



**ASYS  
GROUP**



**Tray- and Transfersystems**

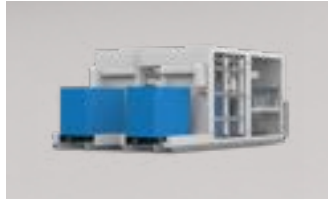
**TECTON** | *Tray- and  
Transfersystems*

# Systematic Material Flow

From stand-alone machine to fully  
integrated and smart production lines

# Preview

---



## Page 06|09 From the Smallest Trays to Euro Pallets

The PARIO machine range covers all application areas. We bring the necessary industry know-how for key sectors such as life science, automotive, electronics and many others.



## Page 18|19 Smart Factory Ready!

The ASYS Group has a broadly diversified portfolio. With our software solutions and material logistics modules the Smart Factory is already a reality today.



## Page 28|29 MOTUS Transfer and Puck Systems

Thanks to standardized modules, complex requirements even in the smallest production areas can be implemented optimally.

# Content

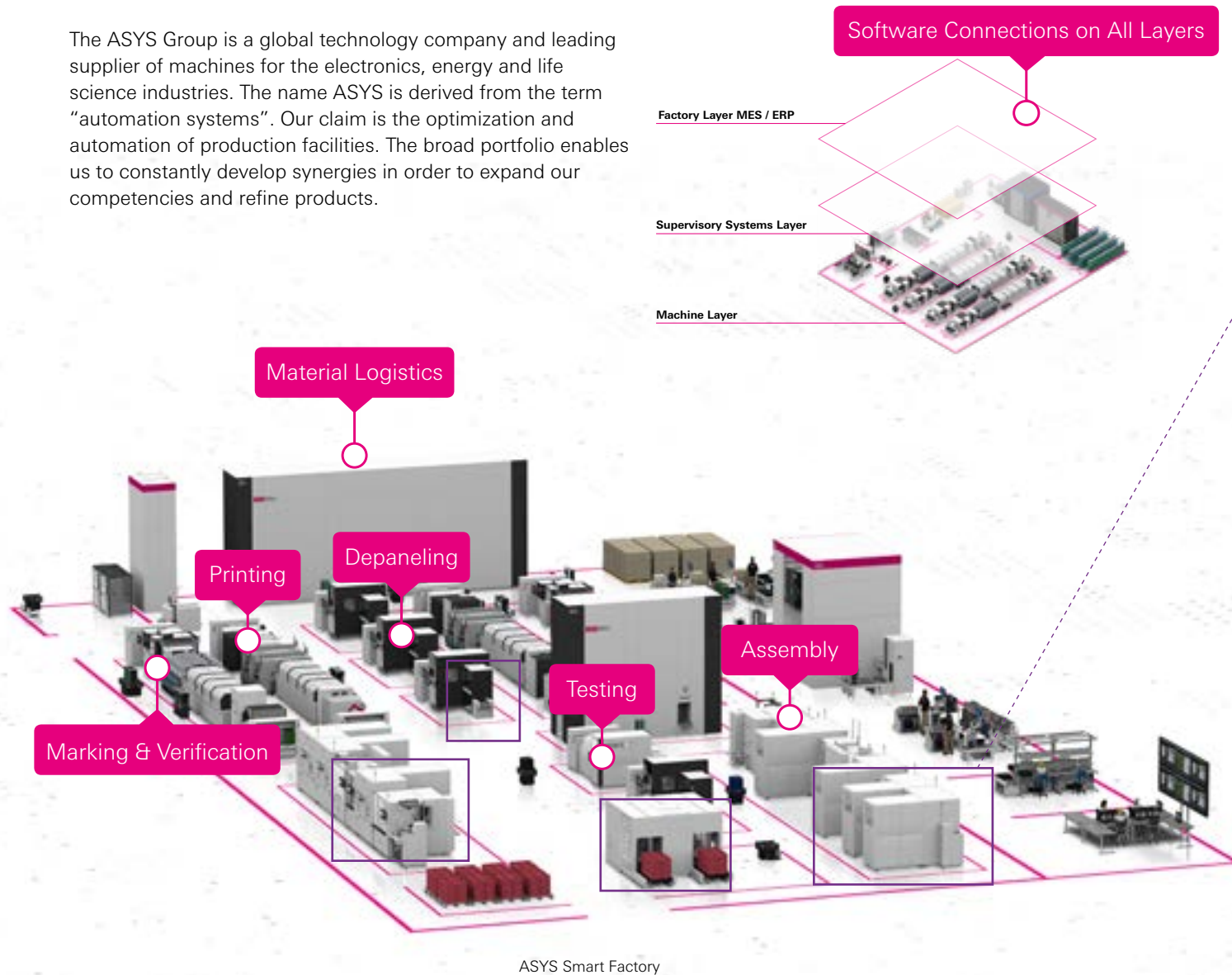
---

<b>ASYS Group</b> Solutions for Your Shopfloor	<b>04</b>
<b>TECTON</b> The Specialist for Systematic Material Flow	<b>05</b>
<b>PARIO</b> Tray and Component Handling	<b>06</b>
<b>Tray Handling</b> With All Options and for Every Application	<b>08</b>
<b>Approved Line Solutions</b> Due to Integration into the ASYS Portfolio	<b>10</b>
<b>For Your Product</b> We Have the Right Handling Solution	<b>12</b>
<b>Gripper and Tray Design</b> For Various Shapes, Materials and Quantities	<b>14</b>
<b>Options for Extended Reach</b> And Autonomy in Production	<b>16</b>
<b>Smart Factory Ready!</b>	<b>18</b>
<b>Complete Solutions</b> For Different Combinations	<b>20</b>
<b>ASYS INVENTUS</b> Customized Assembly Solutions	<b>21</b>
<b>SIMPLEX</b> Intuitive User Interface	<b>22</b>
<b>PARIO Tray Handling Systems</b> At a Glance & in Detail	<b>23</b>
<b>MOTUS Transfer System</b> Modular and Flexible Interfaces	<b>28</b>
<b>Full Service</b>	<b>30</b>

# ASYS Group

## Solutions for Your Shopfloor

The ASYS Group is a global technology company and leading supplier of machines for the electronics, energy and life science industries. The name ASYS is derived from the term "automation systems". Our claim is the optimization and automation of production facilities. The broad portfolio enables us to constantly develop synergies in order to expand our competencies and refine products.



