HELLER
Automotive

HELLER Automotive. Inside Competence.

www.heller-machinetools.com

HELLER
Automotive

Inside Competence.
Our extensive know-how allows us to offer innovative and comprehensive production solutions for powertrain, drivetrain and chassis components. Highly productive. For minimal piece-part costs.

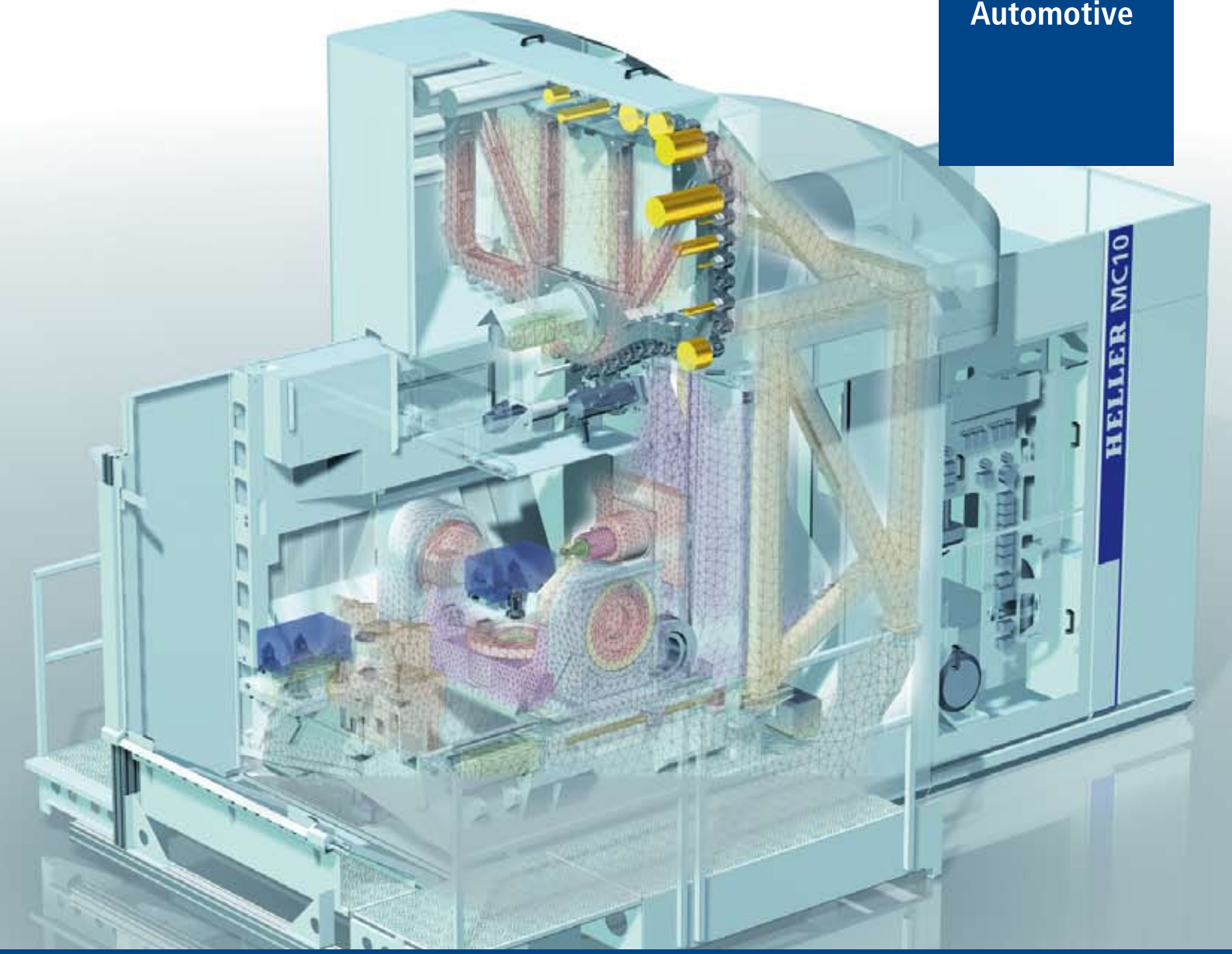
HELLER
Machines

Made to work.
Application know-how and technological competence to cater for all production requirements. With a new generation of machining centres offering a wide range of options in our proven quality.

HELLER
Services

Just closer to you.
Individual services and custom-made service packages ensure optimum productivity and highest availability of your machines. Anywhere in the world, on site and around the clock.

HELLER
Automotive



HELLER manufacturing systems

HELLER ModuleLine.

A safe investment in the future.

As a global automotive insider of many years standing we are familiar with the entire production and supply process in the automotive industry and understand the needs of that industry. Our core competence is in customer-specific production solutions for key powertrain, driveline and chassis components. Over many decades we have acquired Master Competence for a wide spectrum of parts. We are familiar with your processes and your economic requirements. That is why HELLER Automotive has developed new manufacturing concepts offering comprehensive and innovative solutions – always with a focus on minimal piece-part costs.

HELLER Automotive. Inside Competence.
Our manufacturing systems

For prismatic light-duty components

The ModuleLine concept provides manufacturing solutions combining a high degree of flexibility with optimised piece-part costs. With its modular design and easy scalability the ModuleLine is the ideal solution for all market requirements. The modules of the HELLER ModuleLine are configured as stand-alone machining units that can be linked to a fully automated ModuleLineSystem at any time. According to your specific requirements, you only have to invest in the production solution you currently need.

