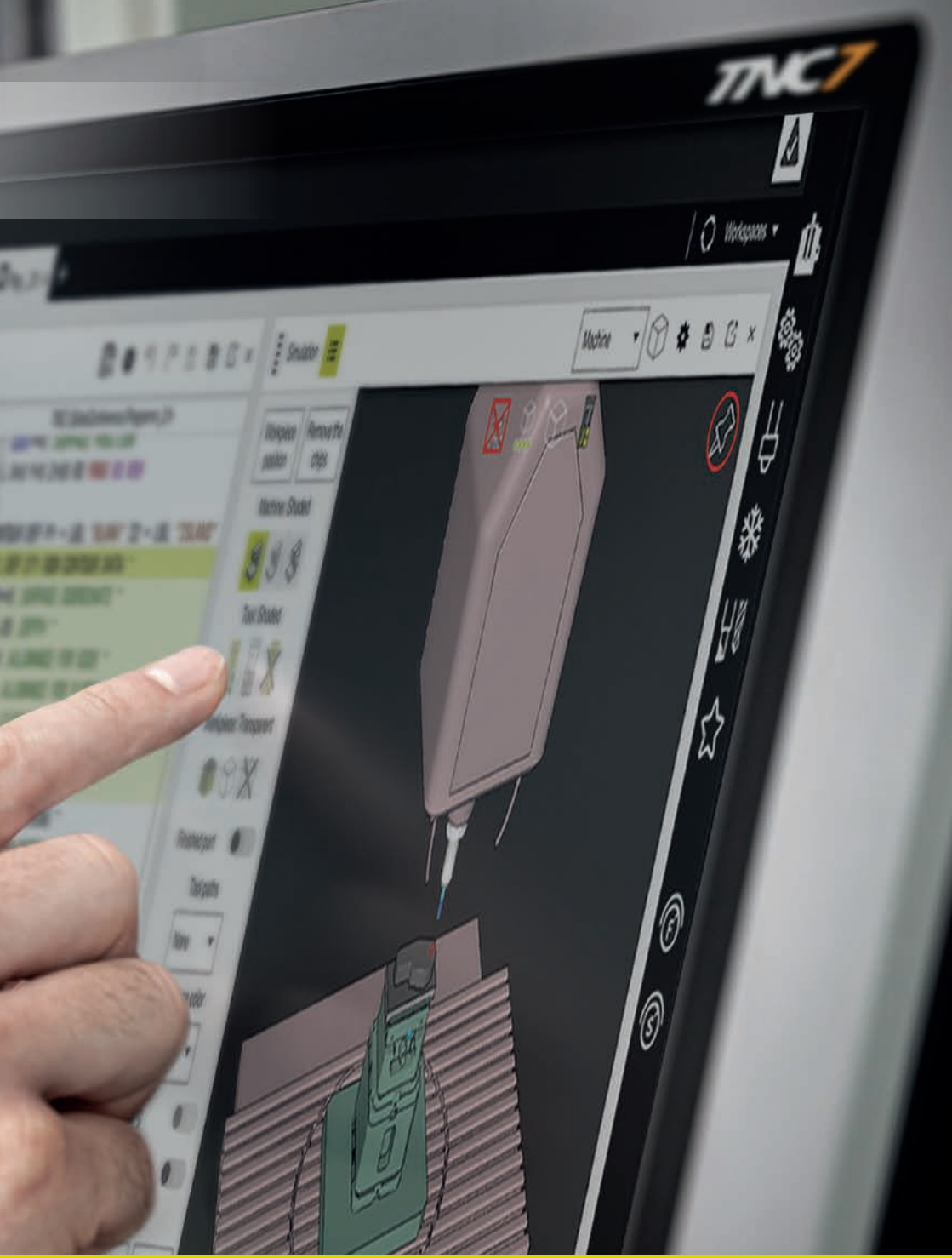
Fast, convenient, intuitive
A user interface that adapts to your tasks

The TNC7 user interface is a key factor in enabling fast and reliable machining. Its fillable forms, dialog guidance, and clear layout ensure that users feel at home, readily able to access the functions they need.