ASYS Smart Factory



PARIO Trayloader Family and MOTUS Conveyor

## TECTON

### The Specialist for Systematic Material Flow

The core competence of TECTON is the product handling with palletizing systems and the reliable connection of assembly processes with linear transfer systems. From the smallest tray to euro pallets, the solutions cover all areas of application. Due to the integration of the TECTON portfolio into the ASYS

Group, extensive synergy effects are generated and implemented. Highly sophisticated line solutions with a structured material flow are created due to TECTON competences for tray handling and transfer.

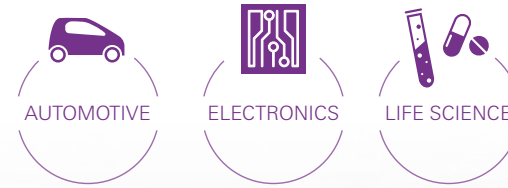


# PARIO

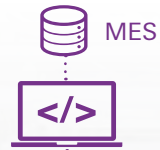
## Tray and Component Handling

Tray and component handling – from the smallest trays to euro pallets, the PARIO machine series covers all areas of application. Medical components for the pharmaceutical industry or parts from the automotive sector are handled safely and reliably with these systems.

Maximum flexibility is also demonstrated by the large number of additional options. These make the standard systems of the PARIO machine series extremely adaptable to a wide range of customer requirements.



*“No matter what industry, we have the expertise for key sectors such as life science, automotive, electronics industry and many others. We know their requirements, we have the necessary evidence, knowledge and tools and these – of course – worldwide.”*



PARIO 5000 in Pharmaceutical Version



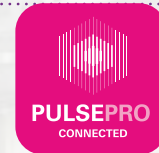
PARIO 4000 with Trolley Integration



PARIO 1000



PARIO 800

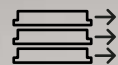


# Tray Handling

With All Options and for Every Application



Tray handling is always accompanied by other process steps. We hand over, transfer, remove and work in combination with other systems of the process chain – we set the frame.



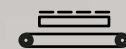
Tray handling starts with providing the trays. Whether as single mode, as a stack or as an integrated solution into an existing logistics concept – we provide.



Regardless of the type of trays, every further processing starts with destacking of trays. This is also the original business idea of ASYS TECTON – we launch.



From the tray into the production process, on workpiece carriers with free position or conveyor belt, with additional tasks like scanning, as single or multiple gripper. Many things are possible – we put on.



Transport within or between different systems or working stations, horizontal or vertical, as single system or in combination – we take further.

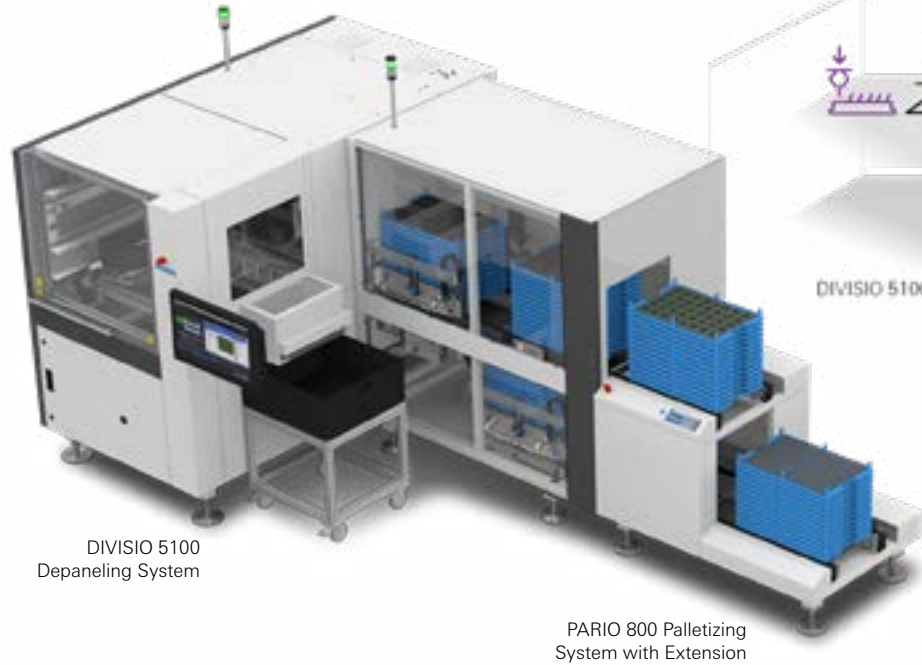


The end of the production process is sorting and stacking into a packaging unit for safe positioning and storage of single parts – we take care of.



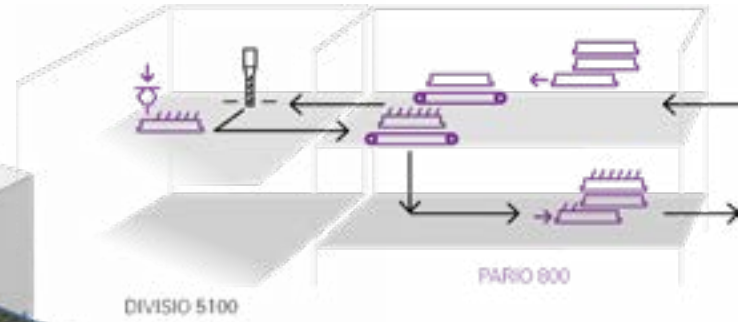
Finally, these packaging units are combined into larger transportation units and provided to logistic department – we tidy up.





