WE ARE

ASYS GROUP

AUTOMATE, DIGITALIZE & CONNECT

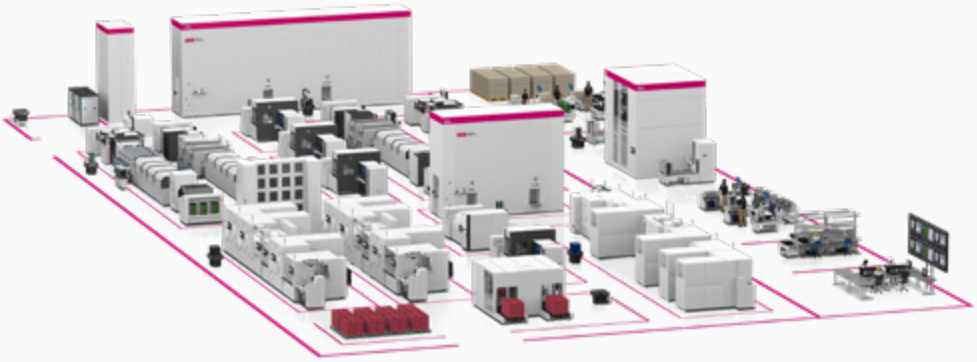
IN-VENT-ORS

Discover the Future of Automation

ASYS Group: Committed to innovation, focused on customer needs

ELECTRONICS

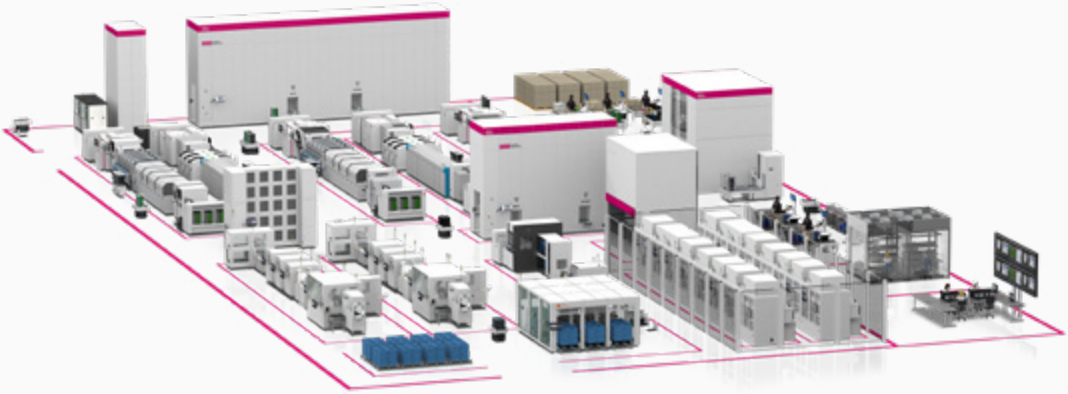
Optimized solutions for your
electronic devices



AUTOMATION SOLUTIONS FOR YOUR PRODUCT – WE SET THE BENCHMARK FOR SMART FACTORIES

LIFE SCIENCE

Validated solutions for your
medical devices



ENERGY

Established solutions for your
high-volume production

Content

ASYS Group

Automation in Highest Perfection

We have always been committed to innovations that focus on customer needs. In doing so, we move with the times. We link our core business – automation – with two other dimensions: Digitalization and connectivity. We work on unique solutions with vision. The challenges of the future are our strongest driver.

Werner Kreibl | Klaus Mang | Jürgen Ries

Management: Klaus Mang, Jürgen Ries, Werner Kreibl

With sustainable expertise in automation and digitalization, the ASYS Group is globally active in mechanical and plant engineering. As a highly specialized technology leader, we develop and manufacture process and line solutions for the world's most successful brands. Broadly positioned in three future-proof industries - Electronics, Energy and Life Science - our ASYS brand stands for the highest international standards in quality and manufacturing.

ASYS Group

Business Units

Business Unit
Electronics

Business Unit
Life Science

Business Unit
Energy

ASYS Group

Companies

ASYS Automatisierungssysteme GmbH the holding company of the ASYS Group, develops and manufactures handling systems and process tools for marking, depaneling and testing as well as customized solutions.

EKRA Automatisierungssysteme GmbH is a specialist for high-end screen and stencil printing systems as well as services and products related to the entire printing process.

ASYS Assembly Solutions GmbH Through the integration of the established special machine manufacturer, ASYS gains further competencies in the final assembly of customer-specific systems.

ASYS TECTON GmbH develops and manufactures high-end tray handling and transfer systems for standard and customized solutions.

ASYS Prozess- und Reinraumtechnik GmbH develops and produces cleanroom solutions, dry storage systems and special solutions for climate control and conditioning of process machines.

