

# Take control of the future

Implement innovative applications  
with SIMATIC controllers

[siemens.com/simatic-controller](https://www.siemens.com/simatic-controller)

The right SIMATIC Controller  
for every application

Overview of applications

Integrated functions in all  
SIMATIC Controllers

**PNAP** KALA



# The right SIMATIC Controller for every application



Whether you need compact controller solutions with integrated functions, powerful controllers for the highest demands, or controllers for distributed architectures or PC-based automation: Our SIMATIC controller portfolio has the right PLC for your requirements.

In addition to scalability every controller provides consistent system functions like efficient engineering, high performance, innovative design, versatile diagnostics, Safety Integrated, Technology Integrated, and Security Integrated.

This allows flexibility while designing and adapting automation solutions without the need for building know-how over and over again.

Each machine and plant have individual requirements regarding system performance and application complexity. You can find the right controller for your application in our SIMATIC controller portfolio. Below you'll find many practical applications and details about implementation.



# Overview of applications



Pumping and ventilating ↗



Simple controlling ↗



Simple closed-loop controlling ↗



Autonomously conveying ↗



Conveying and transporting ↗



Electrical charging ↗



Higher-level controlling ↗



Testing and measuring ↗



Model-based closed-loop controlling ↗



Assembling ↗



Cutting and sawing ↗



Filling ↗



# Pumping and ventilating

## Typical of this application:

Compressors, compressed-air technology, and vacuum technology are found in many industries and processes. The following features are important for control technology:

- **Small- to medium-quantity framework**  
A small number of I/Os, signal processing is performed in the lower to medium performance range.
- **Comprehensive communication options**  
Compressors, compressed-air technology, and vacuum technology require different interfaces.
- **Integrated technology functions**  
Compressors, compressed-air technology, and vacuum technology require integrated closed-loop control in the form of PID controllers.

For these requirements, we recommend the **SIMATIC S7-1200 Basic Controller**. For more information, visit the product page. Or you can directly start our TIA Selection Tool.

### SIMATIC S7-1200 Basic Controller

Ideal for the lower to medium performance range. [➤](#)

### TIA Selection Tool

You can configure your controller here. [➤](#)

### Do you have any other requirements?

Select your controller in five steps. [➤](#)



# Simple controlling

## Typical of this application:

Production processes often require a lot of different sequential programs that need to be controlled.

- **Medium-quantity framework and modularly expandable**  
Simple control tasks can usually be covered with a medium-quantity structure. Many automation solutions have to be functionally adaptable and require a modular controller.
- **Modular expandability and flexibility**  
Flexibility is especially important for the automation program, which means that different sequential programs with the corresponding parameters often need to be kept in reserve.
- **Cost-effectiveness**  
These applications are subject to high cost pressure and have to be implemented as economically as possible in order to stay competitive.

For these requirements, we recommend the **SIMATIC S7-1200 Basic Controller**. For more information, visit the [product page](#). Or you can directly start our [TIA Selection Tool](#).



### SIMATIC S7-1200 Basic Controller

Ideal for the lower to medium performance range. [➤](#)

### TIA Selection Tool

You can configure your controller here. [➤](#)

### Do you have any other requirements?

Select your controller in five steps. [➤](#)



# Simple closed-loop controlling



## Typical of this application:

Simple closed-loop control plays an important part in numerous production processes. For example, it controls temperature, pressure, and flow rate.

- **Comprehensive communication options**  
The devices require different communication interfaces (including PROFINET, Modbus/TCP, serial protocols).
- **Modular expandability and flexibility**  
The closed-loop control must be functionally adaptable: modular controller, flexible automation program.
- **Integrated technology functions**  
Integrated closed-loop control options ensure an exact sequence of control variables and parameters.

For these requirements, we recommend the **SIMATIC S7-1200 Basic Controller**. For more information, visit the product page. Or you can directly start our TIA Selection Tool.

### SIMATIC S7-1200 Basic Controller

Ideal for the lower to medium performance range. [➤](#)

### TIA Selection Tool

You can configure your controller here. [➤](#)

### Do you have any other requirements?

Select your controller in five steps. [➤](#)



# Autonomously conveying



## Typical of this application:

In many production and logistics processes, a seamless materials supply – for example, via conveyor belts or AGV – is essential. The right controller has the following characteristics:

- **Compactness and versatility**  
The controller has to be installed and be expandable inside a small space in the cabinet.
- **Safety**  
Safety and standard functionalities in one device save space and make programming simple and flexible.
- **Ruggedness**  
High resistance to shocks and continuous loads due to vibration; reliable when exposed to extreme fluctuations in temperature.