DIVISIO 5100  
Depaneling System

PARIO 800 Palletizing  
System with Extension



Process Flow of Tray Loading and Unloading of  
DIVISIO Depaneling System with PARIO 800

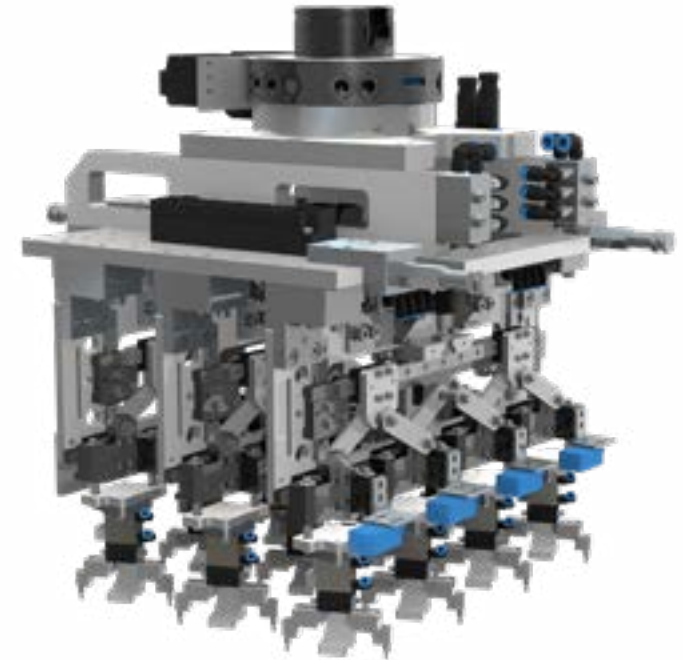
process, from loading of the panel to depaneling, to safe depositing of the individual PCBs and final stacking of the trays. Various options for increasing range and availability are possible.

#### Customized Grippers

Our grippers play a significant role at all of our operations. They are as versatile as our customers components but always developed on a base of our standardized and proven modules. The surfaces are also optimized for their tasks, right up to finest diamond coating.

#### Clean Room Solutions

All these solutions are also available for clean zone or clean room conditions as well as ESD version or with links to the customers MES/ERP systems.



PCB Gripper

## Approved Line Solutions Due to Integration into the ASYS Portfolio

Automation of handling systems in the SMT production was the foundation for the success of the ASYS Group. For more than 30 years we are a preferred partner of the electronic industry and define the standards. One of our strengths is chaining of various systems.

#### Process Chaining

For example, a palletizer in combination with a DIVISO depaneling system from ASYS Group represents a complete system which is able to automate all steps of the depaneling



Panel Gripper



PCB



Solenoids

# For Your Product

## We Have the Right Handling Solution

We meet all current standards from a wide range of industries and can also adapt flexibly to your requirements. Whether scalable tray change times and pick & place times or special trays – we make it possible. Each solution offers you ESD

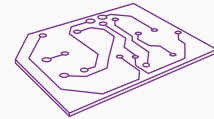
capability, automatic tool change and a superior monitoring of your shopfloor due to our PULSE PRO Smart Factory Manager.



### Electronics

PCBs, components, stamped grids, seals, etc.

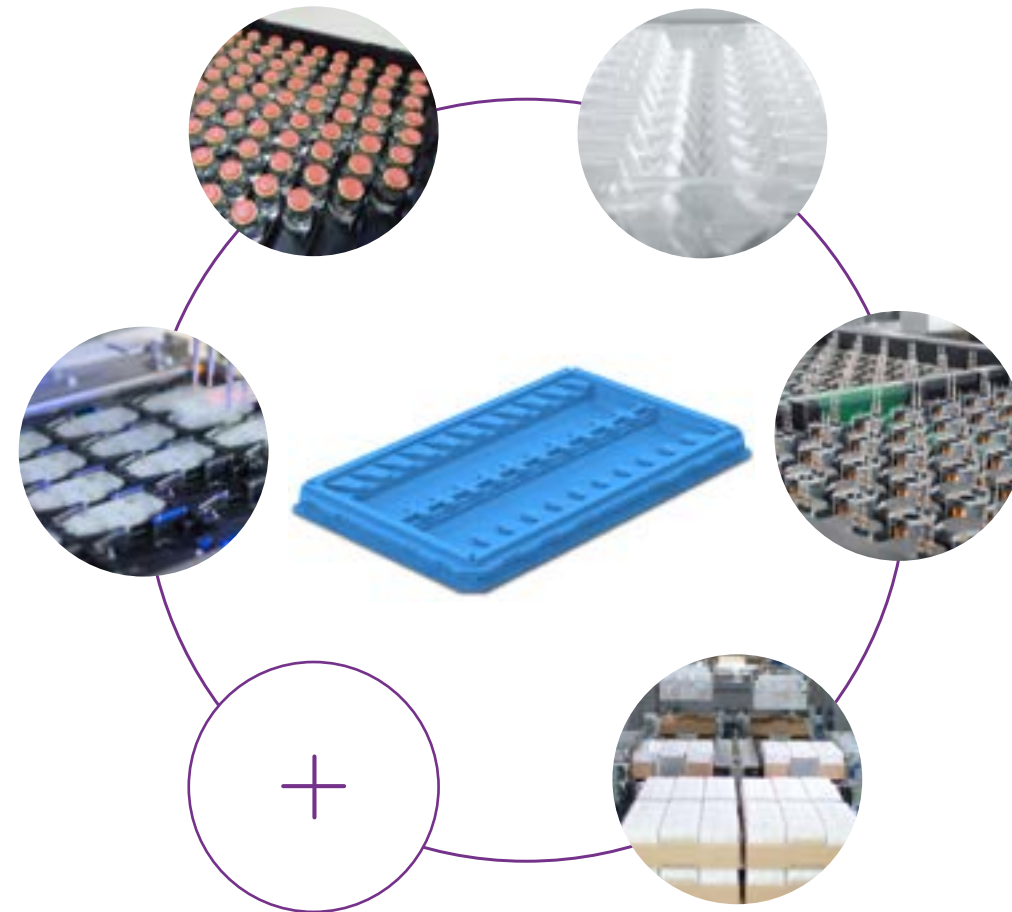
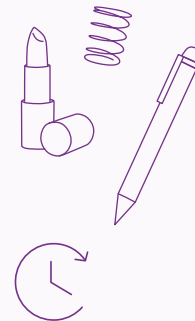
- ✔ ESD capability
- ✔ Integration of third-party machines
- ✔ Horizontal and vertical communication standards



### Customized Solutions

Various materials, shapes and quantities

- ✔ Integration of additional processes: screwing, testing, cleaning, lasering, workpiece carrier handling etc.
- ✔ Assembly tasks up to complete assembly lines
- ✔ Scalable cycle and tray change times



### Life Science

Cartridges, sensors, ceramic components, inhalers, etc.