The control's user interface was optimized for touchscreen compatibility, ensuring an immediate response to the operator's gestures. Users can rotate and enlarge images, select functions, and navigate, all with tapping, swiping, and zoom gestures on the screen.

- Clear layout and navigation
- Optimized for touch operation
- Graphical contour programming with gesture-controlled drawing
- Training videos on a variety of topics directly on the control
- Context-sensitive dialog guidance, images, and help functions



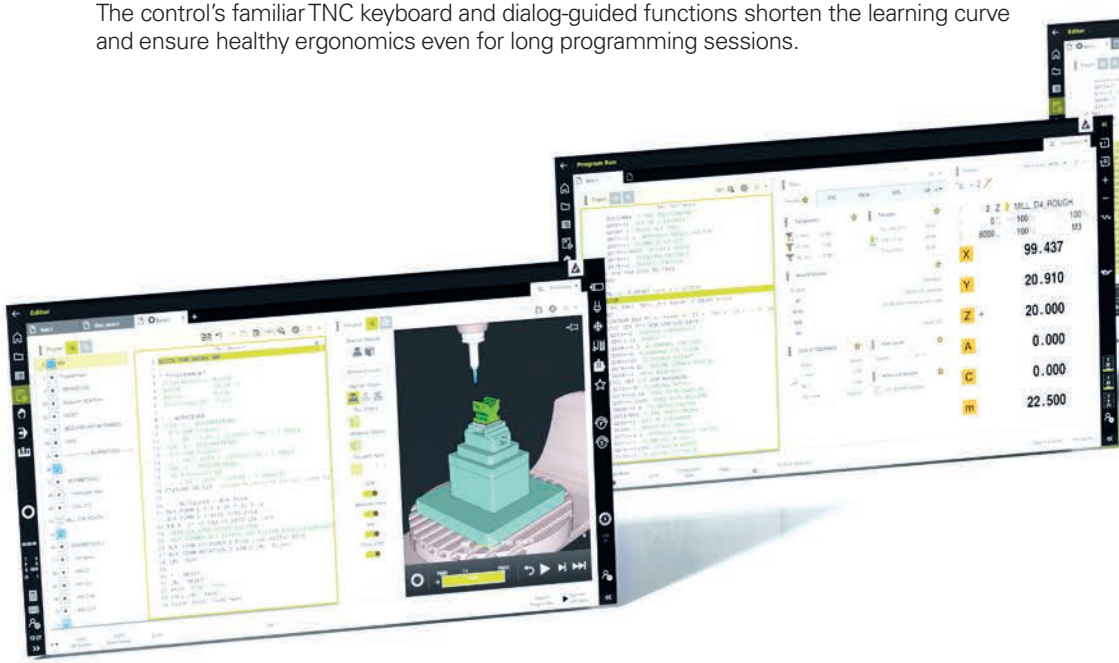

TNC7
Workspaces
Machine

Intelligent programming
Klartext meets graphical programming

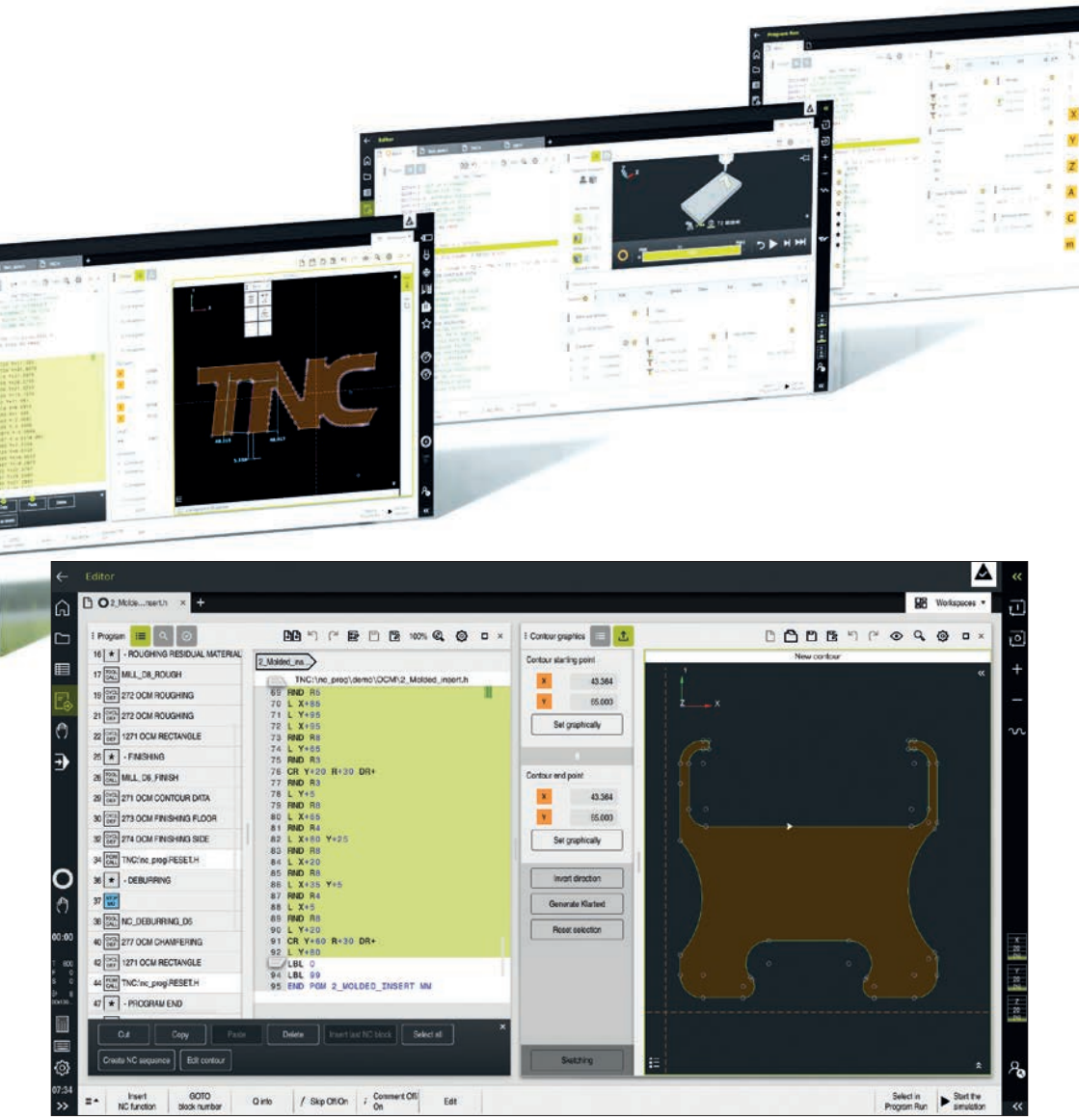
The TNC7 combines familiar Klartext programming with state-of-the-art graphical functions. Users can draw contours directly on the touchscreen using common finger gestures. Based on this drawing, the TNC7 automatically generates an editable NC program in the intuitive Klartext programming language.

Users can therefore choose whether to program solely in Klartext, rely purely on graphical programming, or combine both methods. Already existing NC programs, cycles, and contour programs can continue to be used.

The control's familiar TNC keyboard and dialog-guided functions shorten the learning curve and ensure healthy ergonomics even for long programming sessions.



- Graphical contour programming with contours drawn directly on the touchscreen
- Easy creation of complex contours, including contours that are insufficiently dimensioned for NC programming
- Program creation in the intuitive and editable Klartext programming language
- Reusability of existing NC programs, cycles, and contour programs
- Guided introduction to programming on the TNC7


Editor
Workspaces
Program
Contour graphics
New contour
Contour starting point
Contour end point
Set graphically
Invert direction
Generate Klartext
Reset selection
Switching
Cut
Copy
Paste
Delete
Select all
Create NC sequence
Edit contour
Insert NC function
GOTO block number
Q info
Skip On/Off
Comment On/Off
Edit
Select in Program Run
Start the simulation

Assistance throughout the machining process

From initial design to finished part

The TNC7 supports users through all phases of the manufacturing processes, covering programming, machine setup, program validation, and machining. An extensive package of cycles, intelligent probing functions, and graphically guided workflows simplify pre-machining steps, making them reliable and transparent.