Manufacturing systems for prismatic light-duty components

For prismatic heavy-duty components

Products from HELLER Automotive offer optimum combination possibilities for flexible manufacturing systems. HELLER machining modules can be linked via all kinds of automation systems, e.g. rail-guided vehicles, gantry loaders or robots

Manufacturing systems for prismatic heavy-duty components

For crankshaft and camshaft machining

The manufacture of crankshafts and camshafts requires a high level of technological competence. There is hardly any automotive component in high volume production for which a greater variety of combined technologies is applied. HELLER is among the few manufacturers worldwide providing the complete know-how of the process chain. With our RFK and RFN milling machines, our DRZ turn-chasing centres and a host of machining centres we master all major technologies for pre-machining of crankshaft and camshafts. These powerful special machines can be installed as stand-alone units or in linked mode as a complete manufacturing line.

Manufacturing systems for crankshaft and camshaft machining

HELLER ModuleLine
Full flexibility for your production.

Faster and faster innovation cycles, growing model variety, extreme cost pressure - this triangle of requirements is what you're dealing with on an everyday basis. Today, it is no longer enough for machines to offer high speed and precision. The new challenges are flexibility, modularity, optimum TCO and minimal piece-part costs.

To ensure that our machines meet with your requirements and are ready to respond to future challenges, we have completely transformed and modernised our machining modules. Whether as stand-alone machines or a complete manufacturing system - an investment in HELLER is always an economic and future-oriented investment.

Incremental investment

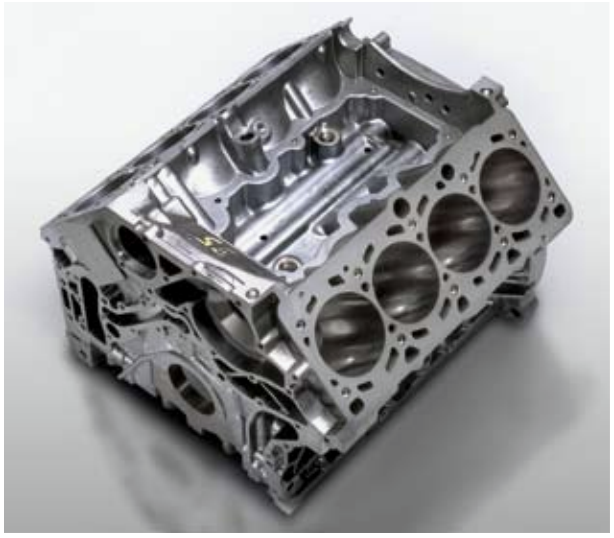
You only require stand-alone machines for your current production but plan to set up a complete manufacturing system in the future? You are producing low volumes at the moment but are expecting a significant increase in volume in the near future? The HELLER ModuleLine gives you the chance to invest in steps. What is a stand-alone machine today can become a complete manufacturing system tomorrow and later be adapted to changes in production volume or different production requirements. With HELLER's ModuleLine everything is possible.

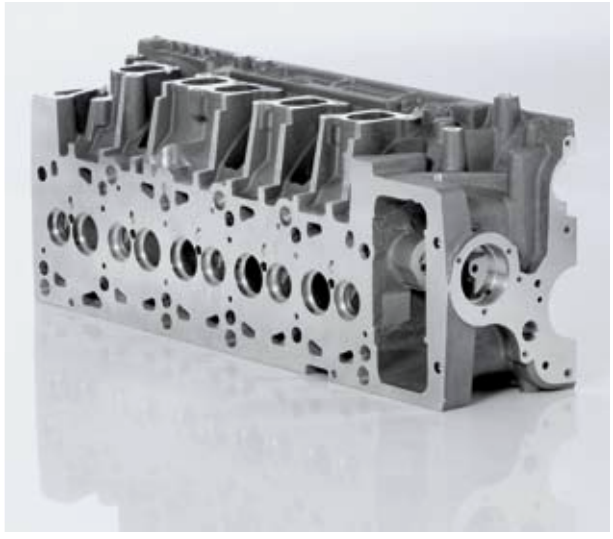
Ideal for any market

Often, the type of loading depends on which market the machines are used. HELLER machines can be loaded manually or automatically. Whether for use in low-cost countries or high-tech production, the HELLER ModuleLine is ready for all market requirements and can be reconfigured as and when required.

Benefits of the HELLER ModuleLine

- **Flexible extendable manufacturing system for series production**
- **Tailored to the requirements of low, medium and high-volume production**





Full flexibility with HELLER ModuleLine

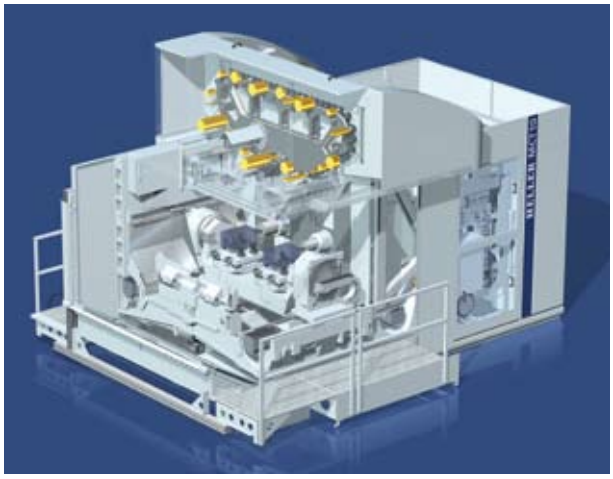
- Individually upgradeable machining modules and workpiece loading systems
- Machining modules prepared for stand-alone operation or automatic workpiece loading
- Flexible workpiece supply ranging from manual conveyors or gantry loaders through to highly flexible ModuleLine handling system

Standard machining modules.
For highest productivity.

ModuleLine machining modules are classified into standard and process modules. Being designed for high-volume production, standard modules provide the highest productivity, whilst process modules are tailored to high accuracy and heavy processes. All machines from the ModuleLine have one thing in common: they provide flexibility as stand-alone modules or can be individually operated in linked mode so that they complement each other in an optimal way in series production.

