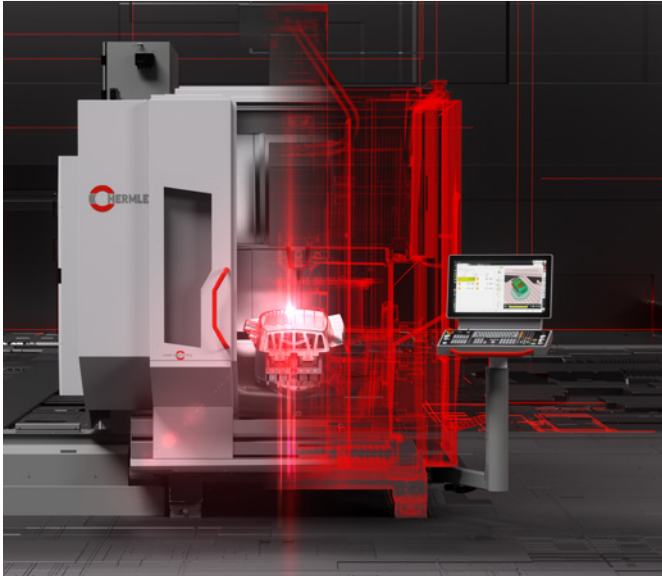


DigitalTwin

The virtual machine
www.hermle.de



Proven precision



Proven precision digitally extended

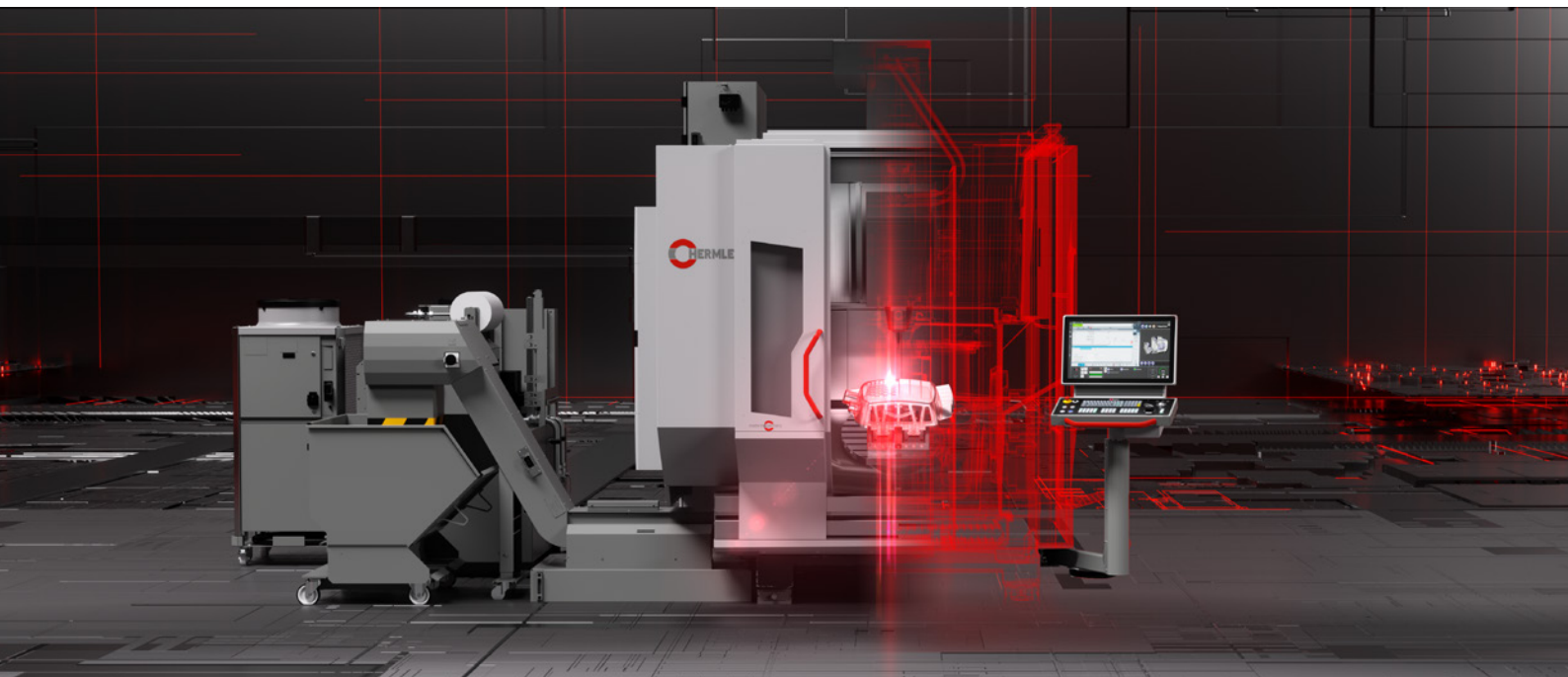
The next level of manufacturing begins with the HERMLE digital twin. An exact virtual copy of the physical HERMLE machine enables complete process reliability, collision-free NC programs, shorter run-in times and more efficient training – directly in the digital domain. CAM integration, remote operation, connecting sites and virtual commissioning are all implemented seamlessly. The digital twin is an integral part of HERMLE's digital technologies.

