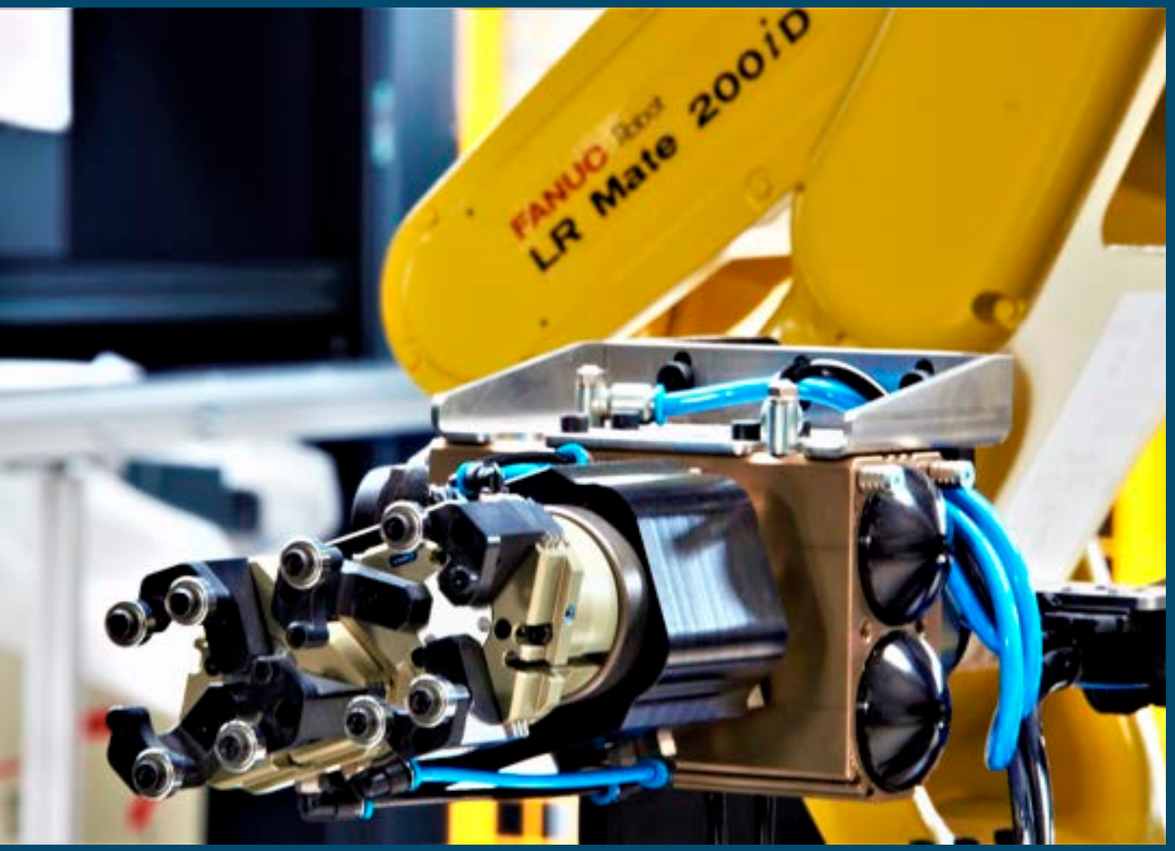
BFSA

Black Forest Smart Automation

# Smart
# high-end solutions for your manufacturing

Black Forest Smart Automation




## Stay flexible
## Start smart - expand as needed

Every company has individual production requirements, and every product requires customized production processes. To remain competitive in the long term, it is becoming increasingly important to be able to adapt production processes quickly and easily at short notice. Respond flexibly to changes or new requirements and expand your system as needed.

Simply add further modules or additional functions to your SmartCell from our extensive modular system, such as:

- Palletizing modules
- Conveyor belt / throughput system extensions
- Door module for CNC machines
- Stacking / unstacking modules
- Fault diagnosis & component tracing





With our implementable SmartModules, lengthy process and production chains can be shortened and optimized. To do this, integrate the following work steps into your SmartModule.

Nowadays, getting started with automation is no longer a question of “whether or not”, but rather “when and how”. Our modular design makes it very easy for you to get started. The SmartCell is the core piece on which further modules are built. In this way, you get a solution tailored to your production.

| | | | | |
|---|---|---|---|---|
| **Cleaning** | **Air-Cleaning** | **Preservation** | **Measuring** | **Marking** |
| **Packaging** | **Brush-Deburring** | **Bonding** | **Joining** | **and much more...** |

Intelligent software solutions allow you to control your processes remotely. End-to-end data management and seamless data tracking are possible.
Your process is very specific, complex, and individual? Just get in touch with us.

Our powerful team with young revolutionary ideas, coupled with plenty of experience, will find the optimal solution for you.

## SmartCell

Shorten your entire process, increase your productivity, and reduce your operational costs at the same time.

The BFSA SmartModule integrates into your existing processes and offers maximum versatility and running safety in the smallest of spaces.

You get your automation as an “All-In-Solution” with our complete service, or you take over the integration into your production yourself. Just as you like.

User training, of course, can also be booked. The SmartCell requires just the footprint of a Euro pallet (48x32 in).

## Equipment

- Protective enclosure with two-part access door
- Stable construction
- Industrial robot with high payload
- Conveyor belt
- Signal lamp 4-color
- Control cabinet
- Machine feet
- Device for moving with lift truck
- 2 viewing windows
- Safety elements (emergency stop, safety fence)
- CE protective enclosure
- Profinet I/O modules expandable
- Safety CPU expandable
- Simplest expansion options





## 1 Extensions

You can supplement your SmartCell with additional process steps. This is possible both inside the SmartCell with selected modules and outside, for example with additional cells or palletizing systems.

## 3 Gripper assembly

Individually adaptable to your application.


## 2 Robots

6-axis industrial robot with high payload.

## 4 Control

Continuous control concept (all-in-one system), intuitive and user-friendly touch control, remote access, optional data acquisition.

## 5 Control element

Easy operation via 3 push buttons (“push the flashing button” concept), complete error output.

## 6 Maintenance-friendly protective housing

The system is protected from all sides and at the same time accessible from all sides for maintenance activities. A contradiction? Absolutely not, our solution offers you optimum serviceability.

## 7 Dimensions

With a footprint of only 48x32 in, the basic module can be flexibly positioned.