MC 10/20

MCT 10



MC 10/20:

- For high productivity
- Robust and process-secure design
- Fast tool and workpiece supply to the work area
- Inherently rigid design of the machine bed
- Column with optimised rigidity with stepped guideways providing high and stable process forces
- Narrow machine width provides small footprint and short transport paths for workpiece supply
- Optimum balance between high speed and energy consumption
- Fewer setups and higher accuracy due to 5-sided machining

MCT 10:

- Basic structure identical to MC 10/20
- Use of 2 independent traversing columns
- Compensation of X, Y and Z-axis
- Simultaneous workpiece change, common workpiece axis
- Chain-carriage magazine with two direct tool changers

At a glance: highlights of the ModuleLine modules

Spindle drives

- Shortest run-up times of all spindle drives with synchronous motors ensure short idle times: 16,000 rpm in 0.9 sec., 10,000 rpm in 1.2 sec.
- Motor spindle with increased torque: power 48 kW, torque 490 Nm, 10,000 rpm in 2.1 sec
- For heavy machining (MC 200): 2-range gear box with 8,000 rpm and 822 Nm torque and optional installation of an out-facing slide

Cutting Tools

- HSK63 and HSK100 spindle taper on MC 10/20 and MCT 10, max. tool length 600 mm
- An optional tool magazine for process machines allows storage of five additional tools
- Supplementary functions during idle time: tool breakage monitoring, tool taper cleaning, tool blow-out and coding

Temperature stabilisation

- All feed motors are isolated from the machine bed via cooled intermediate flanges.
- Spindle and feed motor cooling circuits are controlled and adjusted to the machine bed temperature.
- The work area cover is isolated from the machine frame via an air gap to prevent heat input from chips.

High chip removal rate

- Robust design of the machine column with stepped guideways provides high rigidity in direction of machining

Ready for dry machining

- Chips do not contact machine bed
- Single and dual-channel MQL system
- 5th axis for inverted machining
- Optimised chip evacuation from machine

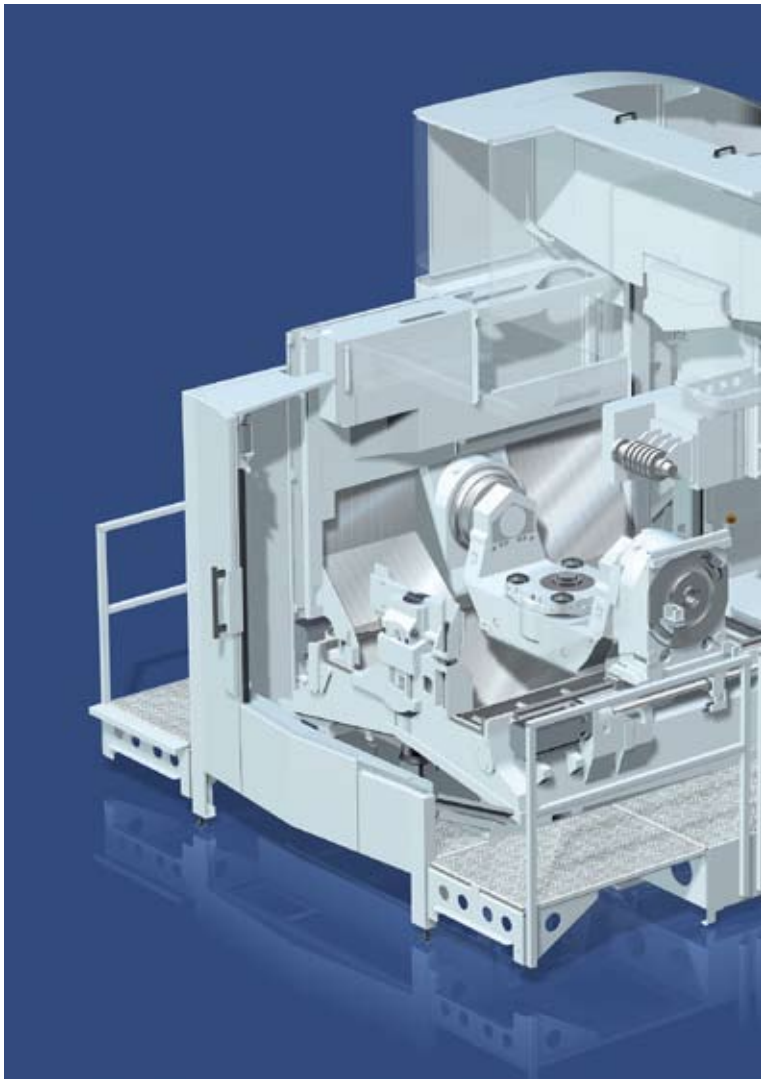
Process machining modules.
For highly precise and heavy processes.

MC 200

MC 200:

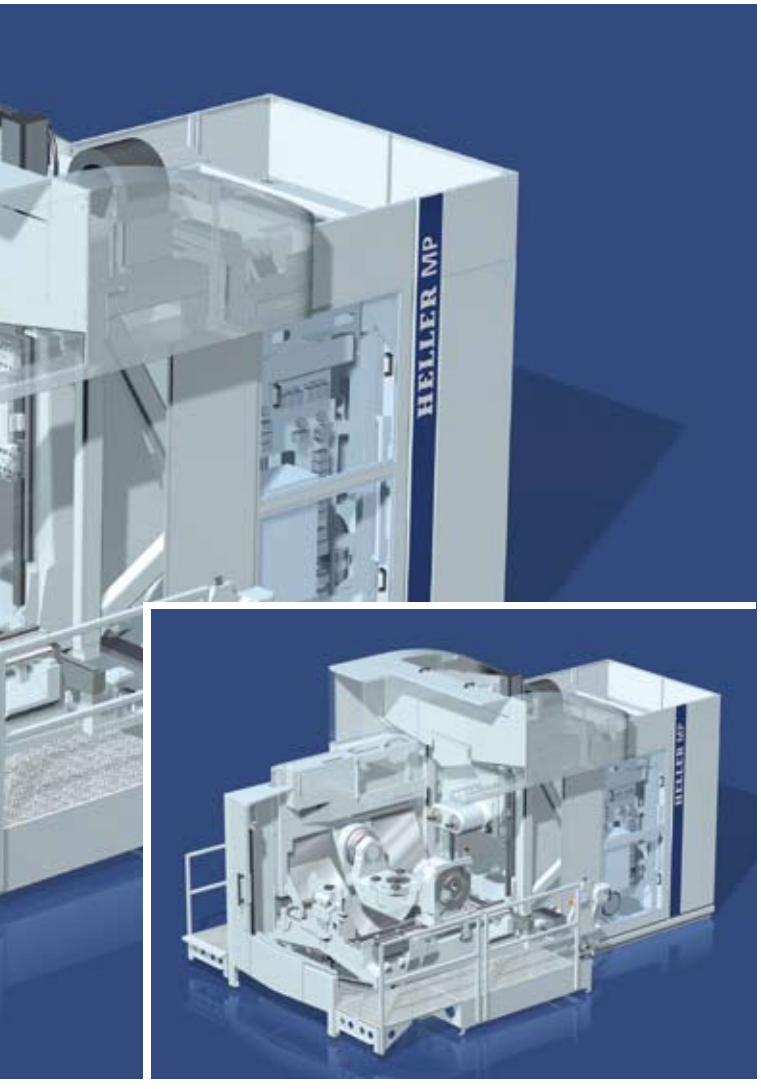
- Basic structure identical to MC 10/20 and MCT 10
- Process module for increased cutting capacity and oversize tools
- Heavy-duty motor spindle up to 10,000 rpm
- Heavy-duty cutting unit up to 8,000 rpm
- 2-range gear box with optional out-facing slide, torque adapter and multi-spindle head location
  - Robust bearings
  - Compact and torsionally stiff structure
  - Option: rotary distributor for wet machining or dry machining with MQL
- Optional process tool magazine with 5 places
  - Max. tool diameter: 330 mm (with free places)
  - Max. tool weight: 50 kg
  - Max. tool length: 800 mm

MP 200



MP 200:

- Basic structure identical to MC 200
- Process module with process-specific multi spindle drill head or drilling unit



MPC 200

MPC 200:

- Basic structure identical to MC 200
- Process module with drill head change
- Heavy cutting with non-exchangeable tools for highest precision
- Unit for drill head locations (500 mm x 400 mm, 630 mm x 500 mm)
- Additional drill head magazine for 3 drill heads
- Drill heads are loaded from the HSK 100 system magazine

Loading concept.
Basis for maximum flexibility.

One concept for all.

With the ModuleLine HELLER has developed a new machine range that is ready for any type of loading without requiring extensive rebuilds. Whether loading is fully automatic or manual: the machining module remains the same. This makes the ModuleLine an upgradeable and future-proof manufacturing concept.

Flexibility made to measure

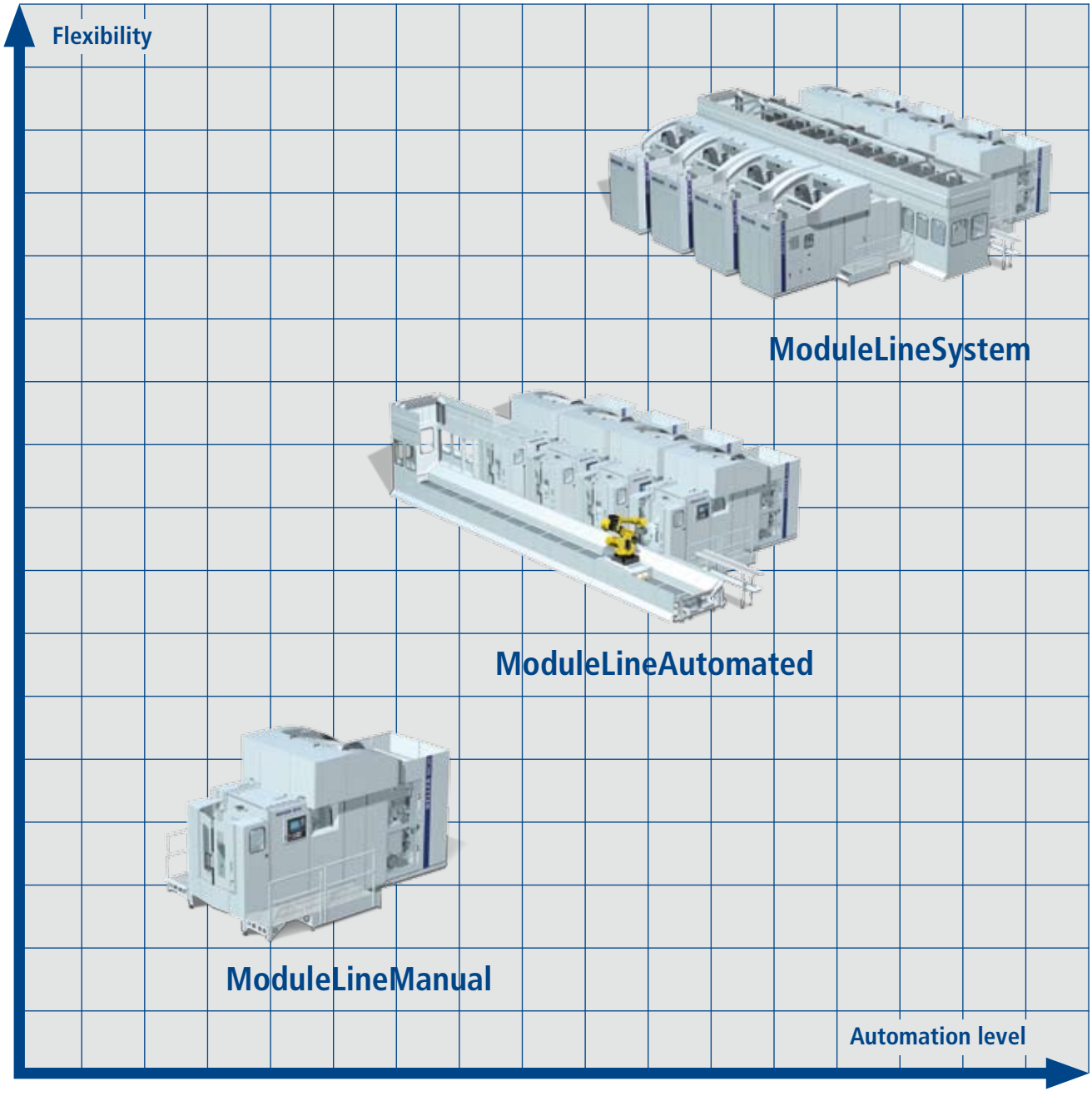
Machining tasks and labour utilization vary with market conditions. This also affects the type of loading. ModuleLine machining modules can be adapted to the local requirements to provide optimum economic efficiency.

