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Ingenuity for life

The dream team for outstanding productivity

SINUMERIK Run MyRobot integrates robots and machine tools

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SINUMERIK – for new productivity benchmarks

As automation continues to take its course, robots and machine tools are increasingly working closely together. Robots and machine tools are increasingly collaborating more closely with one another. Using robots in the production environment can significantly boost productivity – for example when they support loading and unloading or handle machining tasks.

The number of handling and machining robots (machine tools with robot kinematics) is continually on the rise. Increasingly more machine operators are seeing that automation is an important strategy when it comes to achieving a constant workpiece quality and being more flexible. Digitalization is facilitating the required higher level of automation and networking of the components involved.

Automated machining cells – for higher productivity and production flexibility

Automated machining cells play a decisive role in increasing the productivity and flexibility of production environments. What is especially decisive is that all the systems involved are simply integrated – machine tools must be integrated into production workflows using networking solutions – and robots must be simply integrated into machine tools via predefined interfaces. Seamlessly automated workflows can be implemented by creating automated machining cells: from production planning, through the provision of all job data and information in a digital form at the operator panel up to efficient operation of machines and robots.

One CNC for several robot connection versions

SINUMERIK Run MyRobot/Direct Control

Application area:
- Handling
- Machining
- Hybrid (handling & machining in parallel to the main machining time)

Robot kinematics fully integrated in the CNC

Can be implemented with:

SINUMERIK 840D sl	☑
SINUMERIK ONE	☑

SINUMERIK Run MyRobot/Direct Handling

Application area:
- Handling

Modular robot handling integration

Can be implemented with:

SINUMERIK 840D sl	☑
SINUMERIK ONE	☑

Robots and machine tools: all facets of the integration

With its SINUMERIK, Siemens has a CNC system for robot integration: From a simple connection via the user-friendly integration for handling tasks – up to the complete integration of robot kinematics in a system.