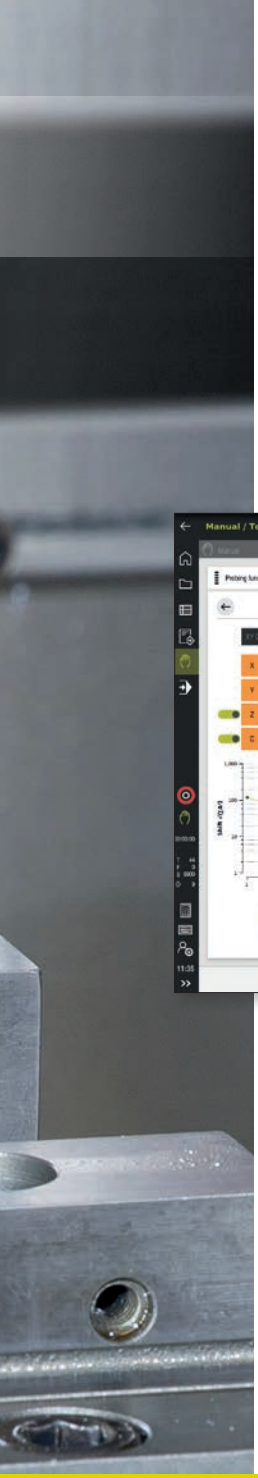
The control's powerful program editor makes modifying even large, complex NC programs intuitive and efficient. Meanwhile, realistic depictions of workpieces, workholding fixtures, and the machine envelope help users to check for and detect possible conflicts early on.

All these TNC7 functions work together to support users in implementing consistent, reliable, and efficient machining.

- Easy-to-use probing functions featuring user guidance
- Ability to open and edit multiple NC programs simultaneously
- Graphically guided workpiece setup in six degrees of freedom
- Functions for safe and reliable 5-axis machining
- Ability to simulate NC programs without changing the operating mode
- User-friendly structuring of large NC programs

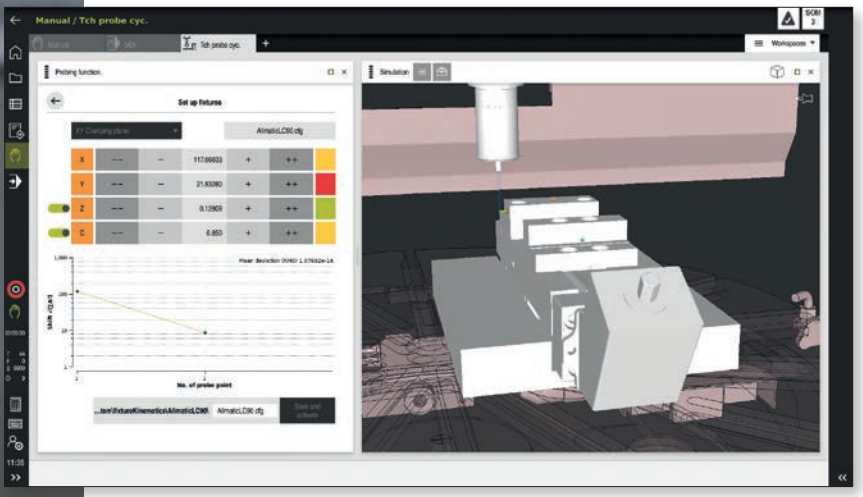
Comprehensive process reliability

Protecting your machines and cutting processes



Dynamic Collision Monitoring (DCM)

The TNC7 has taken Dynamic Collision Monitoring (DCM) to the next level, now including protection not only for tools and machine components but also for workholding fixtures. 3D models of fixtures can be easily imported into the control, allowing their actual position and orientation to be included in collision monitoring. DCM supports operators during manual machine movements and automated machining.