For these requirements, we recommend the **SIMATIC ET 200SP Distributed Controller**. For more information, visit the [product page](#). Or you can directly start our [TIA Selection Tool](#).

### SIMATIC ET 200SP Distributed Controller

Space-saving thanks to a compact design. [➤](#)

### TIA Selection Tool

You can configure your controller here. [➤](#)

### Do you have any other requirements?

Select your controller in five steps. [➤](#)



# Conveying and transporting

## Typical of this application:

Materials must be transported to a precise destination, for example across long distances via a conveyor belt or by AGV. This requires the right conveyor technology, which is often distributed. The controller must have the following characteristics:

- **Machine-level installation**  
Renders conveyor units independent of higher-level controller, reduces cable routes, and simplifies diagnostics.
- **Comprehensive functionality**  
The controller has to deliver a wide range of requirements: safety, motion tasks, and process and system diagnostics.
- **Ruggedness**  
The systems have to be resistant to water, dust, and loads due to temperature, shock, and vibration.

For these requirements, we recommend the SIMATIC ET 200pro Distributed Controller or the SIPLUS extreme modules for harsh environments. For more information, visit the product page. Or you can directly start our TIA Selection Tool.

### SIMATIC ET 200pro Distributed Controller

Control functionality directly at the machine in IP65/67 [↗](#)

### TIA Selection Tool

You can configure your controller here. [↗](#)

### Do you have any other requirements?

Select your controller in five steps. [↗](#)







## Typical of this application:

Mobility in the future will require open and flexible automation solutions. This means that the right controller needs to feature:

- **Compactness and versatility**  
Systems for e-charging systems must be as compact and also as functionally versatile as possible.
- **Integrated and scalable**  
The system has to be flexibly expandable to far more than 100 charging points.
- **Open interfaces**  
There are a variety of interfaces between the charging unit and the backend (often payment systems).

For these requirements, we recommend the **SIMATIC ET 200SP Open Controller**. For more information, visit the product page. Or you can directly start our TIA Selection Tool.

### **SIMATIC ET 200SP Distributed Controller Open Controller**

Compact controller for open automation with PC applications [↗](#)

### **TIA Selection Tool**

You can configure your controller here. [↗](#)

### **Do you have any other requirements?**

Select your controller in five steps. [↗](#)



# Higher-level controlling



## Typical of this application:

Depending on the size of the machine or plant, flexibly usable and reliable controllers are required that cover a large performance range. In this case, the controller must offer:

- **High performance**  
Power reserves, fast data exchange, smart communication, and minimal cycle and response times.
- **Large-quantity structures**  
Read in and continue to process large numbers of input signals, forward them quickly to many actuators, and reliably edit data.
- **Scalability**  
Flexible systems and lines require modular concepts and different configurations of the automation system.

For these requirements, we recommend the **SIMATIC S7-1500 Advanced Controller**. For more information, visit the product page. Or you can directly start our TIA Selection Tool.

### SIMATIC S7-1500 Advanced Controller

The ultimate plus for productivity and efficiency [➤](#)

### TIA Selection Tool

You can configure your controller here. [➤](#)

### Do you have any other requirements?

Select your controller in five steps. [➤](#)



## Typical of this application:

For material and product testing, the automation system must decide within a fraction of a second whether the quality is adequate. The right controller needs to offer:

- **Versatile interfaces**  
A redundant, openly expandable controller for access from multiple operating terminals or via the intranet
- **High-performance data acquisition**  
Supports analyses to improve plant availability, productivity, energy consumption, and quality.
- **Complex data evaluation**  
The production data has to be available over a long period of time for tracking and tracing and for quality assurance.

For these requirements, we recommend the **SIMATIC S7-1500 Software Controller**. For more information, visit the product page. Or you can directly start our TIA Selection Tool.