SINUMERIK Run MyRobot/Handling

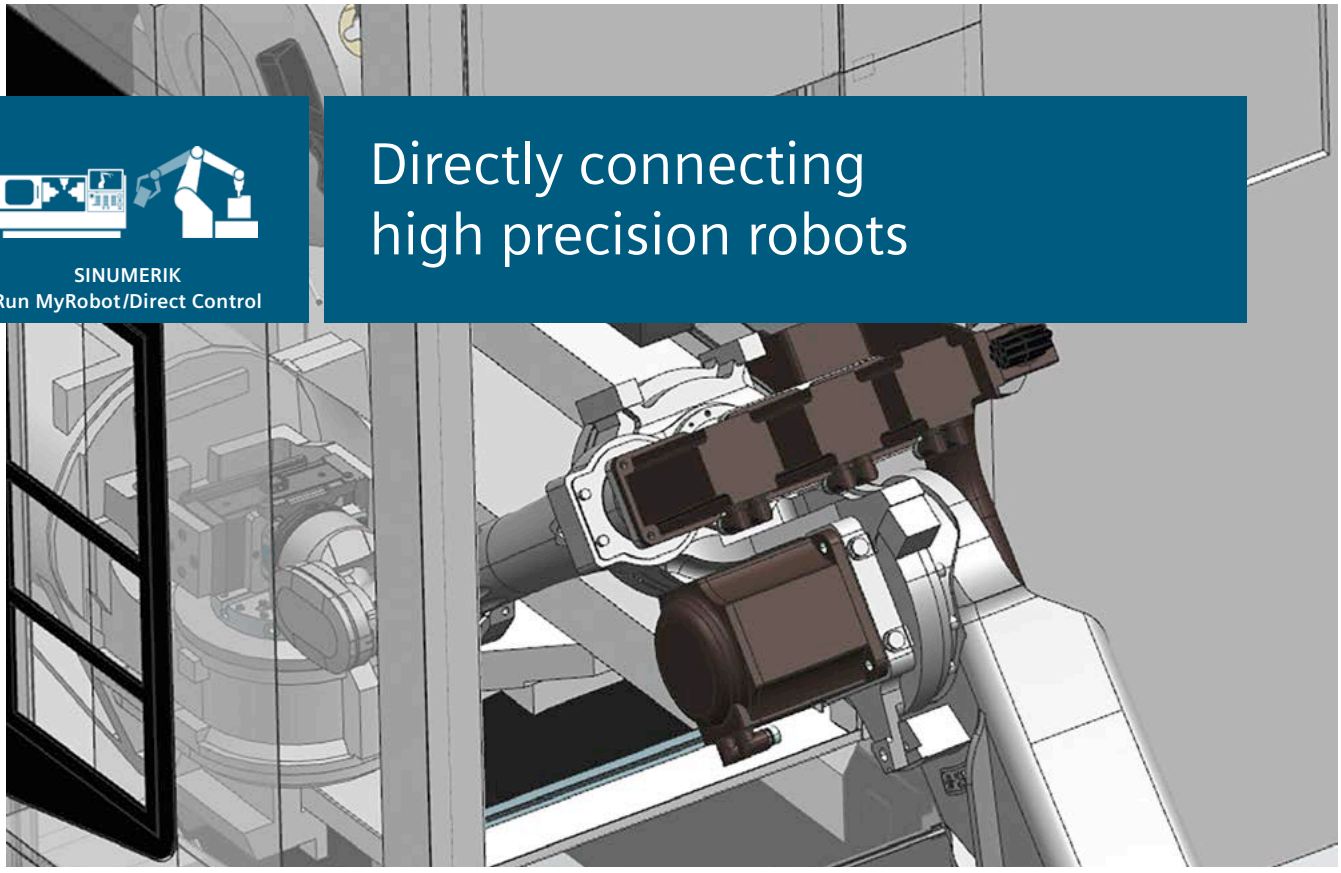
Application area:
- Handling

Simple PLC I/O interface

Can be implemented with:

SINUMERIK 840D sl ☑

SINUMERIK 828D ☑



SINUMERIK
Run MyRobot/Direct Control

Directly connecting high precision robots

The demand for automation solutions for machine tools teamed up with high precision industrial robots is increasing at a rapid pace. This applies for handling – as well as high-precision and complex processing tasks. With SINUMERIK Run MyRobot/Direct Control robot kinematics can be directly integrated in CNC systems.

The unique SINUMERIK-controlled robot technology further enhances precision and dynamic performance in conjunction with the advantages of a control concept from a single source.

With the introduction of the direct control concept, the complete range of CNC and drive functionality can be utilized. An additional robot controller is not required in the machine tool environment. As a consequence, important advantages are obtained – such as the more compact hardware dimensions, simpler spare parts management and a higher degree of reliability.

Due to the seamless integration of the robot kinematics in the SINUMERIK, the commissioning and engineering tasks are significantly simplified to the customer's advantage. The complete engineering process chain is guaranteed with the inclusion of the robot's digital twin in the CAD/CAM system and thus benefiting of the existing SINUMERIK post-processor and VNCK simulations.