YOUR ADVANTAGES

- *Error-free NC programs – without risks.
Using real CNC controls and real dynamics, all processes run collision-free,
production-ready and real-time accurate.*
- *Centralised control – global processes.
Thanks to digital twins, machines can be relocated without any loss of expertise.
All sites remain seamlessly and in real time connected to the main plant*
- *Virtual commissioning – early start of production.
Testing NC programs, optimizing processes and training staff prior to machine
delivery. Ready to go from day one.*
- *Qualified employees get up-to-speed faster – without downtime.
Realistic training in the virtual environment enables efficient and safe training,
without any production interruption.*



The digital counterpart



The digital counterpart of your machine

At the heart of the system is a complete, kinematic machine model that incorporates all axes and collision contours. When combined with an original, virtual CNC control, it delivers a realistic digital copy. The control parameters, cycles and functions correspond to the physical machine. The result: An identical NC version, precise runtime estimation, identical operational behaviour, complete process transfer to the virtual environment.



Perfect copy

The digital twin features a virtual CNC control, which is based on the same control software as the physical machine. This allows you to create or edit NC programs with all cycles and control functions. Needless to say, the entire CNC syntax is available.

Identical behaviour

The virtual CNC control reliably detects syntax errors in cycles or in the CNC program – even when they arise in connection with the parametrisation or configuration of tools, zero points, parameters or variables.