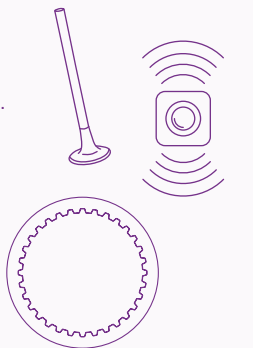
- ✔ Clean room class according to DIN ISO 14644-1
- ✔ Homogeneous surfaces and stainless steel designs
- ✔ Processes according to GxP
- ✔ Tray changing and pick & place in 3 s each
- ✔ Transport of thin-walled blister trays



### Automotive

Housings, milled parts, plastic injection molded parts, etc.

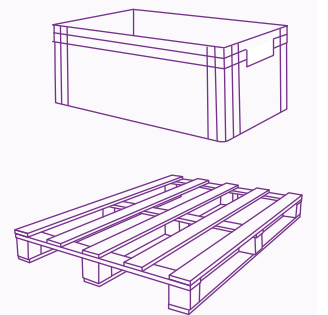
- ✔ High levels of availability
- ✔ High autonomy
- ✔ Complete traceability



### Large Parts

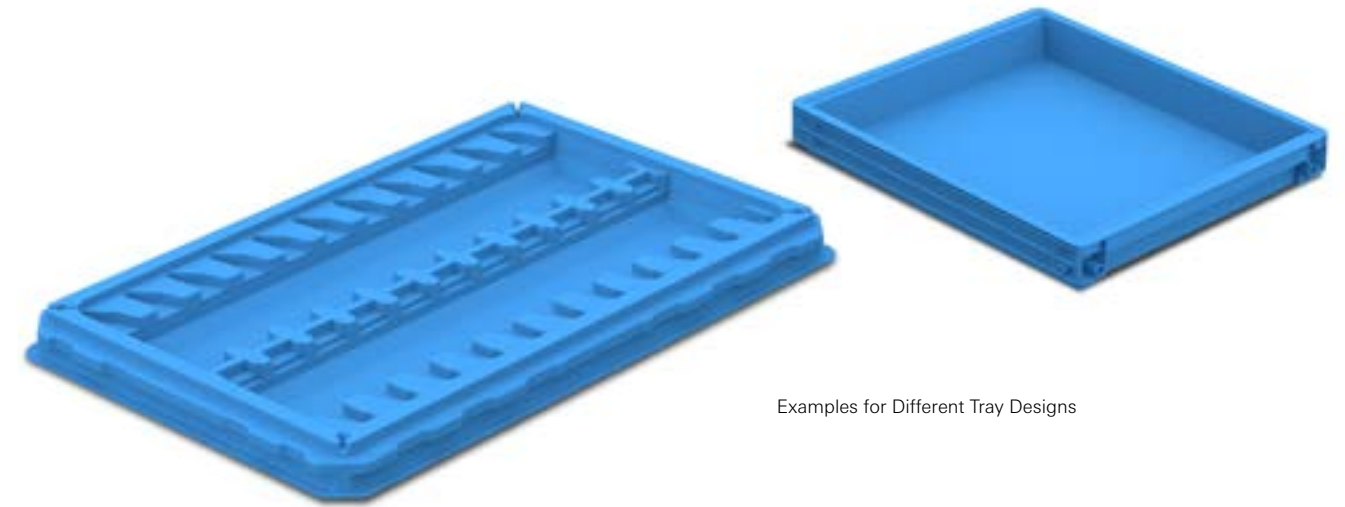
Pallets, KLT box, outer packaging, etc.

- ✔ Fast cycle times
- ✔ Robust design
- ✔ Layer pad handling
- ✔ High quantities





Examples of Customized Gripper Solutions



Examples for Different Tray Designs

## Gripper and Tray Design For Various Shapes, Materials and Quantities

The design of the grippers is our core competence. In addition to tray handling, we can also integrate component handling, which involves picking the product from the tray and placing it on a workpiece carrier. There are only a few limits regarding the shape and material of the parts. Almost anything is conceivable as long as it can be stored in a tray.

### Process Integration

Additional tasks, such as cleaning or scanning of parts, are also possible, as well as special requirements for the environmental conditions.

### Intelligent Grippers for Industry 4.0

In our portfolio we also have intelligent grippers that can be easily exchanged without programming effort or further intervention in the machine design. Similar to a USB interface, the gripper communicates with the machine and is immediately ready for use. This enables highly flexible, automated production with minimized setup costs and paves the way to Industry 4.0.

- ✔ Highest flexibility
- ✔ Adapted to your product
- ✔ Intelligent grippers for minimized setup costs

### The Right Tray for Every Part

The requirements for trays are very complex: they have to be able to withstand environmental conditions such as heat, abrasion, liquid media or impact of forces. Also they have to safely protect the workpieces and meet the requirements for trouble-free and error-free automated handling.

### Tray Specialists

We are specialists in handling all types of trays. No matter which components are to be stored and transported in a tray. We have the solution for any gripping, transporting or stacking problem

and are experienced in all common tray materials and designs.

### Tray Design

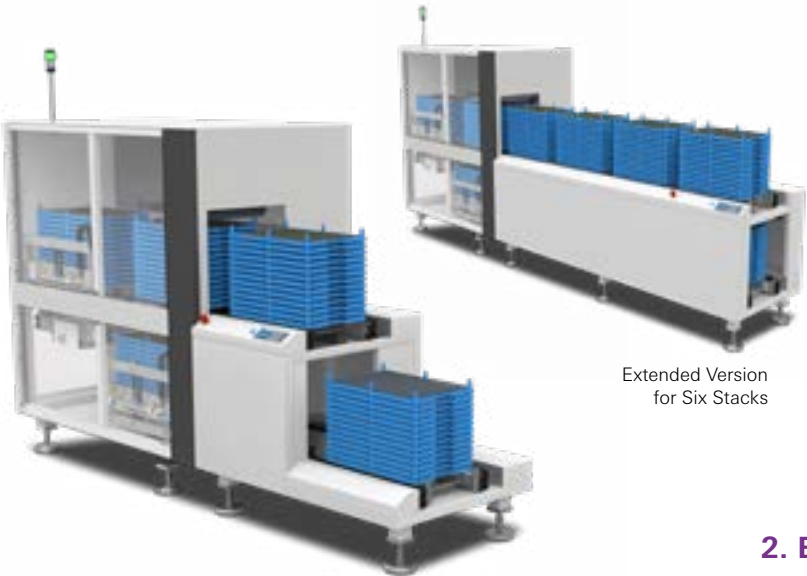
We also like to support your tray design process or can make a recommendation as to a competent partner.