- Collision monitoring for machine components, tools, and fixtures
- Interactive, graphically guided fixture setup and measurement
- Consideration of the actual position and orientation within the work envelope
- Collision monitoring during both manual and automated operation
- Detailed machining simulation for program validation
- Easy importing of fixtures from common 3D file formats
- Fully integrated within the control

Detect process deviations on the control

Process monitoring is fully integrated into the TNC7 control, where it reliably detects deviations from reference runs. Critical errors such as tool breakage can even be caught during the first production run. Rich visualization and analysis functions make it easier for users to evaluate machining processes. Users are able to respond to problems quickly, thereby avoiding secondary damage while boosting productivity.

The control can also support users in defining the best tasks to monitor, enabling the optimization of each additional machining operation.

- Reliably detect critical process problems
- Dependable monitoring through robust, block-level resolution
- Prevention of secondary damage
- Ability to automatically continue with subsequent operations in automated systems, thereby preserving productivity
- Automatic process documentation
- Control-guided support for machine setup and monitoring
- Operation without additional sensors

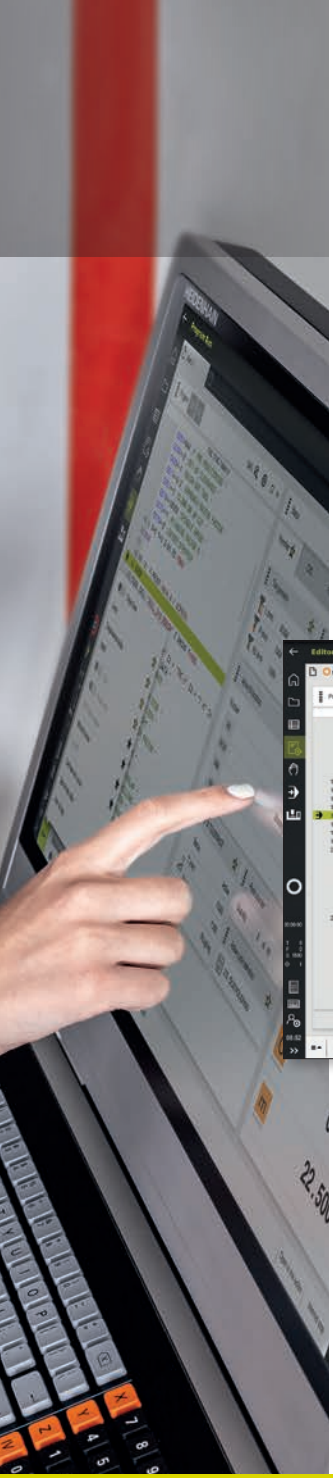
Monitor the condition of machine components
Component monitoring for the TNC7 helps machine manufacturers enable real-time monitoring for important machine-tool components during operation. This monitoring toolbox is integrated into the control and allows for the implementation of different monitoring functions based on the machine's design characteristics.

An overloaded spindle bearing, for example, can be detected, as well as changes in the machine's drive train. The resulting load-related and condition data also provide a basis for predictive maintenance planning.

Depending on how the machine is configured by its manufacturer, the amount of wear present in the recirculating ball screw can be determined, with changes displayed or a warning message issued for an impending overload.