SINUMERIK Run MyRobot/Direct Control

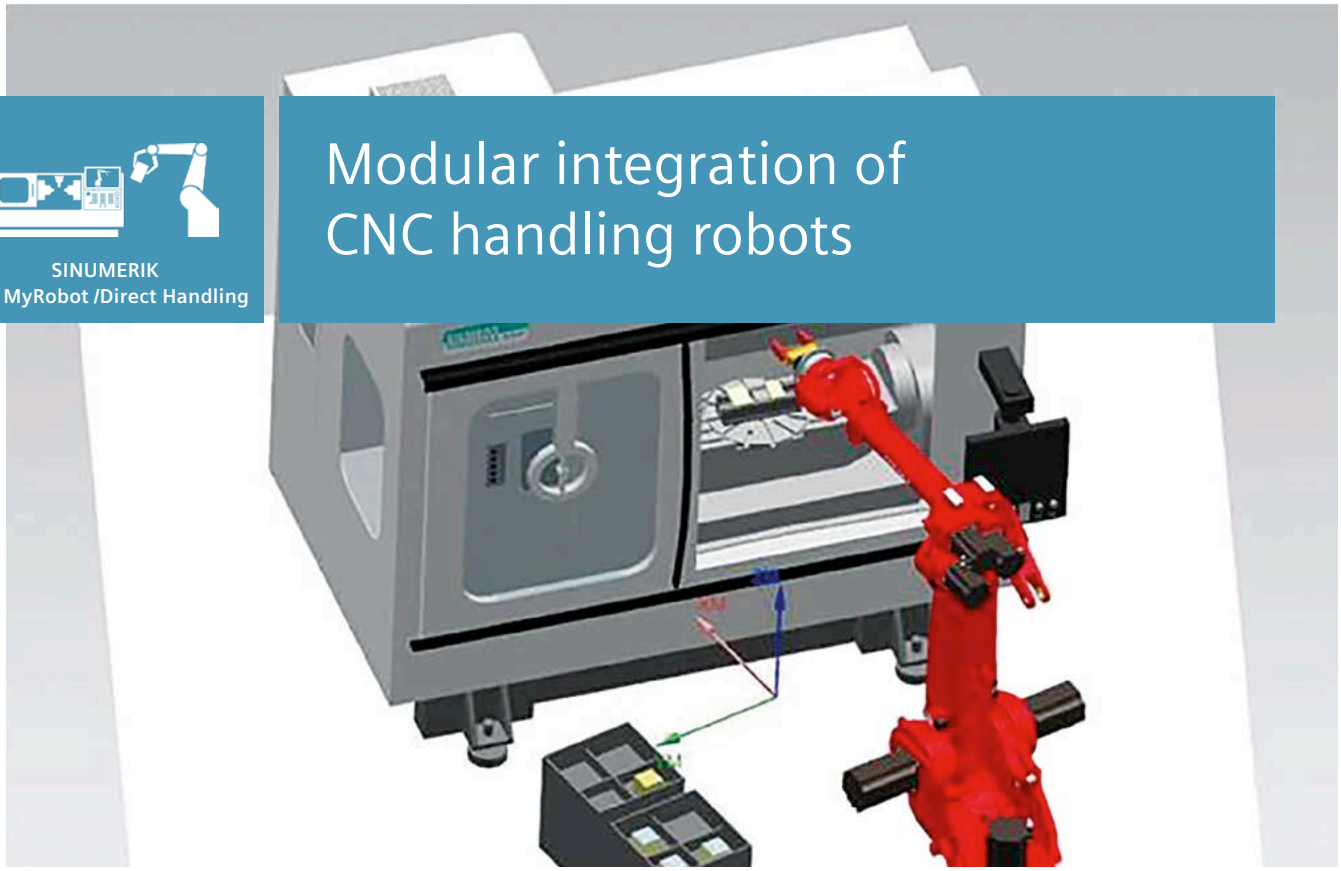
- Drive-based connection of the robot kinematics with the SINUMERIK CNC system (Direct Control concept)
- Setting-up, programming and operation in the SINUMERIK-specific environment (Create MyConfig, G-Code, programGUIDE etc.)
- Preconfigured setting data available for a selection of robots
- Robot-specific programming knowledge not required

Advantages at a glance

- Integrating the robot mechanical model in the SINUMERIK CNC increases productivity and flexibility, thus facilitating the high workpiece precision and quality.
- The Direct Control concept significantly simplifies the controller hardware configuration resulting in optimized spare parts management.
- Reduced time and effort for commissioning and engineering – including ready-to-run setting data for selected robots.

SINUMERIK
Run MyRobot /Direct Handling

Modular integration of CNC handling robots



SINUMERIK Run MyRobot /Direct Handling is based on the same functioning principle as Run MyRobot / Direct Control, just optimized for modular robot automation solutions.

Machine tools which don't have an integrated robot in one of the NC channels, can easily be modularly extended with the Run MyRobot /Direct Handling package and a separate NC controller for the robot. The benefits for the end-users are the operation and programming of the robot over the SINUMERIK HMI, same as the machine tool. This means that the existing NC shop-floor knowledge can also be applied for the robot. As there is no robot controller anymore – the robot arm is directly controlled from the SINUMERIK – the commissioning, service, maintenance of the robot is similar to the CNC machine.