- ✔ Competent support of your tray design





# Options for Extended Reach And Autonomy in Production



PARIO 800 with Extension

Extended Version  
for Six Stacks



## 2. Extension with Trolley

Our trolley solutions are the next evolution for internal logistic concepts. Not only the range extension is the driving force behind the idea, but also the fundamental reorganization of the logistics chain. Components, already delivered in stacked trays up to a height of 1.400 mm, put on a standard trolley, can directly be handed over to the PARIO trolley palletizers without any further repacking. This simplifies processes and saves money. Our trolley solutions are also connected to MES/ERP, so that everything remains in overview and is traceable at any time.

## 1. Extended Ranges

Our equipment is designed for 24/7 operation. It is therefore logical to offer options for extended ranges or even autonomous production. We have developed solutions for various industries with extended infeed and outfeed areas.



PARIO 500 with Trolley Extension



PARIO 1000 with AMR Connection



PARIO 4000 3-Slot Palletizer with Trolley Extension

## 3. Extension for Autonomous Production

The tray handling systems are part of our concept for autonomous production. Here, we offer solutions with AMR (Autonomous Mobile Robots) with structure and interface to our machines. The AMR changes trays fully automatically and thus enables self-organized material logistics. The whole setup is integrated into the ASYS Material Logistics System, which offers a comprehensive range of warehouses, fleet management and transport and can be monitored with our PULSE PRO software.



## Smart Factory Ready!

The ASYS Group has a broad portfolio. With our software solutions and material logistics modules, the Smart Factory is already a reality today.

### PULSE PRO – Smart Alerts

In the PULSE PRO Function Smart Alerts, ASYS offers different devices, connections and software solutions, which simplify the daily work in a production environment.

TECTON has integrated these pioneering solutions into PARIO tray handling systems and optimized them for handling tasks. Thanks to the connection to PULSE PRO Smart Alerts, the systems can be monitored anywhere via smartwatch and tablet.

Our assistance system connects the operator with the machine and enables optimized and simplified process sequences in production. The entire line can be monitored and thanks to mobile notification, a prompt reaction is possible.



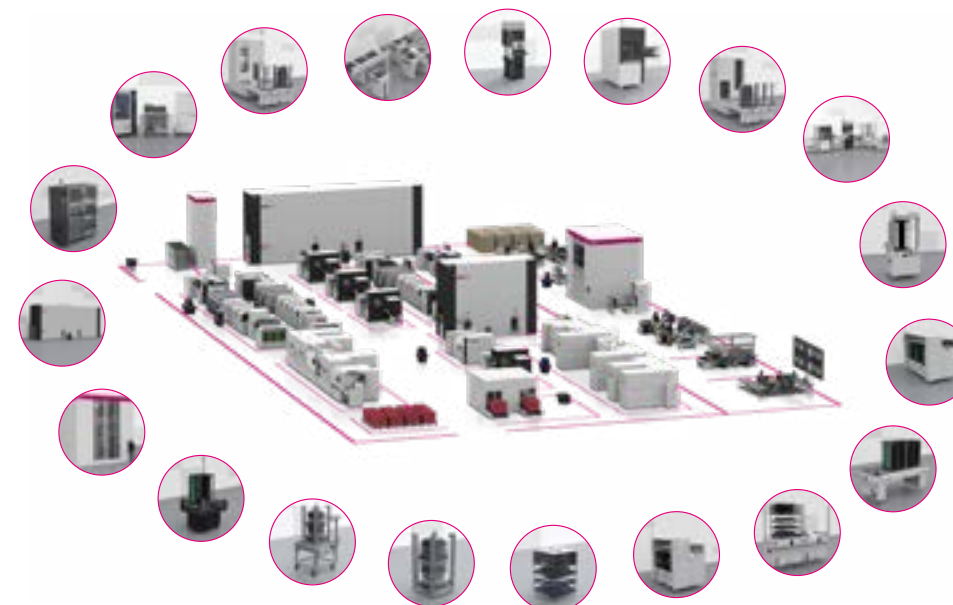
- ✔ Fewer downtimes
- ✔ Automatic and continuous material supply
- ✔ Easy operation of the palletizers

### PULSE PRO – Material Software Solutions

Automation, control and tracking of all material flows and types



- ✔ Connection of all logistics modules
- ✔ Status determination of all stations
- ✔ Machine and AMR connections
- ✔ Fully integrated material supply
- ✔ Interfaces for the connection to higher-level software systems (e.g. MES, ERP, etc.)
- ✔ Standard interface or customized configuration for seamless communication
- ✔ Tray detection on the lines using a unique identifier (Unique ID)
- ✔ RFID can be integrated into the process



### MATERIAL LOGISTICS – Grows with Your Needs

We automate your entire shopfloor thanks to our unique product portfolio of storage, logistics and transport systems, software solutions and connections.

# Complete Solutions

## For Different Combinations



Fully Automated DIVISIO Production Island with PARIO 800 for Part Unloading

TECTON palletizers complement ASYS process machines. Combined, they can be used to create different production islands.

The PARIO palletizing system can be combined with a magazine loader, our depaneling machine and an AMR to form a self-sufficient production island. The intelligent depaneling system requests material independently. The autonomous transport robot changes the trays fully

- ✔ Flexible production (instead of rigid process chains)
- ✔ PULSE PRO ready

automatically. This creates a self-organized material logistics, but always with communication to the production control system.

Of course, our systems can also be integrated into existing production lines or combined with systems from other manufacturers. Based on the SMEMA protocol, communication here is standardized as well as with OPC-UA.