ASYS Metall GmbH manufactures custom metal frames and complex machine housings.

Botest Systems GmbH develops and manufactures test and measurement systems for the electronic industry and for organic semiconductors.

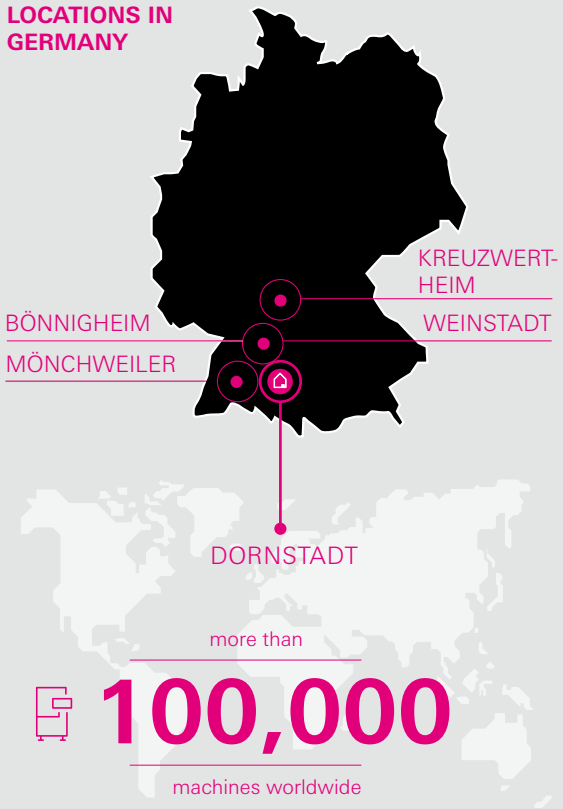
TOTECH Europe BV deliversglobally to the world's top tier OEM and EMS companies for ultra-low humidity storage systems.

motives software GmbH develops complete software solutions in the MES environment in the field of industrial automation with a focus on material logistics, monitoring, order management and customer-specific solutions.

Suppliers within the ASYS Group

MEVO Pulverbeschichtung GmbH specialists in powder coating of steel and non-ferrous materials.

“German Engineering” and Manufacturing



The corporate headquarters in Dornstadt near Ulm coordinates activities across five continents and guarantees highest standards in quality and service. The ASYS Automatisierungssysteme GmbH is the holding company for all the activities of the overall corporate group. It benefits from a powerful, modern infrastructure: all instances from machine frames to surface finishing and machine equipment are located at the site in Dornstadt, Germany.

ASYS Group has installed more than 100,000 systems worldwide. ASYS invests continuously in state-of-the-art production processes at its worldwide sites. The production space at the headquarters in Dornstadt is constantly increasing and currently amounts to more than 27,000sqm.

Made in Germany

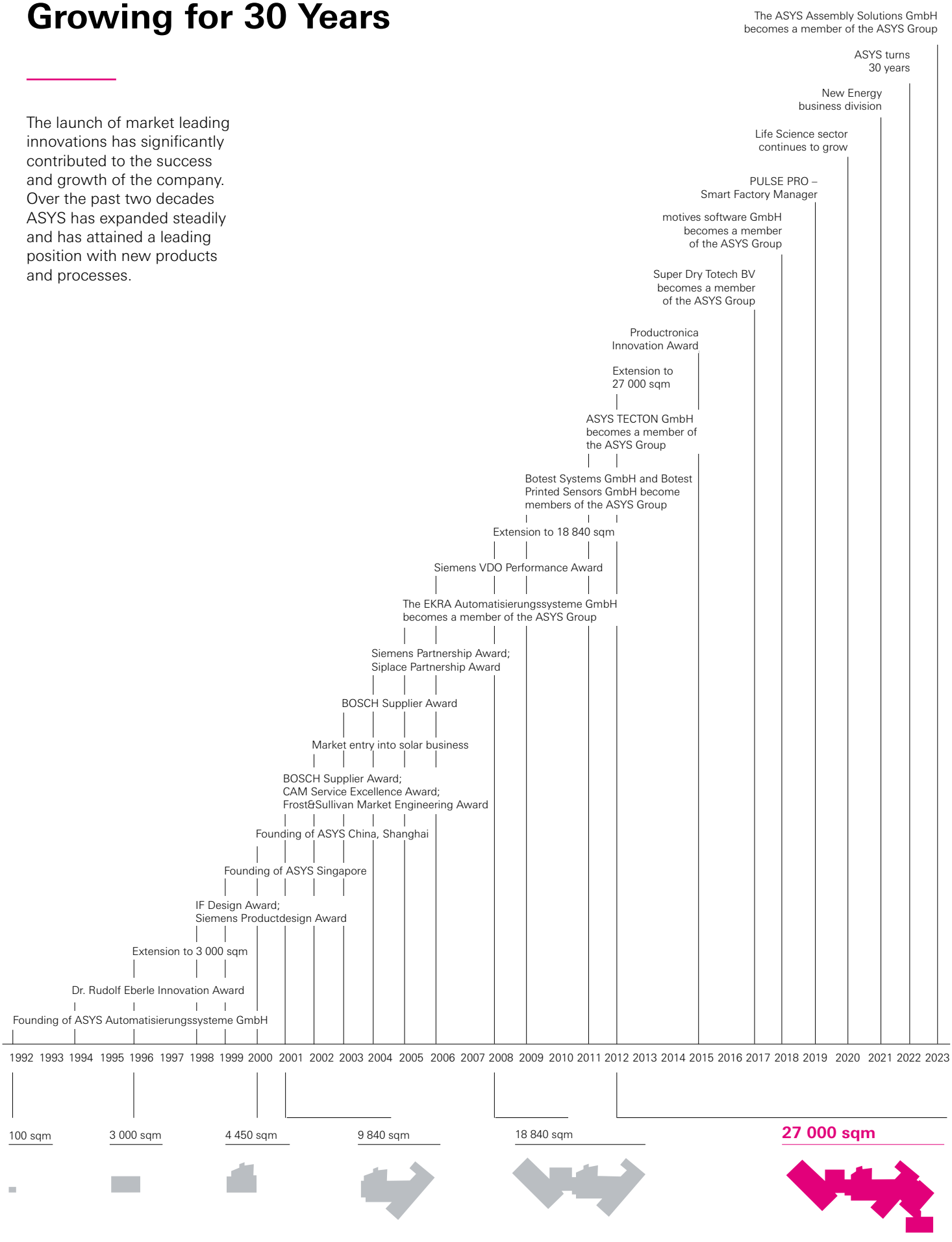
ASYS products exemplify the prestigious “Made in Germany” trademark: precise, high quality systems and machines that are intuitive to use and offer best functionality.