Tailored to your manufacturing task

Each manufacturing system we design for you is based on a ModuleLine machining module. It can either be used in stand-alone operation or be prepared for automatic workpiece loading. The system supports both workpiece with carrier or direct workpiece exchange with fixtures. Workpiece supply is possible via manual loading, roller conveyors, stationary or travelling robots from either overhead or in front through to the highly flexible ModuleLine handling system. This ensures that the system can be fine tuned to your manufacturing task.

Loading concept.
Flexible upgrades for all.

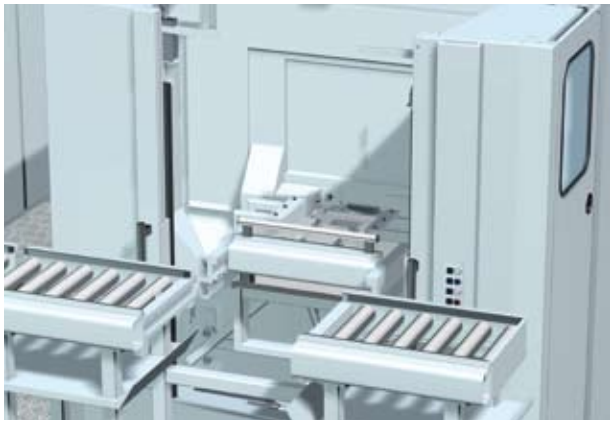
The right type of loading for all investments



ModuleLineManual.
Manual loading.

Benefits

- Manual workpiece loading
- For small to medium volumes
- Basic version for future extension to automated system



Workpiece carrier with and without hydraulic setting station

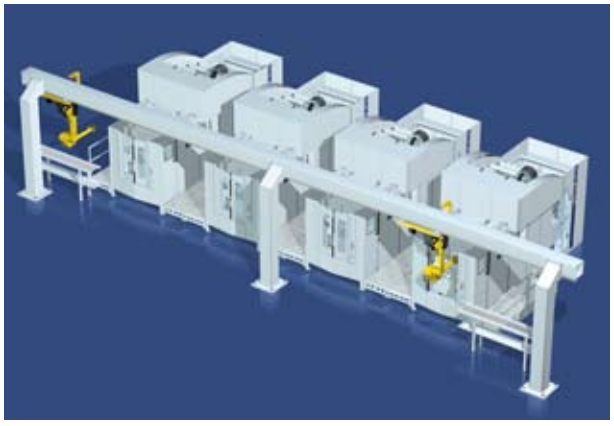
Direct workpiece transfer into fixture

ModuleLineManual: linkage of machining modules via roller conveyor

ModuleLineAutomated.
Automatic loading.

Benefits

- Automatic loading
- For high volumes
- Optimised for a specific part variant
- Ideal for linear configuration