### SIMATIC S7-1500 Software Controller

Top performance for PC-based automation [➤](#)

### TIA Selection Tool

You can configure your controller here. [➤](#)

### Do you have any other requirements?

Select your controller in five steps. [➤](#)



# Model-based closed-loop controlling

## Typical of this application:

Processes that are complex to control often have to be physically modeled. That's why the right controller needs to offer:

- **High availability during ongoing operation**  
The controller must be resistant to dirt, shocks, and vibration.
- **Model-based closed-loop control**  
The controller has to automatically readjust servomotors, for example for a constant material flow in casting processes.
- **Complex process monitoring**  
Processes and legislation require detailed process validation and the perfect functioning of components.

For these requirements, we recommend the **SIMATIC S7-1500 Software Controller**. For more information, visit the product page. Or you can directly start our TIA Selection Tool.

## SIMATIC S7-1500 Software Controller

Top performance for PC-based automation [↗](#)

## TIA Selection Tool

You can configure your controller here. [↗](#)

## Do you have any other requirements?

Select your controller in five steps. [↗](#)



# Assembling

## Typical of this application:

Pick and place, assembly tasks, and handling tasks require freely programmable movements in space for different kinematics. The right controller must offer:

- **Ease of programming**  
Program in a familiar environment based on PLCopen.
- **System-integrated kinematics**  
Easily parameterize typical kinematics with up to four interpolating axes.
- **Convenient engineering**  
Simple configuration, commissioning, and diagnosis of kinematics as well as 3D visualization of movements.

For these requirements, we recommend the **SIMATIC S7-1500 T-CPU Advanced Controller** for complex motion control applications. For more information, visit the product page. Or you can directly start our TIA Selection Tool.



### SIMATIC S7-1500 T-CPU Advanced Controller

The controller for complex motion control applications [↗](#)

### TIA Selection Tool

You can configure your controller here. [↗](#)

### Do you have any other requirements?

Select your controller in five steps. [↗](#)



# Cutting and sawing

## Typical of this application:

Machining products while they're in motion requires a precise synchronization of axes between product feed, saw, knife, flying shears, and sealing unit. The right controller has to offer:

- **Ease of programming**  
Program technologically complex movements in a familiar environment based on PLCopen.
- **Highly dynamic synchronization/desynchronization**  
Fast production sequences and high clock-pulse rates call for high dynamics and precision for exact cutting positions.
- **Print-mark synchronization**  
Precise-print mark acquisition for adapting to changing product characteristics.

For these requirements, we recommend the **SIMATIC S7-1500 T-CPU Advanced Controller** for complex motion control applications. For more information, visit the product page. Or you can directly start our TIA Selection Tool.

### SIMATIC S7-1500 T-CPU Advanced Controller

The controller for complex motion control applications [↗](#)

### TIA Selection Tool

You can configure your controller here. [↗](#)

### Do you have any other requirements?

Select your controller in five steps. [↗](#)



## Typical of this application:

Flexible filling processes – for example, in the beverage industry – require that the motion of the filling tubes be quickly and individually adaptable to the container format. The right controller must offer:

- **Ease of programming**  
Program technologically complex movements in a familiar environment based on PLCopen.
- **Nonlinear motion control**  
Flexible adaptation to new product characteristics and container geometries for quickly changing production sequences.
- **Print-mark synchronization**  
Precise labeling requires the precise acquisition of label positions and their placement.

For these requirements, we recommend the **SIMATIC S7-1500 T-CPU Advanced Controller** for complex motion control applications. For more information, visit the product page. Or you can directly start our TIA Selection Tool.



### **SIMATIC S7-1500 T-CPU Advanced Controller**

The controller for complex motion control applications [↗](#)

### **TIA Selection Tool**

You can configure your controller here. [↗](#)

### **Do you have any other requirements?**

Select your controller in five steps. [↗](#)