## Implementable modules

Shorten your entire process and manufacturing chain with our integration modules.

Simply integrate your downstream manufacturing steps into your smart cell and complete them in parallel

### 1 Laser marking

Mark your workpieces directly in your SmartModule. Individual labeling, integrated quality inspection and correction of position deviations.






### 2 Gryphon

The gripper design is individually adapted to your workpieces and requirements.

### 3 Measure

Your workpieces are measured tactile or optical. For high-precision and sensitive surfaces, we offer air measurement. With the thread testing station, a reliable testing of threads is possible. Post process measuring with automated feed back to the CNC machine can be offered as well.

### 4 Cleaning / air purification

Free your workpiece from coolant residues via vacuum suction and blow-off cleaning. Or achieve the highest results to the residual dirt requirement by rinse cleaning / wet cleaning.

### 5 Docking station / heavy-duty rollers

Use your smart module even more flexibly with a docking station.
A simple locking system makes it very easy to disconnect the automation from the machine and ensures quick accessibility to the machine, for example, during maintenance.

### 6 Preserving

Apply a preservative directly and protect your workpiece from corrosion.

### 7 Packing

Use your or our standard circulation packaging.

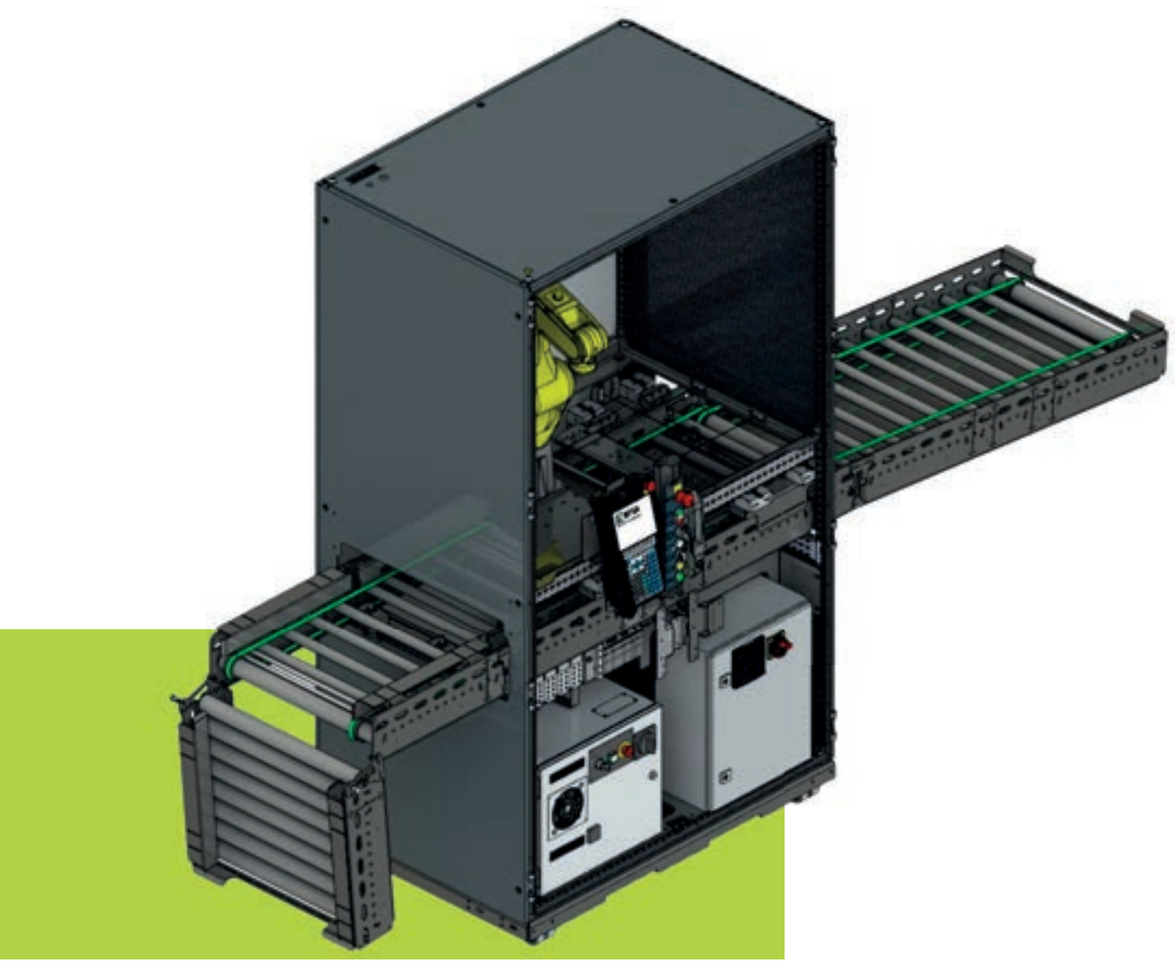
## Expansion modules

Add our expansion modules to your smart cell and extend the autonomy time.

> “Flexible expansion as an autonomy time booster.”

## Technical data

Basic cell dimensions: 48 x 32 in.
Continuous belt standard: 118 in + extensions.