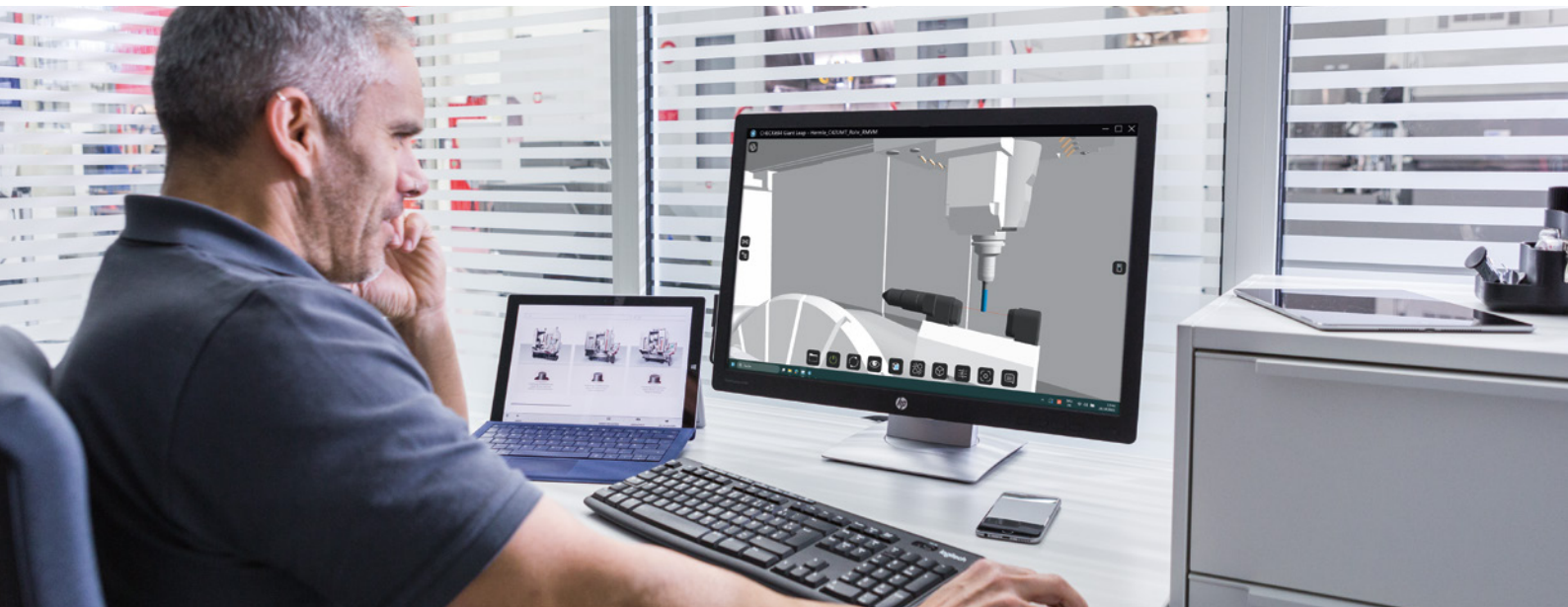
Full control functionality

The virtual CNC control provides the full scope of functions offered by the physical control, including all the cycles, syntax elements and high-level language functions. Programs can be tested, optimised or created directly on the virtual control.

Identical operation

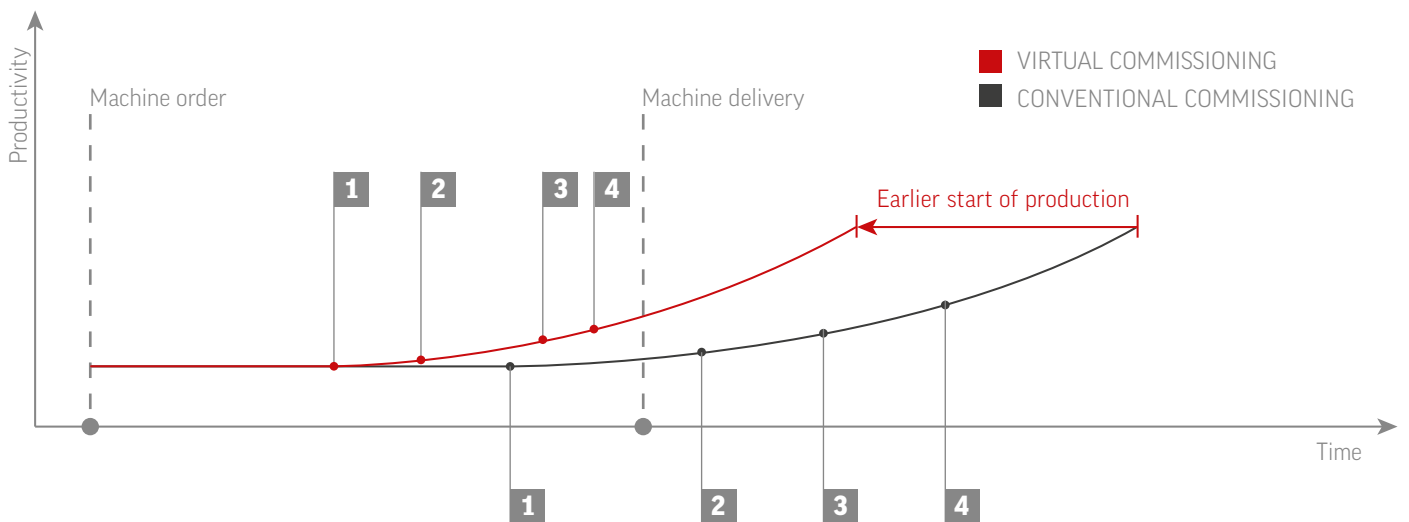
The digital twin, just like the physical machine, is operated using the original control panel. All the operating modes and HERMLE-specific options are fully available. This way you experience your machine with exactly the same operating logic and responsiveness – but in a digital and secure environment that is always accessible.