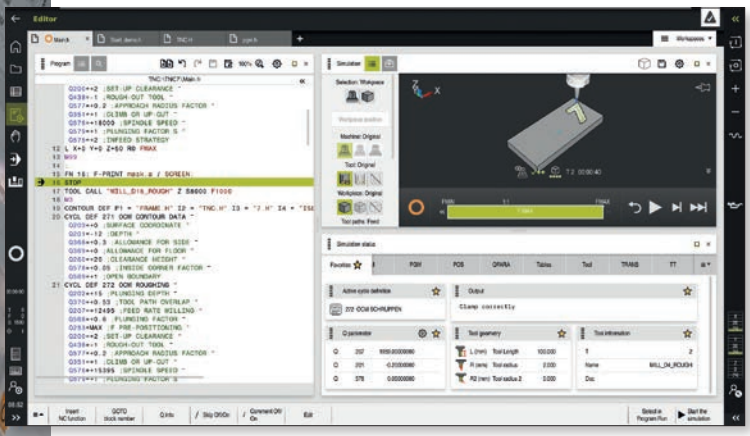
- Protection of important machine components from overload
- Warning messages for critical load levels
- Excellent prevention of crash-induced component damage
- Ability to detect changes and irregularities in the drive train
- Display of wear and condition information
- Basis for condition-based and predictive maintenance

The right screen for every task
Favorites and home menu for quick access



A wide variety of work steps are performed on a CNC machine, including NC programming, machine setup, machine monitoring, and workpiece inspection. The TNC7 control provides a host of functions that support users during every phase of the production process.

Each TNC7 user may need different information and operating elements depending on their specific tasks. To accomodate this reality, the control's interface can be customized to match your personal needs. Frequently used files, status information, and NC functions can be stored as favorites. The home menu, meanwhile, gives you quick access to the tools and features most pertinent to you. Users can also store personal settings in the control's user administration system.



- Customizable workspace for specific tasks and personal requirements
- Dark mode for greater convenience in low-light conditions
- Storable favorites for files, status information, and NC functions
- Home menu for quick access to important functions
- Ability to store personal settings via the user administration system

Versatile product line
Design variants for every application

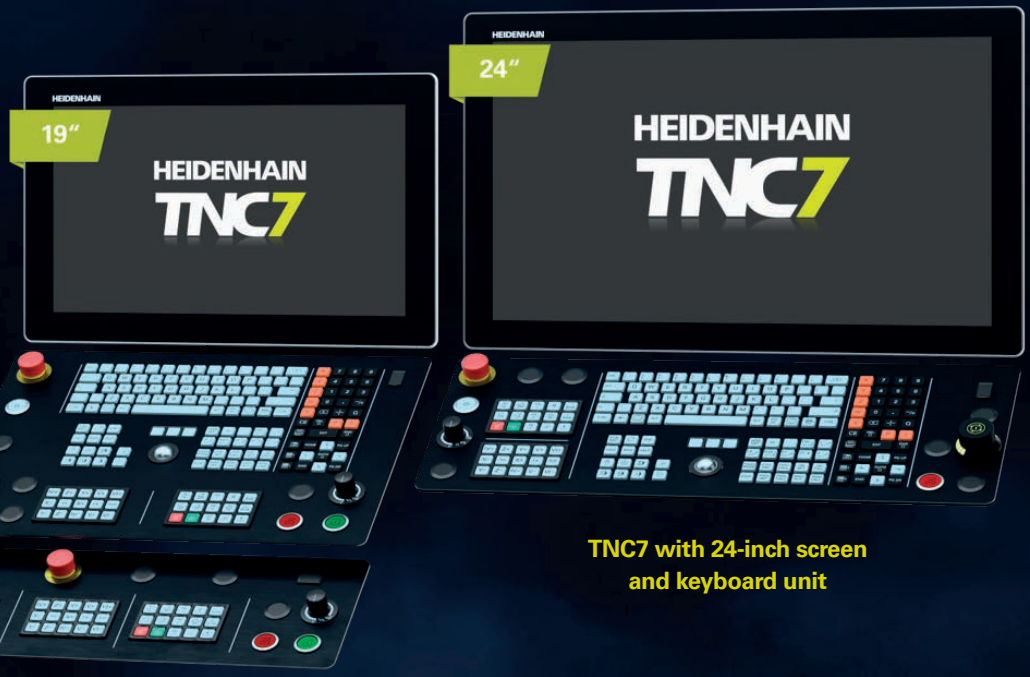
Thanks to a wide selection of hardware variants, we have the right TNC7 for your machine. Its intuitive user interface adapts perfectly to the various available screen sizes. The control's exceptional user experience applies to all variants.