Top loader: loading from top via gantry or suspended robot

Mobile front loader: fully automatic loading via travelling robot

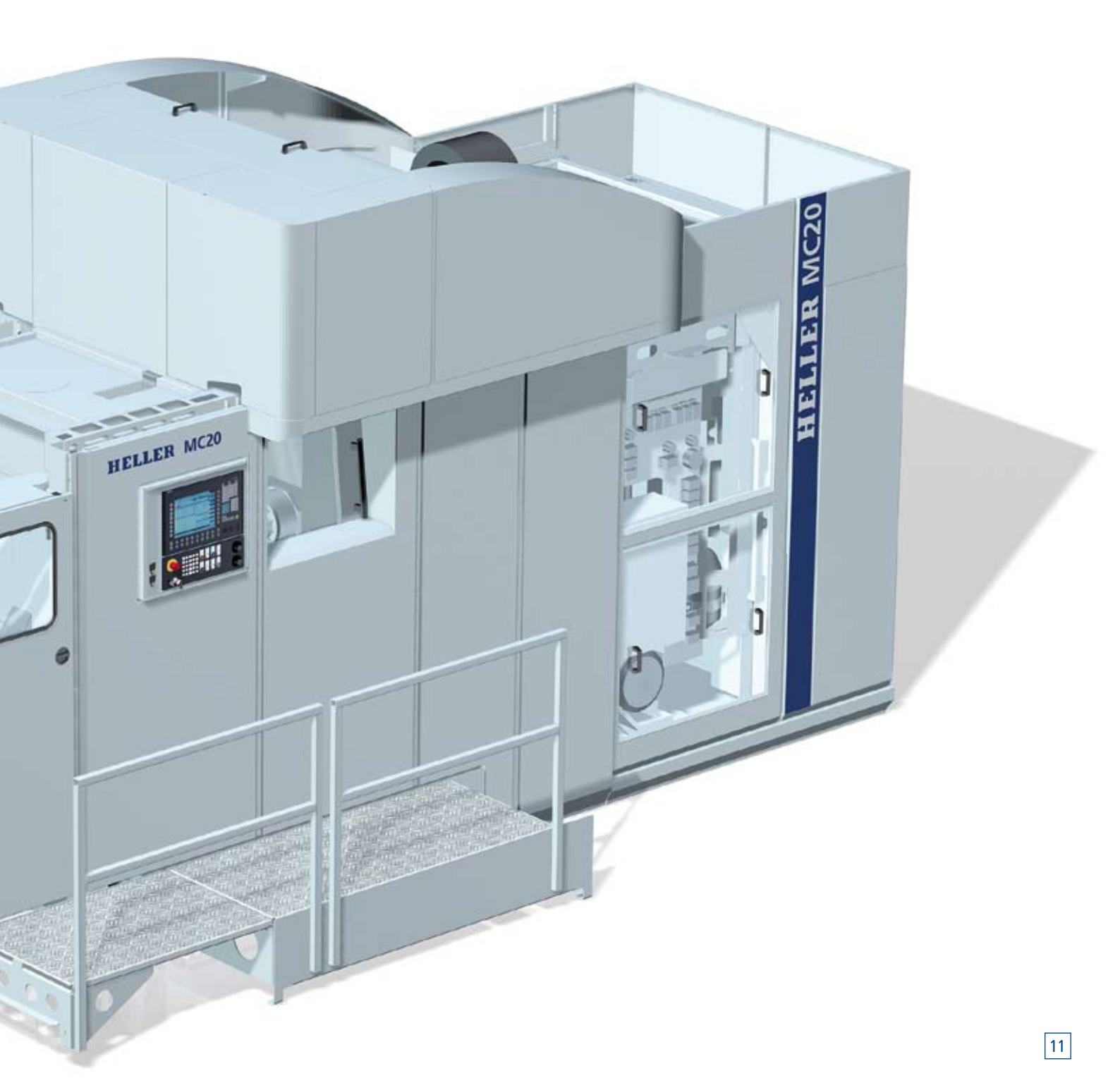
Stationary front loader: three machining modules linked via robot automation

ModuleLineSystem.
Highly flexible manufacturing system.

Benefits

- For systematic loading
- For maximum flexibility in terms of type variety and part mix
- For medium to large volumes
- For minimal space requirements
- Floor-guided automation system supports centralised workpiece and tool supply

ModuleLineSystem: manufacturing system with maximum flexibility


HELLER MC20
HELLER MC20

Machine concept.
Modular for optimum flow.

Workpiece management

ModuleLine offers two options for loading and unloading of workpieces: transport with or without workpiece carrier. In both cases, a workpiece changer transfers the workpiece from the setting station into the work area and vice versa. As a result, the work area is decoupled from the setting station and workpieces can be supplied parallel to machining.

For transport without carriers, the workpiece is placed onto the changer fork at the setting station and is then transferred to the stationary fixture during the subsequent changer cycle.

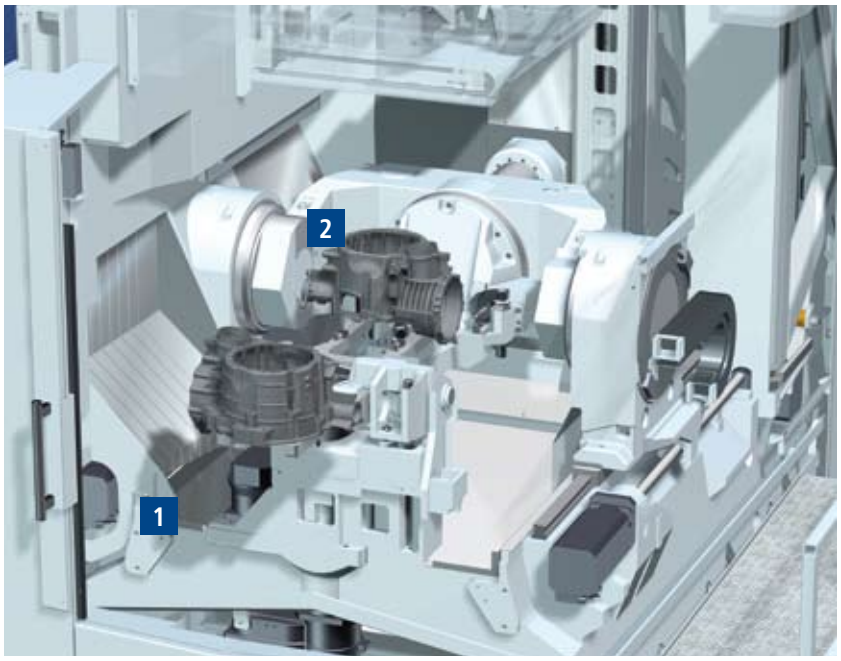
In workpiece carrier-based transport, the carrier and the workpiece are transferred as a unit. Following the changer cycle, the workpiece carrier supplied form the setting station is clamped inside the work area via the zero-point clamping system on the rotary table. Workpieces can be manually clamped on the workpiece carrier. An optional setting station for hydraulic clamping on the workpiece carrier is also available.

For both types of workpiece transport a wide range of hydraulic interfaces are available. For transport without carrier using a stationary fixture up to 12 ports are available in the work area. If you are using workpiece carriers, a maximum of 4 ports are available in the work area and up to 12 ports at the setting station. All ports can be programmed and controlled via the CNC program for customising the clamping sequence.