# Integrated functions in all SIMATIC Controllers

## Integrated functions in all SIMATIC Controllers

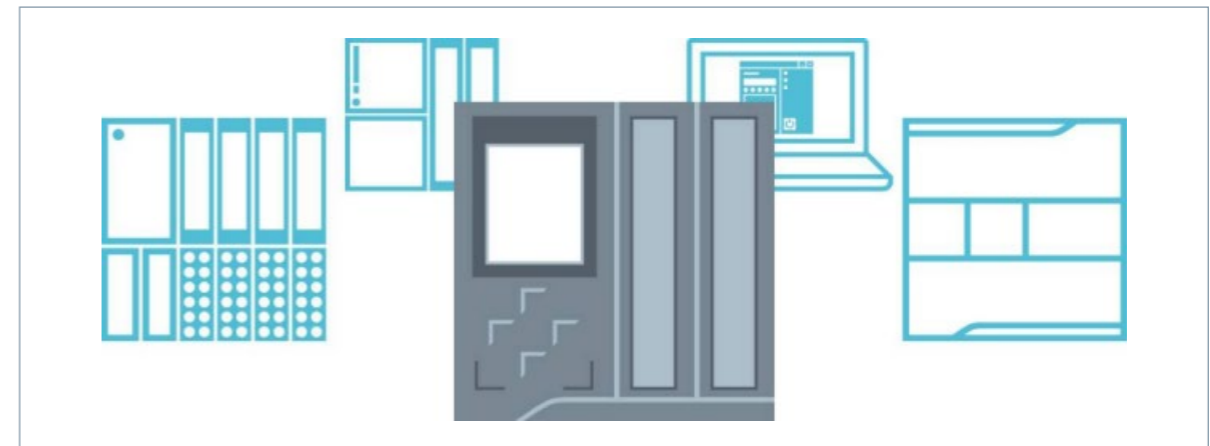
In addition to their scalability, every controller offers integrated system functions such as efficient engineering, high performance, innovative design, reliable diagnostics, Safety Integrated, Technology Integrated, and

Security Integrated. This allows great flexibility in the design or adaption of automation solutions, without having to constantly accumulate more knowledge and expertise.



### Efficient engineering

The seamless integration of SIMATIC Controllers in the shared TIA Portal engineering framework enables the consistent storage of data, the smart library concept, and a uniform operating philosophy. This makes the use of universal functions especially easy.



### Innovative design

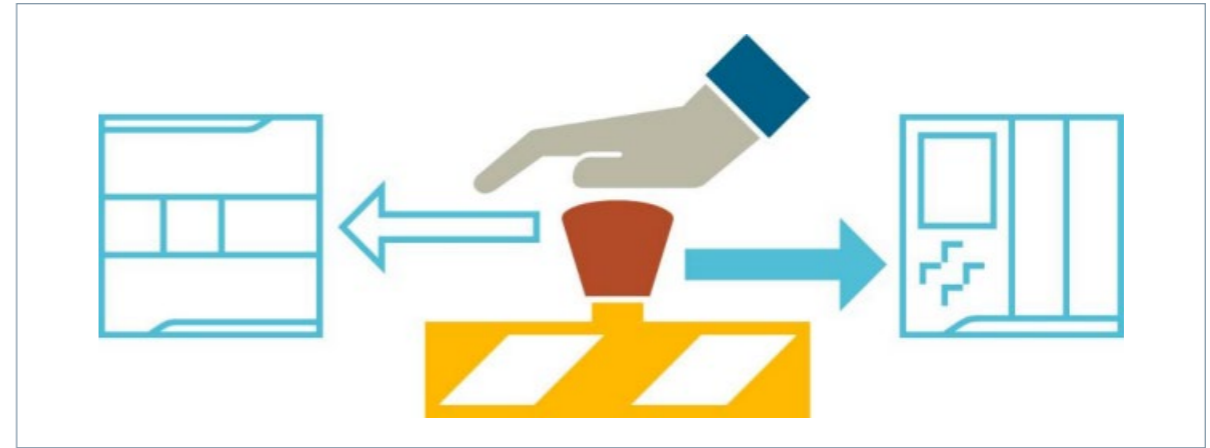
Each controller can be set up and wired differently. The SIMATIC Controller portfolio offers modular, compact, and PC-based CPUs.





### Reliable diagnostics

The integrated system diagnostics with efficient fault analysis and fast troubleshooting cuts commissioning time and minimizes downtime in production. Faults are uniformly indicated in the engineering on the HMI, in the Web server, and in the display of the SIMATIC S7-1500.



### Safety Integrated

Fail safe SIMATIC Controllers offer the greatest possible level of integration: one controller, one communication system, and one engineering for both standard and failsafe automation.



### Technology Integrated

Technology functions for counting and measuring tasks, closed-loop control, and motion control are integrated into all SIMATIC Controllers. Technology CPUs are used for sophisticated motion control tasks.



### Security Integrated

Intellectual property and the investment it represents are safeguarded by the integration of knowledge protection, protection against copying and manipulation, and extra password protection for access to program content.





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