### 1 Tape module

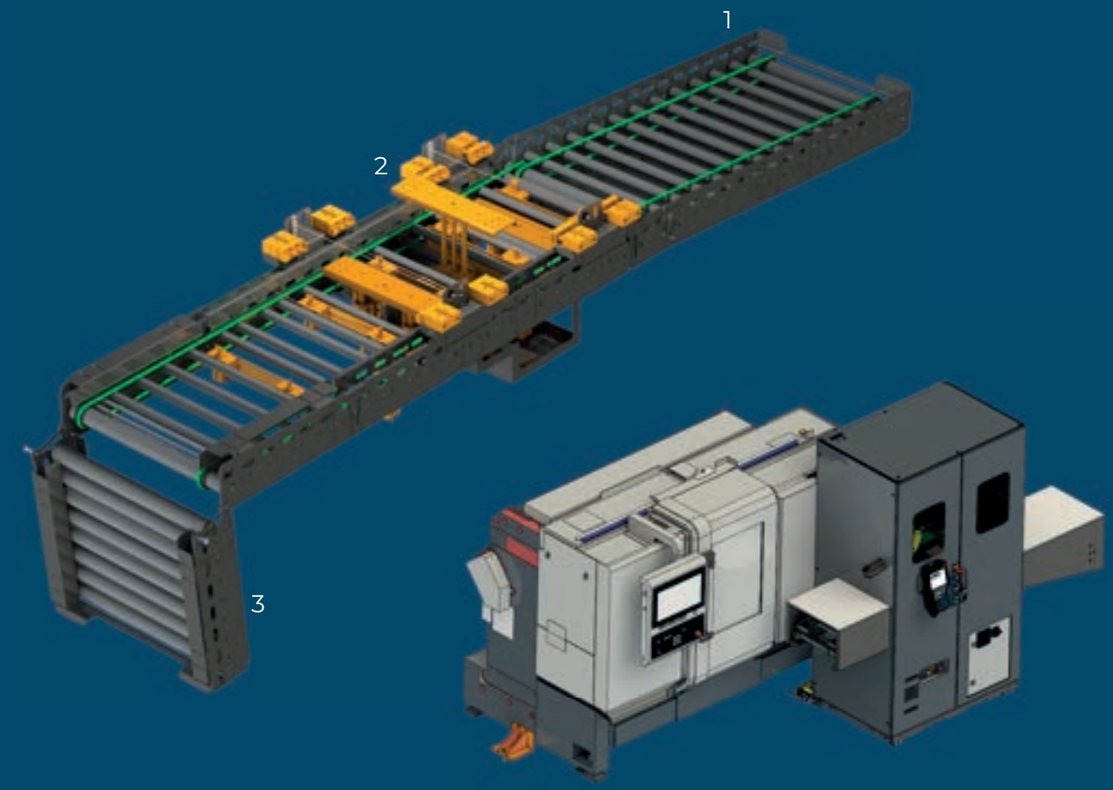
Extend the conveyor belt already installed in your smart cell with our belt modules. This is a simple way to increase the autonomy time.

### 2 unstacking & stacking modules

By using our two-palletizing system, the autonomy can be almost doubled on the same belt length. This means that two trays can be fed onto each other. For processing, these are separated by stacking and stacked again after processin.

### 3 Band extensions

The belts can be extended almost at will. By using the folding module, the belt can be folded down effortlessly.




The figure already contains several configuration options.

## Modular construction

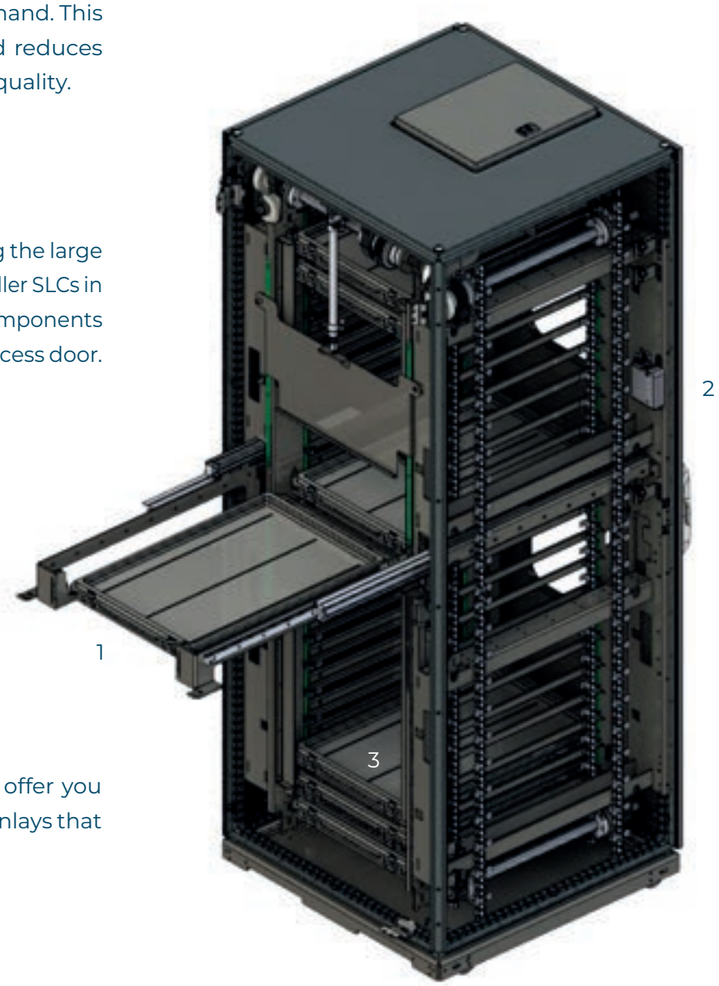
The chain palletizer is integrated into a safety housing (31.5 x 31.5 in). The module can be retrofitted to existing SmartModules.

### 1 Loading area

The loading area offers space for loaded product carriers or workpiece inlays up to 31.5 x 23.6 in. This gives you a loading area size that makes loading easy. Small load carriers (SLC) can be used directly and do not have to be restacked beforehand. This saves time and manpower and reduces sources of error. A plus for your quality.

### 2 Feed

Fast filling is optimized by loading the large SLCs (15.8 x 23.6 in). If you have smaller SLCs in use, these can also be fed. The components / SLCs are fed via the generous access door.




### 3 Inlays

If you use SLC-free loading, we offer you custom-fit component-specific inlays that you can load and feed.





## Chain palletizer

Expand your smart cell with the chain palletizer. It is ideally suited for heavy workpieces. In addition, it is a true space miracle.