SINUMERIK Run MyRobot /Direct Handling

- Setting-up, programming and operation in the SINUMERIK-specific environment (Create MyConfig, G-Code, programGUIDE etc.)
- Best solution for integrating handling robots with modular machine concepts
- No dedicated robot controller required anymore

Advantages at a glance

- Integrating the robot mechanical model in the SINUMERIK CNC increases productivity and flexibility.
- Optimized controller settings for handling operations.
- Robot-specific programming knowledge not required.

SINUMERIK
Run MyRobot/Handling

Handling robots and machine tools operated in precisely the same way

SINUMERIK Run MyRobot/Handling is the recommended approach wherever a robot should simply connect to the CNC. In addition, it allows also the programming and operation directly from the SINUMERIK. Based on this solution, SINUMERIK 840D sl offers the highest degree of system integration.

SINUMERIK Run MyRobot/Handling allows a robot to be operated and taught in using a SINUMERIK operator panel. Connected robots and machine tools can be set up, programmed, operated and maintained via the usual SINUMERIK Operate user interface. The robot is programmed using cycles in SINUMERIK. Robots and machine tools are coordinated via the channel synchronization. This means that machine tool and robot program sequences can be tracked and controlled on the SINUMERIK screen in parallel channels. This makes the integration of robots significantly more attractive and straightforward, as personnel do not require any specific robot know-how.
In practice, the focus is using robots for handling tasks: loading and unloading the machine tool, feeding in tools and therefore speeding up the material flow associated with the machine.