Virtual commissioning



Virtual commissioning – early start of production

The production process begins even before the machine arrives at the installation location. NC programs are prepared, post-processors tested, interfaces validated. Operator training starts at the same time – digitally and from any location. This significantly shortens the ramp-up phase, increases machine uptime and ensures that production gets off to a strong start.



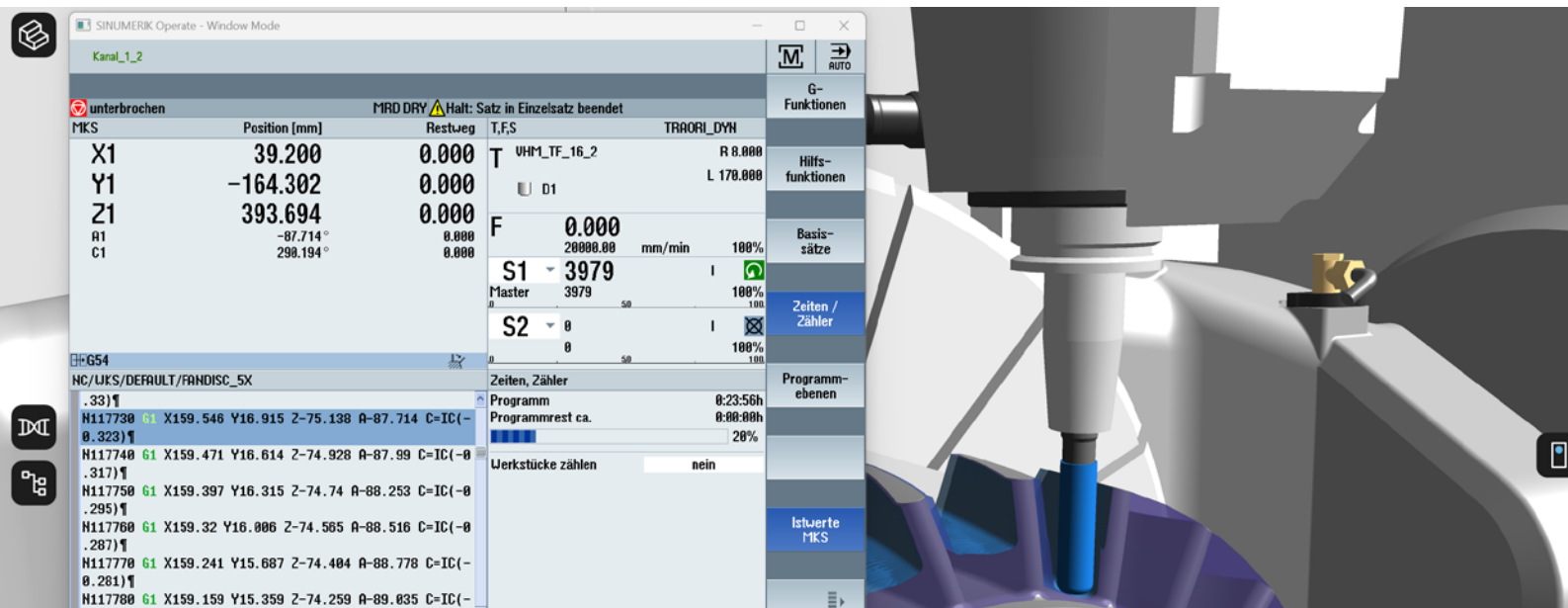
1 Post-processor development

2 Creating NC programmes

3 Design of equipment

4 Process ramp-up for machining

Virtual machining

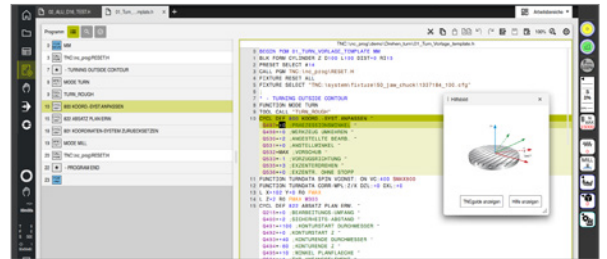


Virtual machining – running in CNC programs virtually

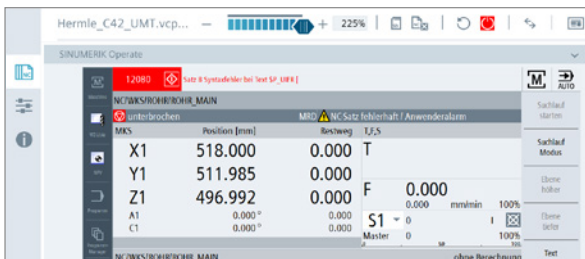
NC programs are not just simulated but completely run in virtually. With realistic machine dynamics, authentic control logic and current machine conditions. The entire optimisation process occurs offline – without downtime on the shop floor. The results are error and collision-free NC blocks. Manufacturing release without any rework. Ideal for automated or unmanned manufacturing.



No collisions – early detection of collisions and component damage.



Optimised CNC programmes – optimisation of the programmes using the full functionality of the virtual controller.



No syntax errors – the programme is thoroughly checked and reliably detects syntax errors.



Highly accurate processing times – during the virtual run, parameters and dynamics are taken into account.

Digitalisation



Rethinking digitalisation