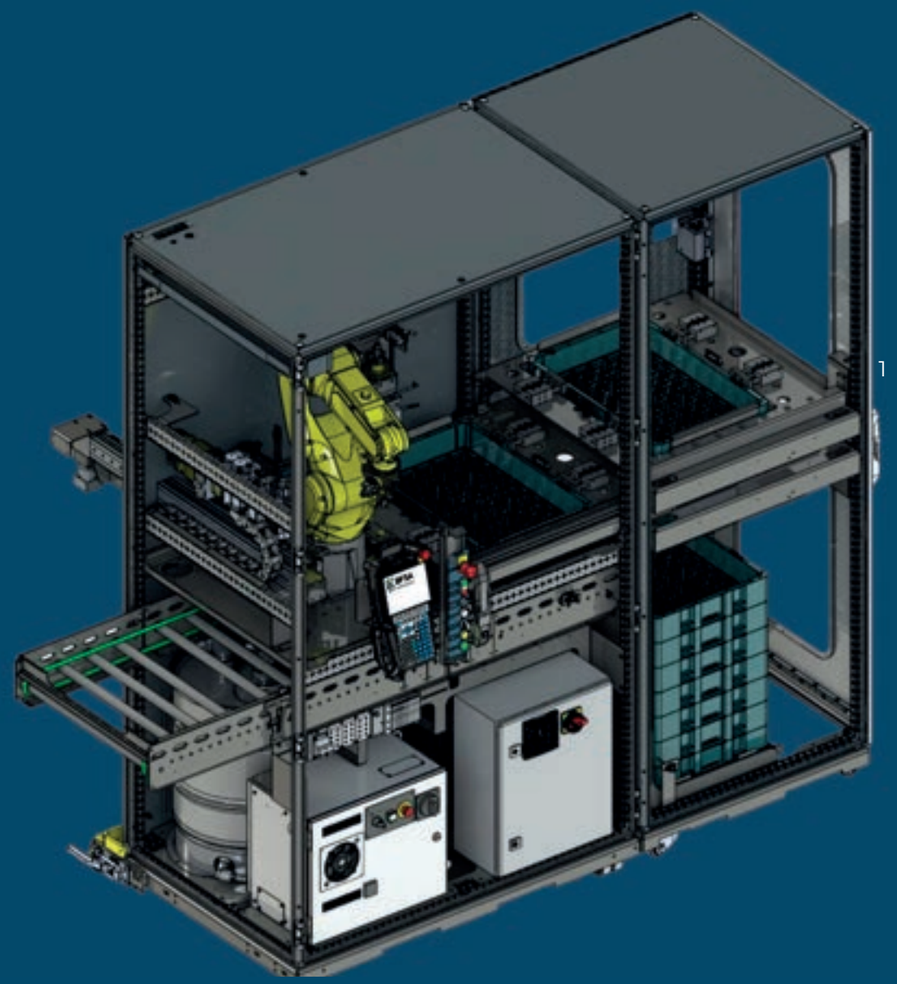
Several chain palletizers are possible per smart module. These can be connected in series and / or opposite, which allows even greater autonomy.

The figure already contains several configuration options.

## Floor roller module

Expand your SmartCell with the floor roller module. This module can be used to feed floor rollers with or without SLCs. The SLCs are fed to the automation individually by stacking. After the SLCs have been filled, they are stacked again and can be removed from the automation via the floor rollers and fed to other automations.

In combination with the conveyor belt, individual SLCs can be fed to the smart cell and then filled and stacked on a floor roller. Depending on the application, this also works the other way around. Several floor roller systems are possible per SmartModule. These can be connected in series and / or opposite each other, which enables even greater autonomy.



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The figure already contains several configuration options.





## Modular construction

The floor roller module in its own safety enclosure 31.5 x 23.6 in. The module can be retrofitted to existing smart modules.

### 1 Feed

The floor roller with SLCs (23.6 x 15.7 in). The floor rollers are fed via the generous access door.

### 2 Mobility

No need to lift heavy SLCs, the floor roller module can simply be moved by hand.

### 3 Uninterrupted manufacturing

By filling several bottom roller modules, you enable uninterrupted operation of your plant.

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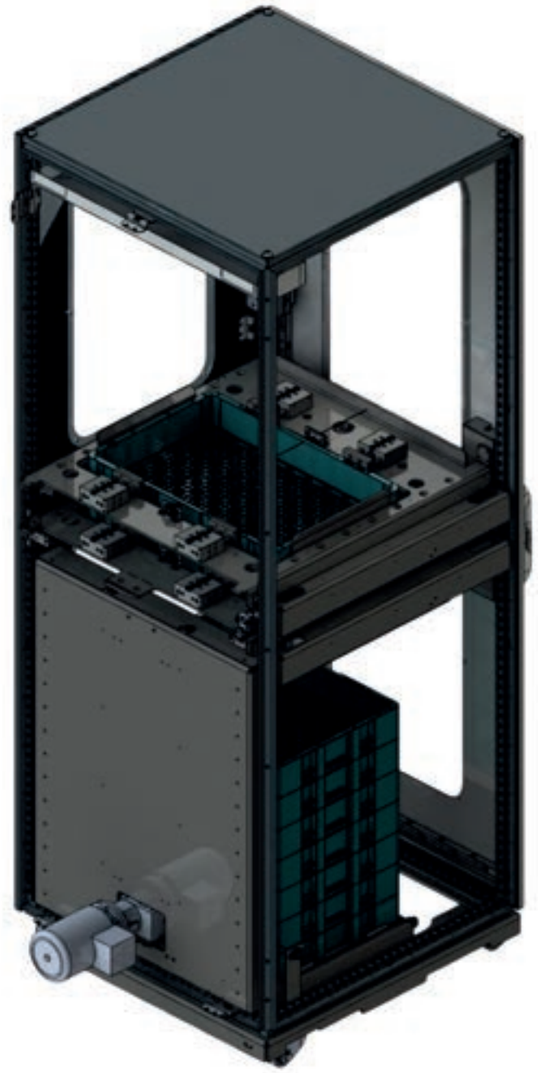
### 4 Batch separation

The use of multiple floor roller modules for feeding and discharging components allows you to cleanly separate batches, if desired.



## Tape stacking module

Expand your smart cell with the tape stack module. This is a true autonomy miracle. By lining up several modules, the autonomy of the smart cell can be expanded many times over. Each module has space for SLC stacks. The SLCs are fed individually to the smart cell by stacking, which are then filled/processed and discharged via the continuous conveyor.

Depending on the application, this also works the other way round. Stacking of the filled / processed SLCs can be done opposite in a separate module. Several destacking modules per SmartModule are possible. These can be connected in series and / or opposite, which enables even higher autonomy.


The figure already contains several configuration options.





## Modular construction

The belt stack module in its own safety enclosure 31.5 x 23.6 in module can be retrofitted to existing SmartModules.

### 1 Feed

By lining up several modules, the belt stack module with the SLC stack (23.6 x 15.7 in) is an autonomous wonder.