At a glance

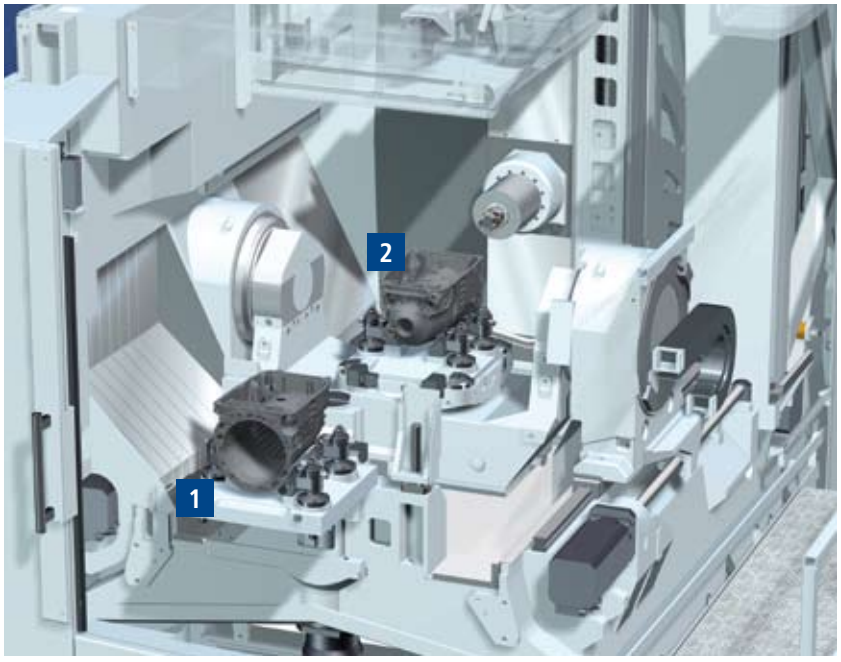
Flexible and economic workpiece change

- With the workpiece changer the work area is decoupled from the setting station minimising the workpiece change time – 10 sec. with workpiece carrier, 13 sec. with fixture.
- When configured without a setting station, and the workpiece is loaded directly into the work area via the workpiece changer, only one fixture is required per machine.
- With workpiece carriers, the same machine can cover a wide range of workpieces.
- Numerous hydraulic function ports provide flexible and freely programmable workpiece change.



1 Setting station
2 Work area

- Free Flow Component Transfer



1 Setting station
2 Work area

- Workpiece carrier-based transport

Machine concept.
Modular for optimum flow.

Tool management

Similar to workpiece management, tool management ensures optimum tool supply to the spindle. Via the tool changer the overhead tool magazine is decoupled from the work area and the tool loading unit. This ensures that tools can be provided parallel to machining and tools are transferred to the spindle without waiting time.

The tool changer performs vital functions; tool taper cleaning, tool breakage monitoring, tool blow out and tool coding during spindle operation time. As a result, spindle waiting times are kept to a minimum. Tools can be supplied via a range of units: tool loading unit, direct spindle pick-up or tool cassettes transferred into the work area on workpiece carriers.

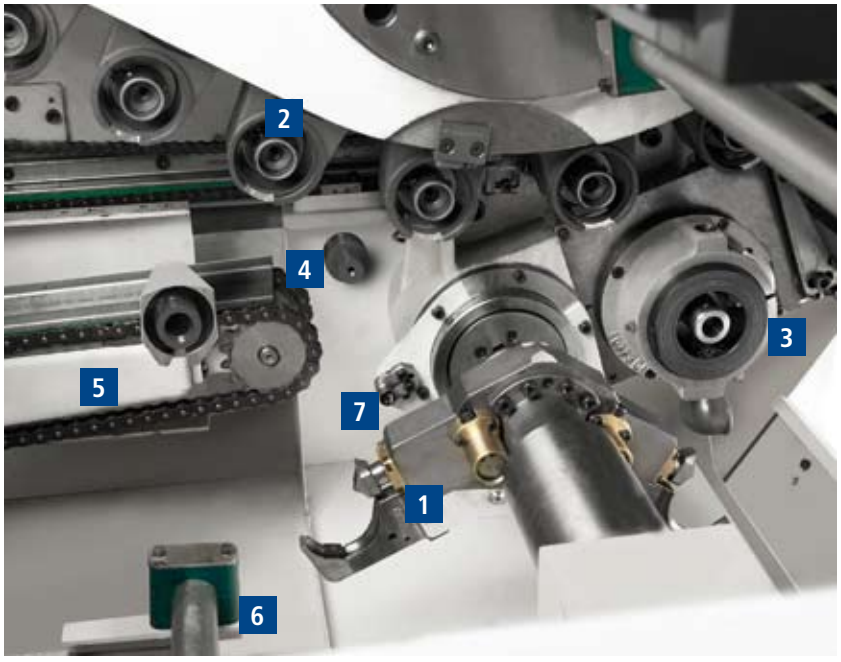
HSK63 and HSK100 spindle tapers for a maximum tool length of 600 mm are available for the standard modules MC 10/20 and MCT 10.

The MC 200 only uses HSK100 tools. Oversize tools with a length of up to 800 mm, a weight of up to 50 kg and diameters of max. 300 mm can be supplied via an optional disk-type magazine that can store up to five tools. These tools can be loaded into the spindle via a pick-up function.