The digital twin of a HERMLE machine is a strategic step towards preparing companies for the challenges ahead. It empowers them to confidently tackle the challenges of globalisation, shortage of skilled labour and new work models. The digital twin thus becomes the key to future-proof manufacturing processes and sustainable competitiveness.

Centralised control of global processes – expertise remains in the main plant

The digital twin enables the centralised control of distributed manufacturing locations. Experts at the main plant access identical virtual machines, analyse NC processes, assess machining operations, detect errors and communicate optimisations directly to remote plants. Engineering expertise therefore remains within the company, even if machinery or production is outsourced. Quality, stability and efficiency are maintained across all locations.

Staff training – Digital. Secure. Practical.

The digital twin enables practical training without risks. Training is applied directly at the virtual machine model. New members of staff learn about CNC programming, setup processes and safety-critical procedures under realistic conditions. Without machine utilisation. Without a break in production. The development of skilled labour is accelerated, expertise remains within the company, and entry into the world of HERMLE is easier.

New work models in manufacturing – Flexible. Mobile. Attractive.

CAM programmers and technologists are productive regardless of their location. The digital twin enables fully remote programming, simulation and process approval. Companies benefit from greater employer attractiveness, new recruitment opportunities and a better work-life balance. Digital machine models enable modern work models, even in traditional manufacturing environments.