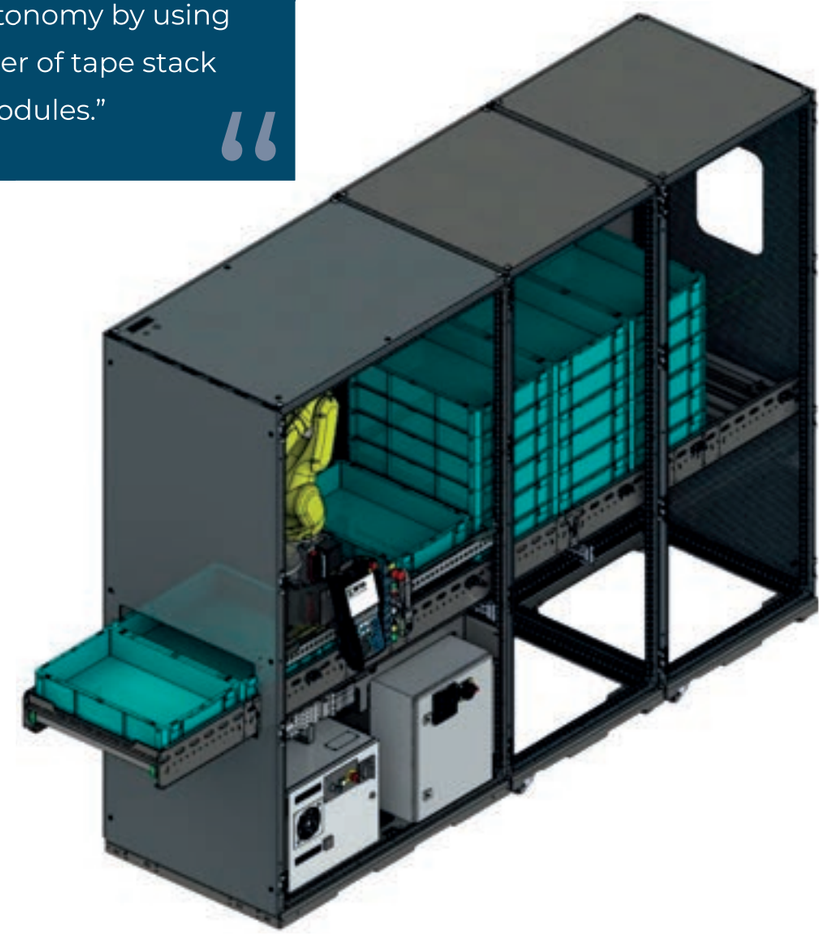
> “Our autonomy miracle: Endless autonomy by using any number of tape stack modules.”

### 2 Uninterrupted manufacturing

By filling multiple tape stack modules, you enable uninterrupted operation of your line.

### 3 Batch separation

The use of multiple belt stack modules for feeding and discharging components allows you to cleanly separate batches, if desired.



## Marking cell

Supplement your production with our marking cell. This can be integrated into your production as a stand-alone unit. The use of a 6-axis industrial robot makes it possible to mark the workpieces without regripping.

Drawers allow the carrier systems or workpieces to be loaded and removed ergonomically.

Thanks to the simple and intuitive control system, program creation, program changes and program changes are effortless to implement for small, medium, and large batch sizes.

The marking cell is also compatible with our modules. Not only the space and cost savings, but also the easy changeover and flexibility make this system an added value for your production.

## Marking technology

Labeling & inspection by integrated camera & measuring laser. Distance (z) detection and automatic correction.

Component position detection (x-y) and marking alignment.

Contour detection (curves, inclined plane, turns, etc.) of the components and automatic adaptation of the laser field to the contour. Contamination inspection of the lens.

Autofocus in the entire marking field. 2D code reader with quality check.

> “Whisper-quiet
> 360° autonomy”