# ASYS INVENTUS

## Customized Assembly Solutions

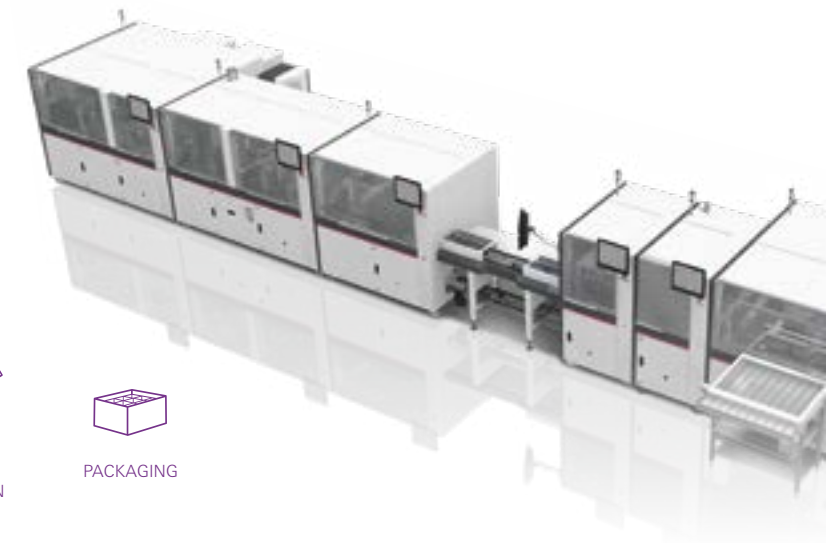
Whether an extremely slim design or an extremely flexible and ergonomic version, up to workflow-optimized special applications – we offer customer-specific „state of the art“ technology even for small batch sizes. Whether difficult or untypical workpieces, the TECTON tray handling systems and linear transfer systems are innovative problem solvers, developed and designed from a single source.

### Process Integration

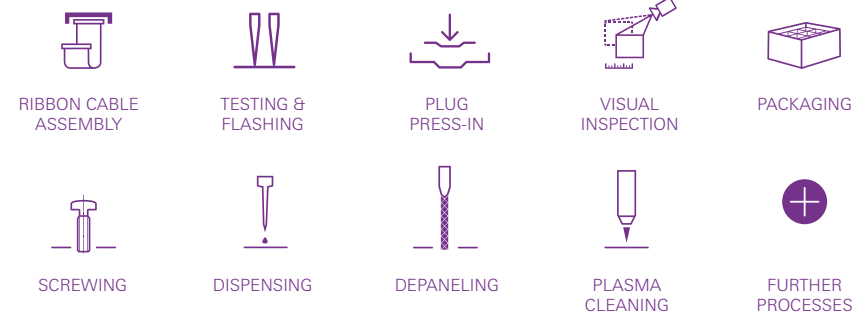
When planning and implementing projects, we can rely on the long experience of the ASYS Group. Our tray handling and transfer systems can easily be combined with other processes. Further equipment, which is developed in the ASYS Group, such as handling or process modules like marking, testing, inspection, depaneling or printing systems, complete the solutions. The unique ASYS portfolio is a perfect construction kit for special systems.

### Adapted to Your Needs

For a successful project start, we provide you with high-quality consulting and expertise, coupled with first-class quality products, customized to your needs. The solutions can be individually adapted and configured with different degrees of automation. Different production concepts, from guided and supervised manual assembly to semi-automatic and fully automated scenarios can be developed and combined, taking into account technical feasibility and the available project budget.



Sample Processes – Further Processes on Request





# SIMPLEX

## Intuitive User Interface

SIMPLEX is a unique human-machine interface (HMI) for controlling and monitoring highly complex production machines. Complex input tasks can be performed intuitively on large touch or multi-touch displays.

### Intuitive Tray Configurator Simplifies the Setup and Operation

In SIMPLEX, the operator can configure a tray step-by-step independently. The color coding of the axis directions makes it much easier to enter position values. The entered data, such as height and width of a tray, are immediately visualised live. For a realistic display, an image of the nest can also be added. The easy handling of SIMPLEX considerably reduces the training effort and helps to avoid errors.

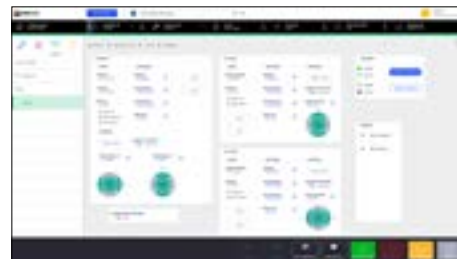
### Predictive Work Thanks to Clever Maintenance Features

SIMPLEX makes maintenance easier. All pending tasks are clearly displayed, and the priority can be seen at a glance. This enables the operator to work quickly and with foresight.



One Standard HMI for All ASYS Machines

- ✔ Intuitive operation and setup with step-by-step instructions
- ✔ Real-time animated graphics such as grippers, axes, belts and tray stacks
- ✔ Easy assignment of components thanks to uniform color coding



Manual Movement of the Axes



Integrated Sensor Parameterization



Visualization of the Clamps

# PARIO Tray Handling Systems

## At a Glance



PARIO 500



PARIO 800



PARIO 700



PARIO 1000



PARIO 2000



PARIO 3000



PARIO 4000



PARIO 4100



PARIO 5000

# PARIO Tray Handling Systems In Detail

## Tray Separation Without Product Handling

	Tray Changing Time	Autonomy Time	Tray Stacking Height Max.	Tray Size Max.
<b>PARIO 500</b> Loading or Unloading	5s	2 stacks	400mm	400x600mm
<b>PARIO 800</b> Loading & Unloading	5s / 8s <sup>1)</sup>	2 stacks	400mm	400x600mm

## Tray Buffering and Supply of Different Trays

	Tray Changing Time	Autonomy Time	Tray Stacking Height Max.	Tray Size Max.
<b>PARIO 700</b>	15s	8-10 trays <sup>2)</sup>	single	400x600mm

1) Depending on the direction of running | 2) Depending on the overall height of the trays

### PARIO 500

Loading or Unloading



- ✔ Different versions: 90° angle right/left and straight
- ✔ Space-saving

### PARIO 800

Loading and Unloading



- ✔ Two-level system: Unstacking and stacking in one unit
- ✔ Optimized for combination with a process plant

### PARIO 700

Tray Buffering and Supply



- ✔ Solution for handling of wobbling one-way trays
- ✔ Tray recognition (coding, DMC, RFID or binary)

### Extendet Automation

DIVISIO 5100  
Depaneling System



**Process Interlinking**  
A palletizer in combination with a DIVISIO depaneling system from ASYS Group forms a complete system.