TNC7 go with 16-inch screen and machine operating panel

TNC7 basic with 16-inch screen and keyboard unit or machine operating panel

TNC7 select with 16-inch screen and keyboard unit or machine operating panel

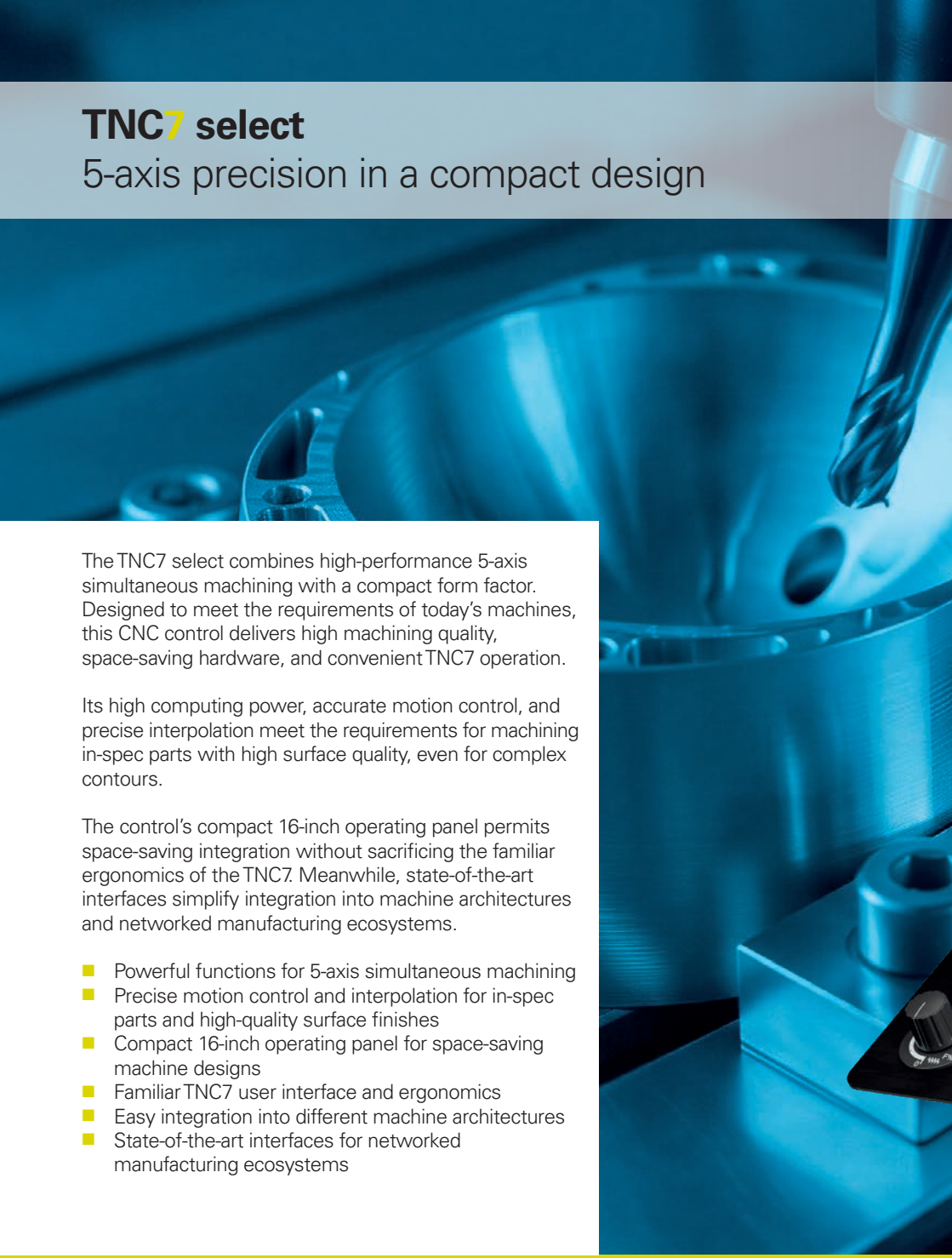
- High-end hardware components
- Full HD anti-reflective screens
- Easy operation throughout your process
- The right solution for every machine design
- High-performance main computers with touch operation
- Robust, ergonomic keyboards and machine operating panels
- Future-ready CPU for high computing and graphics requirements