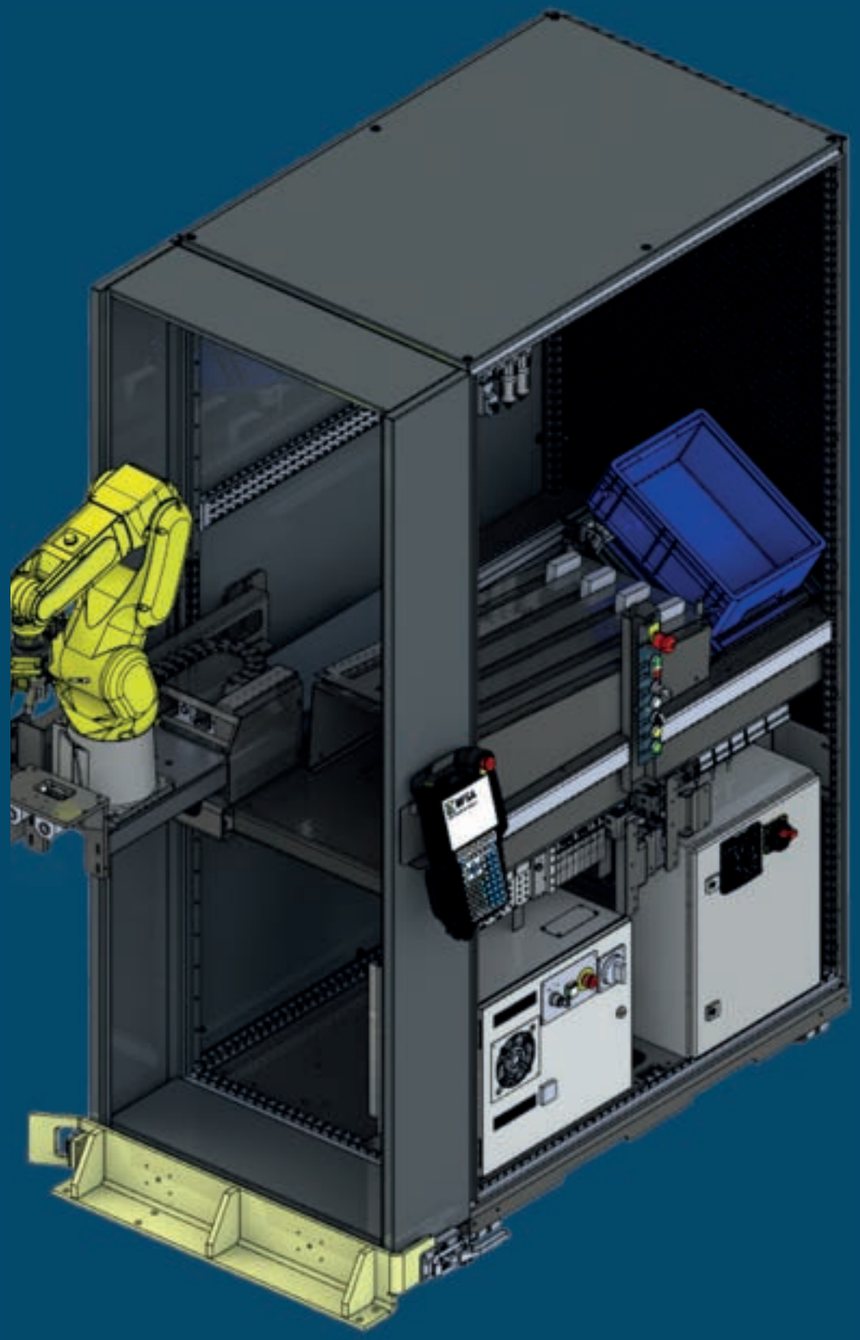




## Technical data

Basic cell dimensions: 48 x 32 in, Assembly area: 2x 27.6 x 15.7 in.
Connection: 230 volts, no compressed air necessary, because electric gripper installed.

The figure already contains several configuration options.







## The patented intelligent vise solution

The intelligent vise solution is ideal for small, medium, and large batch sizes on milling machines.

The footprint is just 59 x 31.5 in.

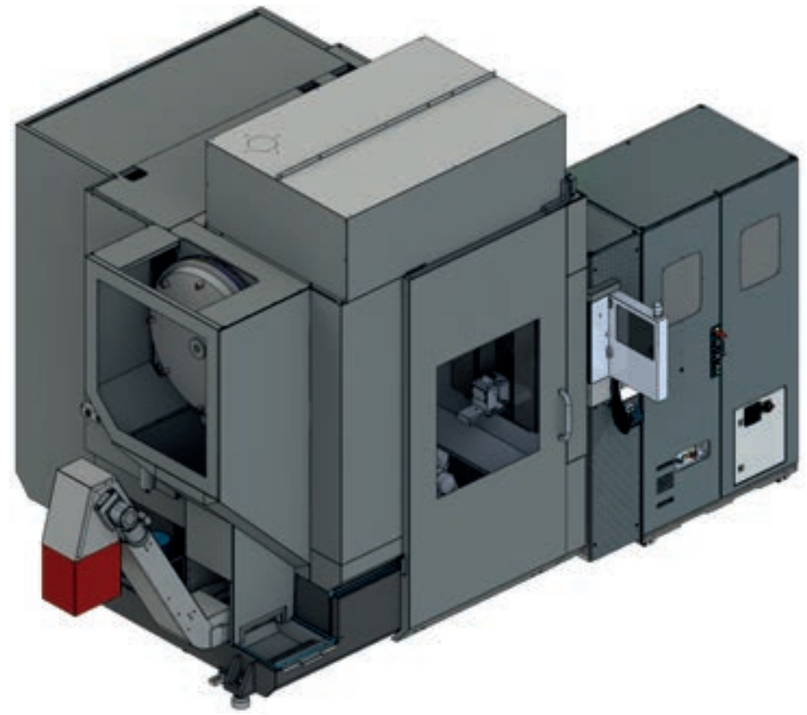
> “The footprint is just 59 x 31.5 in.”

Through this system, the manual clamping system can be operated and unloaded & loaded in parallel with a 6-axis robot.

A simple locking system makes it very easy to disconnect the automation from the machine and ensures quick accessibility to the machine, for example, during maintenance.

If required, an autonomy extension by belt systems or palletizing systems is possible at any time.

Not only the space and cost savings, but also the easy changeover and flexibility make this system an added value for your production.



## Cleaning cell

The inline cleaning cell combines small footprint paired with the highest demand for cleanliness.

Pre-cleaning removes the coarse particles and the cooling lubricants from the workpiece. Final cleaning / rinsing removes the fine particles and meets a high cleanliness requirement. By adding a preservation medium, workpieces at risk of rusting are protected.

The preservation dries up in the next work step. To achieve the highest quality, the medium is filtered before rinsing. In addition, pressure, temperature, and filling level are permanently monitored.

The footprint per module is just 48 x 32 in.

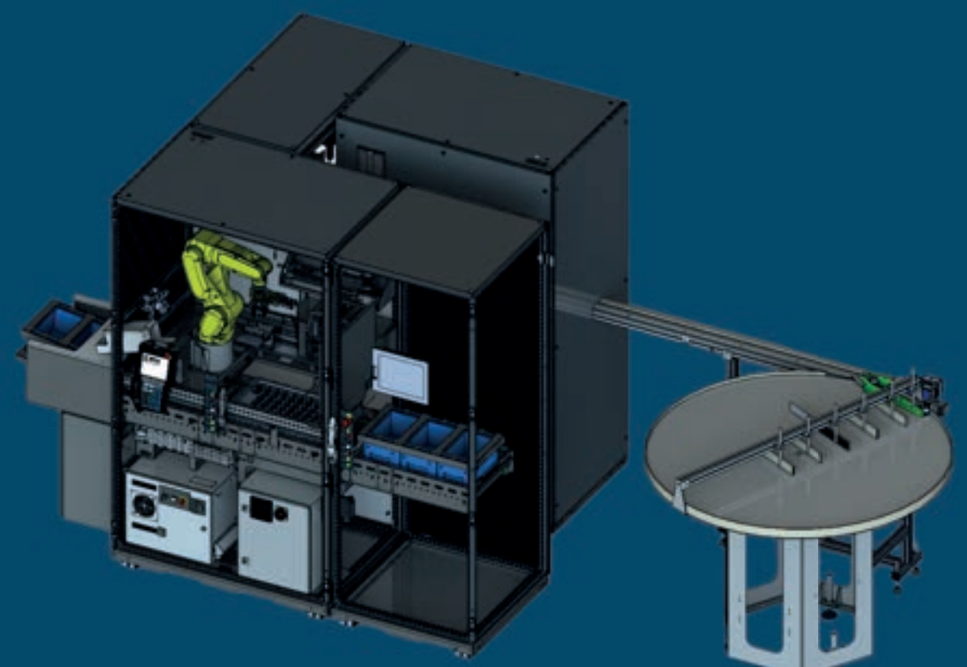
The pre-cleaning, final cleaning and drying modules are connected in series and can be set up in a U-shape, in an L-shape or in a straight line. In combination with the smart cell, upstream and downstream processes can be handled in combination with the cleaning cell. The feeding of the workpieces can be done via different feeding systems.