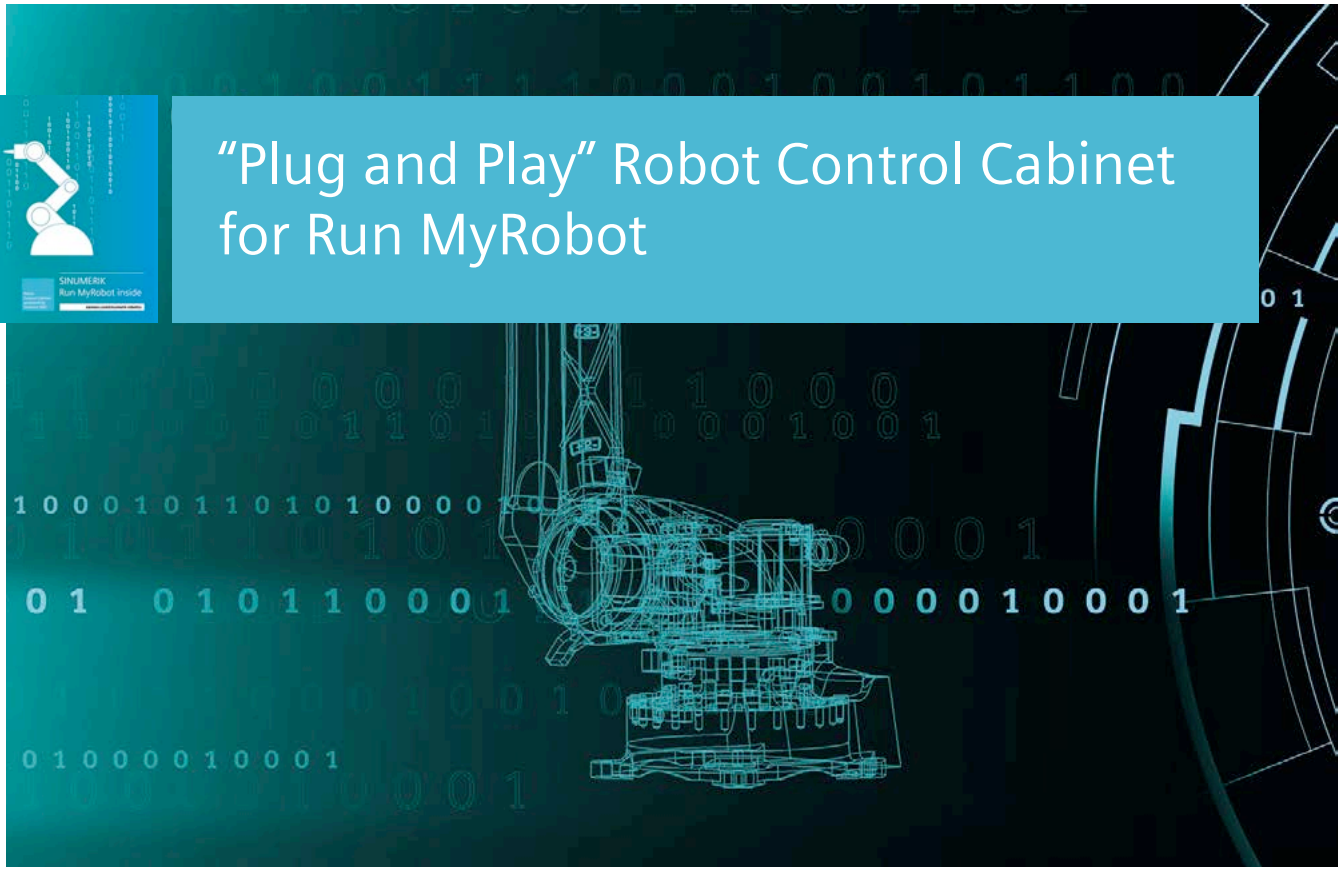
SINUMERIK Run MyRobot/Handling

- Combines robot and CNC programs in the CNC
- Standard operation of robots and machine tool via the SINUMERIK user interface SINUMERIK Operate
- Robot functions such as programming, manual travel, teach in and diagnostics can be directly executed from the CNC.

Advantages at a glance

- Teaching in new workpieces to be handled is significantly simplified as a result of the standard and uniform operation at the SINUMERIK.
- The robot is simply programmed using the cycle programming functionality of the SINUMERIK.
- No robot know-how is required, the robot can be operated by machine operators without requiring any in-depth training.

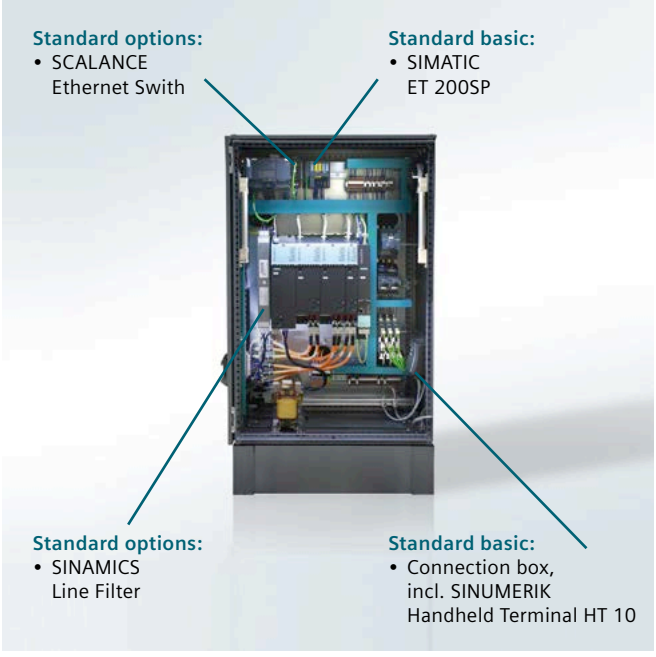
“Plug and Play” Robot Control Cabinet for Run MyRobot



Robot Control Cabinets from WKC

Digitalization also enables machine tools to be used in ever closer association with automated applications. The „Run MyRobot“ Siemens solution is an example of this. The solution now means robots can be integrated even more easily in the Sinumerik CNC system and the digital interface of a machine tool.

Another solution that likewise supports this technology is the standardized Robot Control Cabinet (RCC) from WKC. The RCC provides you with the choice of a basic control cabinet version, which is immediately available and ready to connect to your robotics systems, a predesigned solution with additional options, or a 100% customer-specific application.



Advantages at a glance

- Pre-configured basic versions with additional standard options for quick and easy commissioning.
- Expert advice and engineering of a customized application for the specific requirements.
- Creation of a digital twin including design optimization for integration in the electrical documentation.

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