TNC7 with 24-inch screen and keyboard unit

TNC7 with 19-inch screen and keyboard unit or machine operating panel

TNC7 select
5-axis precision in a compact design



The TNC7 select combines high-performance 5-axis simultaneous machining with a compact form factor. Designed to meet the requirements of today's machines, this CNC control delivers high machining quality, space-saving hardware, and convenient TNC7 operation.

Its high computing power, accurate motion control, and precise interpolation meet the requirements for machining in-spec parts with high surface quality, even for complex contours.

The control's compact 16-inch operating panel permits space-saving integration without sacrificing the familiar ergonomics of the TNC7. Meanwhile, state-of-the-art interfaces simplify integration into machine architectures and networked manufacturing ecosystems.

- Powerful functions for 5-axis simultaneous machining
- Precise motion control and interpolation for in-spec parts and high-quality surface finishes
- Compact 16-inch operating panel for space-saving machine designs
- Familiar TNC7 user interface and ergonomics
- Easy integration into different machine architectures
- State-of-the-art interfaces for networked manufacturing ecosystems

***TNC7*: Enter a new level**

TNC7 basic

Compact control with full TNC7 performance

For many years, the TNC 620 has been a trusted compact and versatile contouring control for milling machines and machining centers. The legacy of this successful control is now being incorporated into the TNC7 family through the TNC7 basic.

As the successor to the TNC 620, the TNC7 basic combines compact hardware with a state-of-the-art user interface and numerous high-performance TNC7 functions, providing machine manufacturers and users easy entry into the current generation of TNC controls.

- Up to eight control loops, of which up to two can be spindles
- Detailed virtual visualization of the workpiece, fixtures, and work envelope
- Efficient cutting strategies with Optimized Contour Milling (OCM)
- Dynamic Collision Monitoring (DCM)
- Graphically guided fixture locating for collision monitoring
- Graphically supported workpiece setup with Model Aided Setup (MAS)
- Component Monitoring for monitoring the condition of machine components

TNC7 go

The intelligent straight-cut control

The TNC7 go is the intuitive straight-cut control for simple milling machines, combining the leading-edge user experience of the TNC7 with practical functions for vocational training, retrofit projects, and everyday shopfloor usage. Novices gain an easy introduction into the world of CNC machining, while experienced operators can readily explore advanced TNC functionality.

- The state-of-the-art graphical user interface with a touchscreen is perfect for vocational training, shop floors, and retrofit projects.
- Novices gain easy entry into CNC machining thanks to the TNC7's intuitive operation.
- Create contours directly on the touchscreen without NC code using the graphical positioning function to draw part geometries.
- Achieve fast results through manual cycles for drilling, face milling, and other typical machining operations with minimal programming work.
- Leverage built-in measurement cycles for tool and workpiece touch probes to simplify probing tasks.

A pioneering control

Dynamic, convenient, intuitive

Virtual simulation of machining steps

Smart programming

Comprehensive process reliability

Assistance throughout the machining process

Enter a new level

TNC7

INTUITIVE
– Exceptionally intuitive machine operation
– Graphically guided setup for workpieces and workholding

COMPATIBLE
– Compatible with all older TNCs
– Proven Klartext conversational programming

FUTURE-READY
– New machining technologies and cutting strategies such as OCM
– Integrated process monitoring for automated tasks
– Digitalization interfaces such as our OPC UA NC Server

TASK-FOCUSED
– Step-by-step approach for all machining tasks
– New workspace layouts for interrelated process steps

ORGANIZED
– Perfect overview of the program, machine, and workpiece
– Customizable workspaces

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