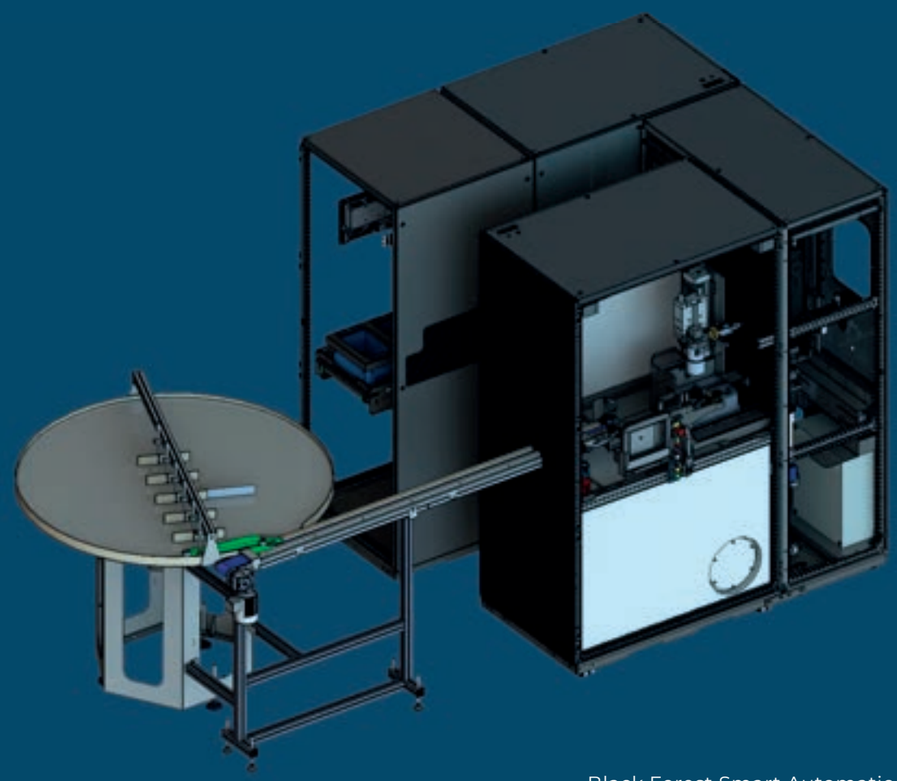
Not only the space and cost savings, but also the easy changeover and flexibility make this system an added value for your production.

> “Just clean.”







## Brush Deburring Cell

The brush deburring cell focuses on the deburring and rounding of workpieces, even with strongly varying contours. The workpieces are gripped by the robot and the edges to be deburred are deburred using a round brush or deburring chisel.

Multiple brushing stations with different brushing heads can be implemented.

Brushing process monitoring tells the operator whether the brushes are engaged or not. The wear of the brushes can thus be monitored.

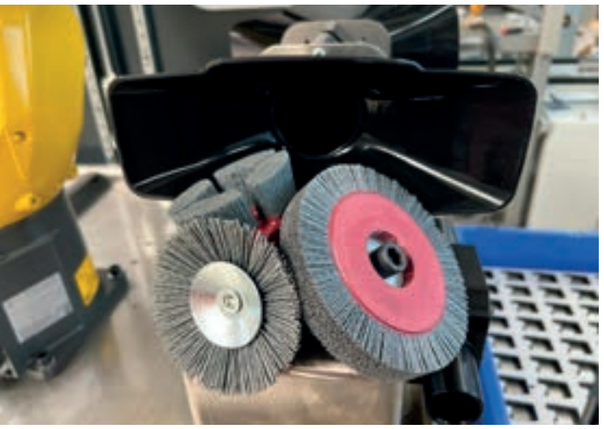
The intelligent Auto-Teach function allows positions to be taught automatically with constant contact pressures.

The workpieces are fed in SLCs (23.6 x 15.7 in), optionally carrier systems from your production.

Selected process modules can also be implemented in this cell.
Blank feeding and finished part removal from the conveyor belt are possible during the process. The modules for increasing autonomy are also used here.