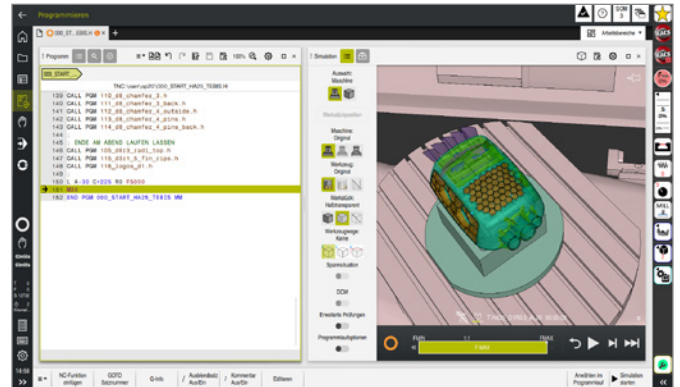
Software solutions

Programming and simulation with three systems – the choice is yours

Choosing the right solution is the key to successfully implementing the digital twin in your company. HERMLE prioritises maximum availability to offer you the best cost-benefit ratio. To do so, we rely on proven technologies and solutions from leading market players – thereby ensuring maximum reliability and future viability.

HEIDENHAIN programming station

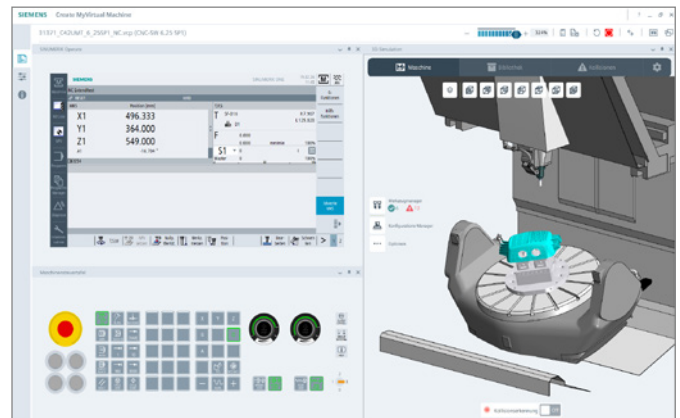
The HEIDENHAIN programming station allows you to operate your digital twin in the familiar HEIDENHAIN environment. You have access to the full scope of functions offered by the control – exactly the same as on the physical machine.



SIEMENS Run MyVirtual Machine

SIEMENS RMVM lets you control your digital twin just like in the real world. You utilise the familiar SIEMENS user interface and benefit from the full scope of functions offered by the control.

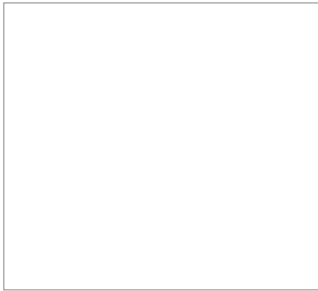
Alternatively, it is possible to integrate RMVM with external systems, such as SIEMENS NX or Vericut, using the RMVM /Open option.



CHECKitB4

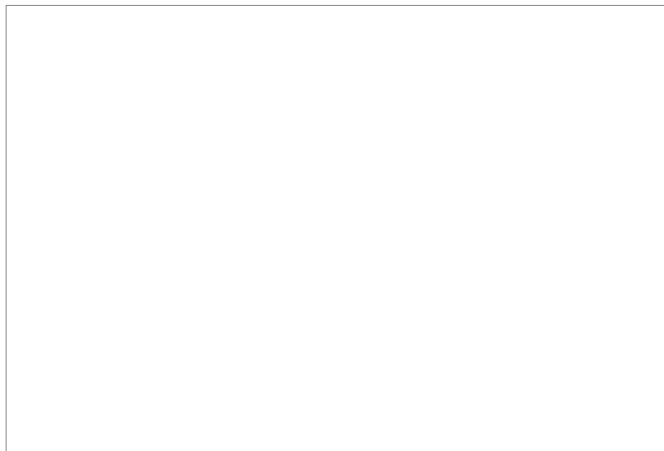
The CHECKitB4 platform by PIMPEL is one of the leading technological solutions in virtual CNC technology. The system supports, among others, HEIDENHAIN and SIEMENS controls and enables digital twins from an array of manufacturers to be operated on a joint platform.





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