At a glance

- HSK63 and HSK100 spindle taper with max. tool length 600 mm on MC 10/20 and MCT 10
- HSK100 spindle taper on MC 200 with five additional places for oversize tools with a diameter of up to 330 mm, a weight of 50 kg and a length of 800 mm
- Short chip-to-chip-times of 2.4 sec. with HSK 63 without spindle waiting times when using tools with short usage times
- Tool loading via tool loading unit, direct spindle pick-up or tool cassettes
- Supplementary functions such as cleaning, blow-out, coding and tool breakage monitoring during idle time

- Disk-type magazine with oversize tools



- Tool magazine with changer

1 Gripper
2 Magazine place
3 Tool taper cleaning
4 Blow-out tool
5 Tool loading unit
6 Tool breakage monitoring
7 Place coding

Operating concept.
8-key operation

1 Programming

- TRANSLINE 2000 user interface
- Programming and diagnostics of the machine

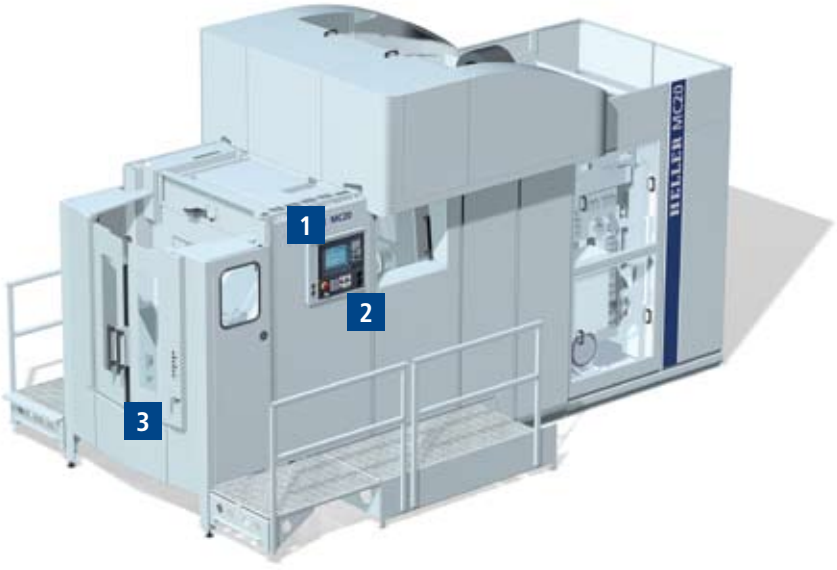
2 8-key operation

- Control of CNC and machine movements
- Move to home position from all situations

3 Workpiece handling

- Workpiece loading

Self-explanatory, clearly arranged, tried-and-tested – operation of the ModuleLine machining modules requires no more than 8 keys. Operation and diagnosis can be performed in a single step on one side of the machine.



State-of-the-art control technology*

We use powerful, state-of-the-art CNC, PLC and HMI components on our machining modules. The hardware is compact and thermally resistant providing extremely low thermal power loss. The machine controls can be integrated into existing networks via Ethernet or ProfiNet, a major benefit to ensure optimum internal communication.

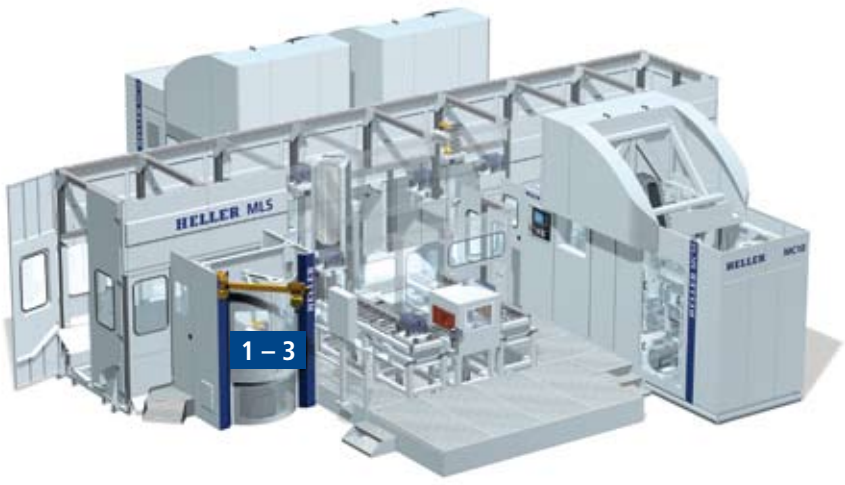
Centralised diagnostics

Actuators and sensors for hydraulics and pneumatics and their controls are arranged for easy access on one side of the machining module. Function-relevant locations on the machine can be checked at a glance or touch.

* Machining modules used in the ModuleLine are equipped with SIEMENS 840D Solution-Line. For project-specific applications FANUC 31i and Bosch Rexroth MTX are available.

Automation concept.
Configuration with a click of the mouse.

Operation of the automation system is based on the same philosophy as operation of the machine control. The complete manufacturing system can be operated with no more than 8 keys. Operation of the user interface of the automation control is intuitive and self-explanatory. The ModuleLineSystem can be adapted to new production requirements with the click of the mouse.



Centralised operation and diagnosis*

The complete automation for the manufacturing system and peripheral equipment are centrally controlled. State-of-the-art hardware components using the same technology as the machine control ensure low thermal power loss on the automation control. The complete logistics process is pre-configured at our plant to ensure perfect process dependability. Logistics functions of the ModuleLineSystem are visualised and controlled via TRANSLINE 2000 allowing quick adaptation of the system to any given situation.

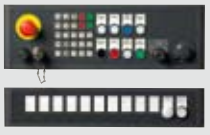
* HELLER's ModuleLineSystem can be equipped with the complete function range available for SIEMENS 840D Solution-Line and project-specific functions of FANUC 31i and Bosch Rexroth MTX controls.

1 System overview

- TRANSLINE 2000 user interface
- System overview and diagnosis
- Configuration of the machining process

2 8-key operation

- Central control functions for the complete system
- System start / stop after cycle end



3 Tool supply and Workpiece supply

- Tool loading and workpiece loading

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