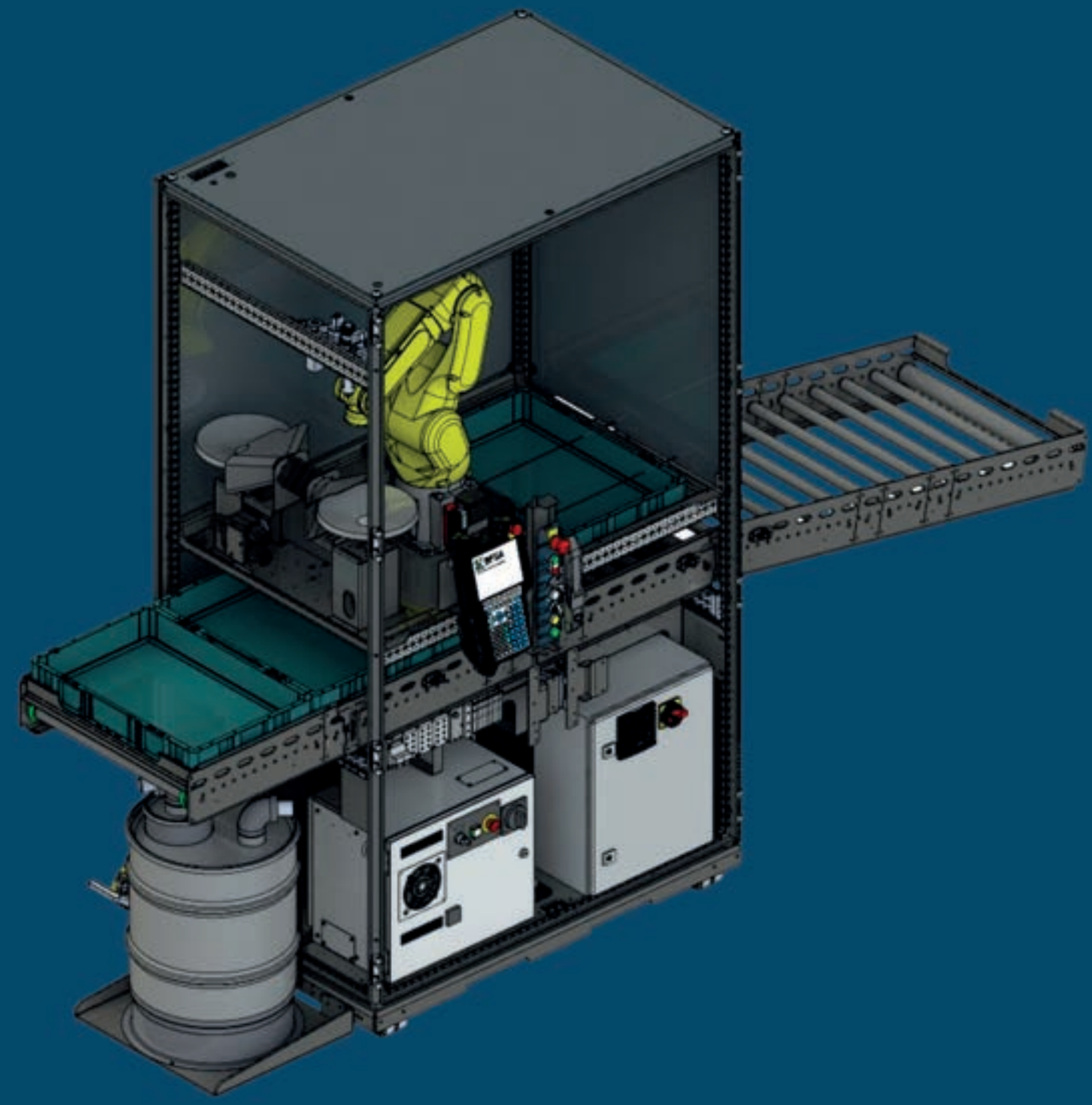
Not only the space and cost savings, but also the easy changeover and flexibility make this system an added value for your production.

> “Contour-independent deburring.”









## Gripping Modules

Handle your workpiece quickly, safely and without damage with our gripping modules.

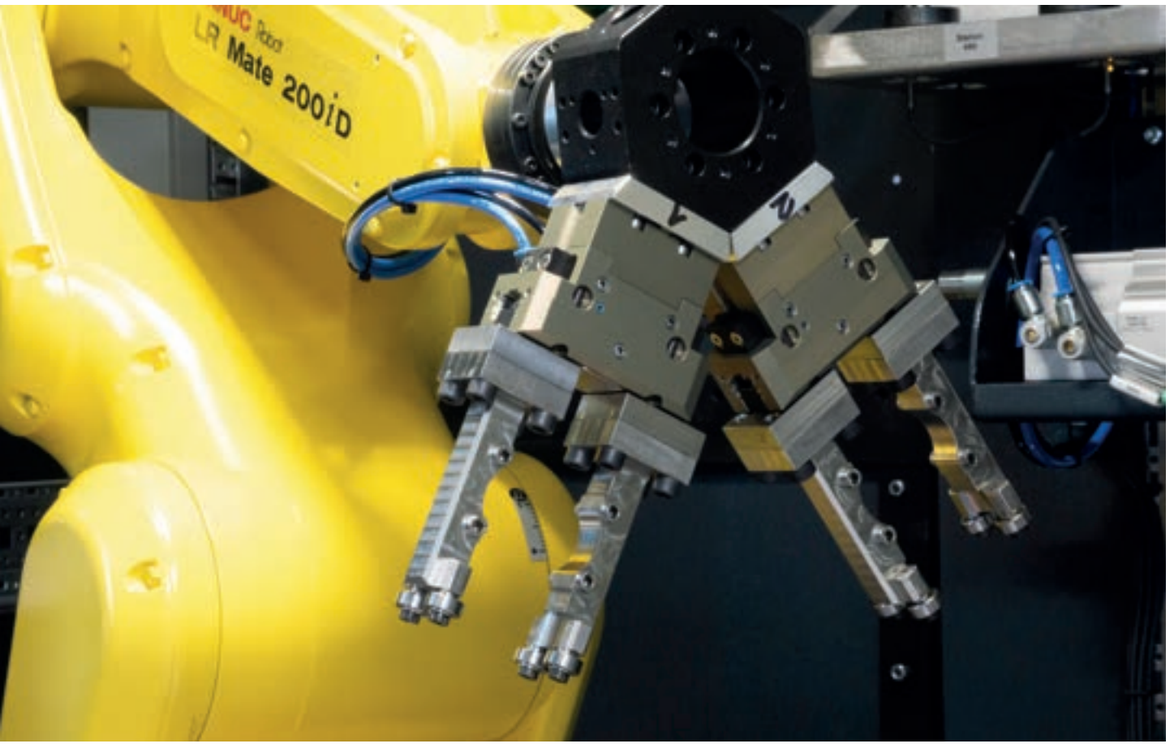
Thanks to an innovative flange, not only single grippers but also multiple grippers can be realized. Due to a variety of mounting options, the grippers can be mounted individually and flexibly on the flange.

The compensation module ensures safe joining or settling in sensitive measuring stations.

In the event of a fault, the compensation module prevents possible damage to sensitive components, automation, or your machine thanks to smart collision detection in the gripper system.

If compactness is required, the compensation module can also be integrated into the flange.

> “Let’s get it done! Careful handling of your components.”








## Basic Gripping Module

This gripping module consists of a flange adapter on which the grippers can be arranged in any position relative to each other.

The compensator is located outside the flange but can be mounted on the flange as desired.

## Gripping Module Basic compact

This gripping module consists of a flange adapter on which the grippers can be arranged in any position relative to each other.

The compensation is located inside the flange. The compact / integrated compensation is mounted in axial direction to the sixth axis of the robot.

## Gripper Module individual

This gripping module can be individually adapted to your requirements. For example, very short cycle times can be realized by feeding several workpieces simultaneously and picking them up by the robot.


Scan the QR code
now and learn more.



FEEL INNOVATION

## Our location

Convince yourself of our smart high-end solutions for your production in Loeffingen Germany and or Fountain Valley, CA.

We are looking forward to your visit.

BFSA

Black Forest Smart Automation

## Learn more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