### Variable

All systems can be flexibly and modularly adapted to your store floor and are available in automotive, pharmaceutical, ESD and clean room versions.

# PARIO Tray Handling Systems

## In Detail

### Tray Separation with Product Handling

	Pick & Place Time	Tray Changing Time	Autonomy Time	Tray Stacking Height Max.	Tray Size Max.
<b>PARIO 1000</b>	≥ 4s	10s	2 stacks	400mm	400x600mm
<b>PARIO 2000</b>	≥ 4s	6-8s	3 stacks <sup>3)</sup>	900mm	400x600mm
<b>PARIO 3000</b>	≥ 4s	3s	3 stacks <sup>3)</sup>	900mm	400x600mm
<b>PARIO 4000</b>	≥ 4s	3s	2 stacks	1,400mm	400x600mm
<b>PARIO 4100</b>	≥ 4s	3s	2 stacks	1,400mm	400x600mm
<b>PARIO 5000</b>	≥ 3s	3s	2 euro pallets <sup>4)</sup>	1,260mm	600x800mm

3) 3 stacks = 2 stacks in base, 1 stack in front of the machine | 4) 2 pallets = 1 pallet in base, 1 pallet in front of the machine

**i Variable**  
All systems can be flexibly and modularly adapted to your store floor and are available in automotive, pharmaceutical, ESD and clean room versions.

### PARIO 1000

Easy Integration into an Assembly Line



- ✔ Space-saving due to the two-level system
- ✔ Fully autonomous extension

### PARIO 2000

Heavy Duty Handling (Tray Weight up to 30 kg)



- ✔ Optimized for heavier loads and acceleration
- ✔ Multi-gripper can be integrated

### PARIO 3000

High Speed Tray Handling



- ✔ High cycle rate up to 4 s due to inlet and outlet track
- ✔ Multi-gripper can be integrated

### PARIO 4000

Support for Logistics Based on Trolleys



- ✔ Processing of tray stacks up to 1,400 mm height
- ✔ Trolley logistics concept

### PARIO 4100

Logistics based on Trolley and AMR Automation



- ✔ Processing of tray stacks up to 1,400 mm height
- ✔ Trolley logistics concept
- ✔ Optional fully automated with AMR

### PARIO 5000

Pallet Handling



- ✔ Optimized for euro-logistics
- ✔ Non-stop component handling



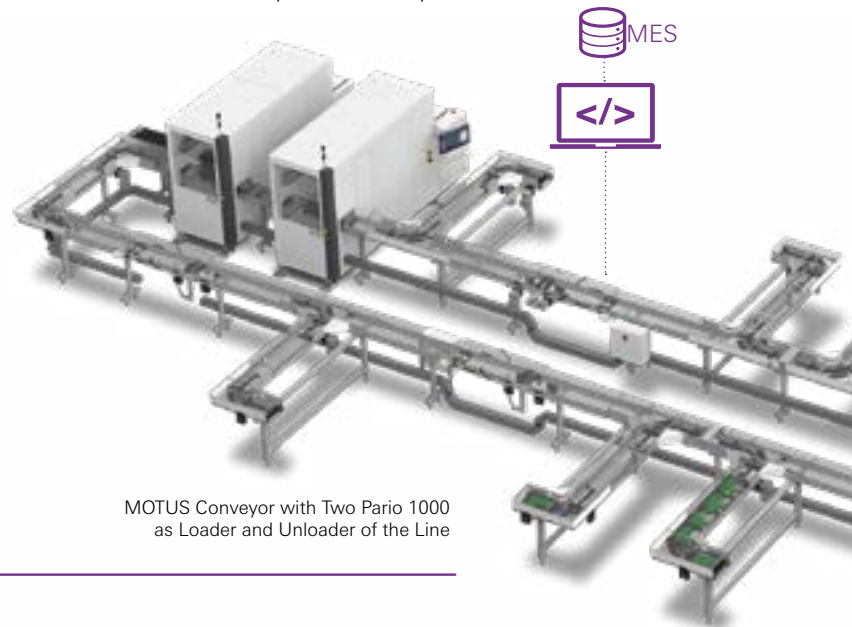
# MOTUS Transfer System

## Modular and Flexible Interfaces

MOTUS transfer and puck systems are the right choice for fully automated assembly systems. Thanks to standardized modules (standard ESD version), complex requirements can be optimally implemented even in the smallest production areas. The transfer systems can be set up with 90° or 180° curves, as a square or with lifts in underfloor technology.

Here the orientation of the workpiece carrier always remains the same. All this with minimum control effort and maximum modularity. Traceability is also guaranteed – all workpiece carriers can be optionally equipped with RFID tags for carrying process data. Due to the modular design, the system can be modified and expanded at any time.

- ✔ Constant orientation of the product carrier
- ✔ Modular building block transfer system, expandable and convertible, track width up to 320 mm
- ✔ Variable position of the motors possible
- ✔ Open construction or with protective covering
- ✔ ESD and clean room version
- ✔ Direct connection to MES/ERP



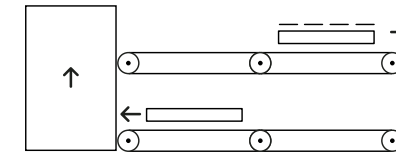
MOTUS Conveyor with Two Pario 1000 as Loader and Unloader of the Line

### All Modules at a Glance

- |                             |                                       |                              |
|-----------------------------|---------------------------------------|------------------------------|
| ⊕ Transfer section          | ⊕ Lifting and indexing unit, lockable | ⊕ Workpiece carrier lift     |
| ⊕ Workpiece carrier         | ⊕ Curve 90°                           | ⊕ Workpiece carrier crossing |
| ⊕ Stopper                   | ⊕ Curve 180°                          | ⊕ Pivoting transfer section  |
| ⊕ Stopper damped            | ⊕ Junction unit 90°                   | ⊕ Substructure               |
| ⊕ Lifting and indexing unit | ⊕ Junction unit 2 x 90°               | ⊕ Manual workstation         |

### Underfloor Recirculation Track

The transfer systems can be set up using lifts with underfloor technology. This is always useful when the circulation of workpiece carriers is required and a space-saving solution is sought. The pre-assembled belt components can be quickly mounted or changed as required.



# Full Service

To ensure that your systems will later be economical and to guarantee a high level of process reliability, the engineers of the ASYS Group, and in particular the specialists from TECTON, are involved from the very beginning.

But the service does not end with the delivery of the system. Other elements of TECTON full-service package include training and technical service.



## Planning & Conception

Intensive and competent consulting is the key to a successful project. Therefore, the sales and construction departments of the ASYS Group work hand in hand to develop the optimal automation solution for each project. A high degree of standardized equipment contributes to an efficient project process. In combination with a large number of options, a wide range of solutions can be covered.

On request, TECTON can provide support in designing the trays. Here, the experts advise which tray is suitable for the chosen handling solution.



## Training

To ensure that the high-quality production equipment is used optimally in practice, TECTON offers regular training courses. These are divided into product- and application-specific standard seminars.



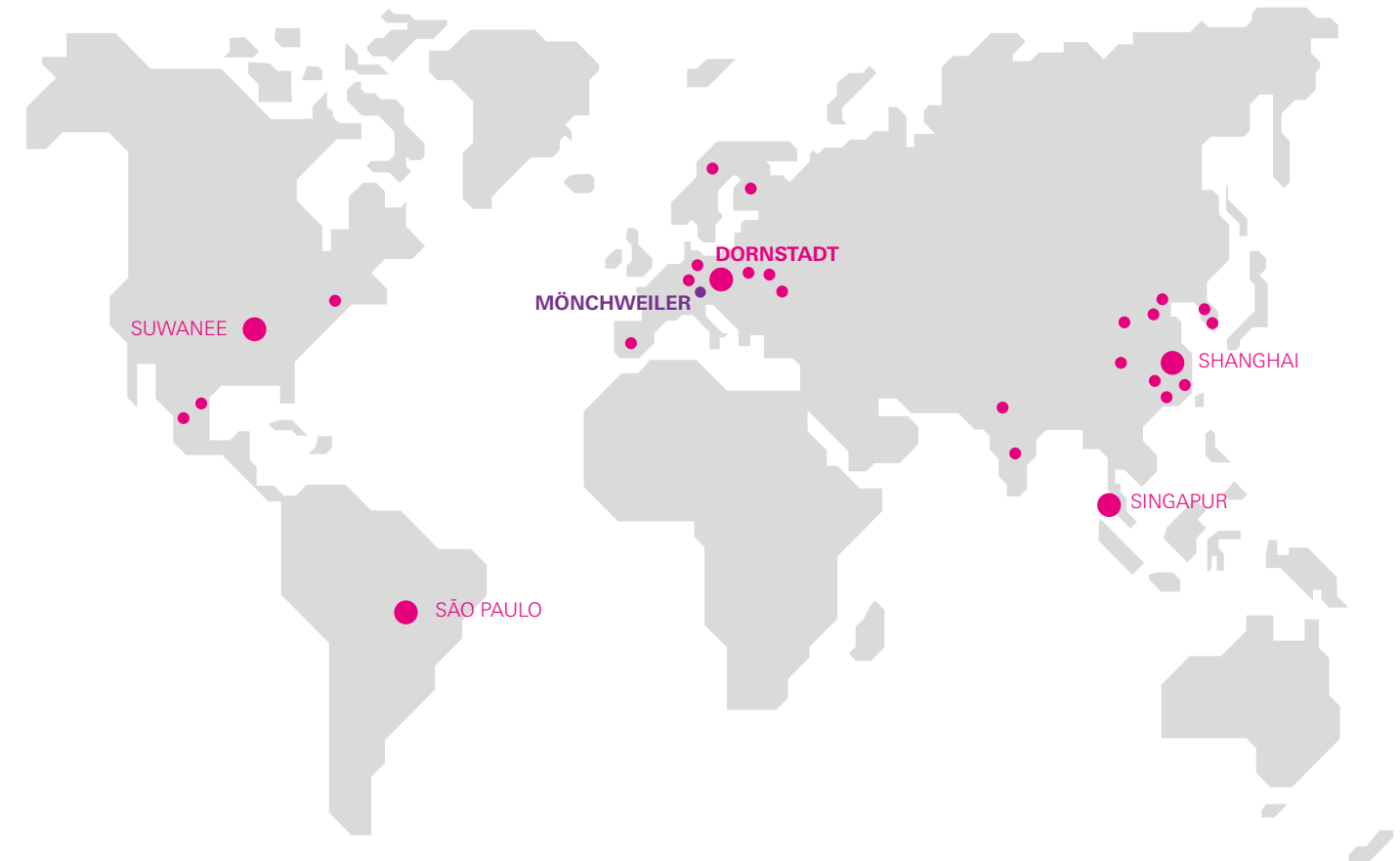
## Technical Support

At ASYS Group, service has a very high priority. The highly qualified and experienced service employees are working around the clock, worldwide. TECTON always keeps standard spare parts in stock for the shortest possible delivery times.



ASYS  
GROUP

TRANSFORMING IDEAS  
Automate, Digitalize & Connect



The Group's business activities in more than 40 countries are controlled from the company's headquarters in Dornstadt near Ulm, Germany.

A broad global network with local service centers in Asia and the Americas ensures a customer-focused service support. Worldwide service teams guarantee best response and spare parts availability.

**ASYS  
GROUP**

**TRANSFORMING IDEAS**  
Automate, Digitalize & Connect

**ELECTRONICS**

# AUTOMATE, DIGITALIZE & CONNECT

**LIFE SCIENCE**

**ENERGY**



Visit our website:  
[www.asys-group.com](http://www.asys-group.com)

**ASYS TECTON GmbH**, Waldstraße 16, 78087 Mönchweiler, Germany, [www.asys-group.com](http://www.asys-group.com)

Subject to change without notice. Some general descriptions and performance characteristics may not be applicable to all products. Technical specifications are subject to change without notice. Only features and technical data provided in purchasing contract are legally binding.

Printed in Germany