6 Sigma Quality Standard
Screen printers of EKRA provide high precision for all production demands. 6σ (sigma) is a standard that guarantees maximum quality in manufacturing. The sigma rating is an indicator for the percentage of mispositioned prints resulting from the machine alignment capability. For the purposes of illustration: 3 sigma means that one part out of 370 parts is misaligned. 6σ (sigma) means that onepart out of 500,000,000 parts is misaligned.

ISO 9001
ASYS Automatisierungssysteme, EKRA Automatisierungssysteme and ASYS TECTON are ISO 9001 certified, which emphasizes the commitment to quality. The standard guides the definition of processes within ASYS – covering the entire product life cycle, from market development, design and manufacture of equipment to decommissioning.

Strong and Fast Growing for 30 Years

The launch of market leading innovations has significantly contributed to the success and growth of the company. Over the past two decades ASYS has expanded steadily and has attained a leading position with new products and processes.



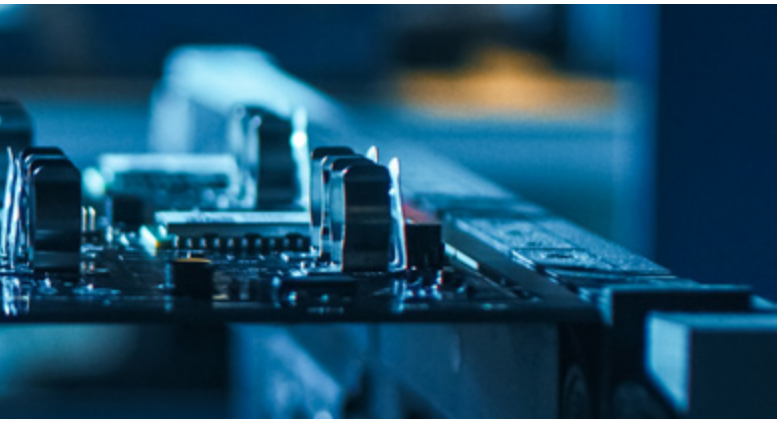
Our Success Factor: Dedicated People

The success of the ASYS Group is based on the qualification and personal commitment of more than 1500 employees. Inspired and dedicated people are the key to developing and providing first-class products.

Worldwide	Americas	Rest of Europe	Germany	Asia
1500	45	45	1320	90

Our Mission:
Automate, Digitalize & Connect

Three words that define our purpose, encapsulate our commitment to our offerings, and set us apart in the industry. These words embody our corporate expertise and serve as a universally recognized pledge embraced by customers, partners, and employees worldwide.



AUTOMATE

… is part of our identity as a company. This is where we come from and this is the path we continue on. It stands for our solution and performance competence – with all employees worldwide. We have started with the automation of individual processes. We have expanded this knowledge. By automating the entire line, we have arrived at the automation of an entire factory.

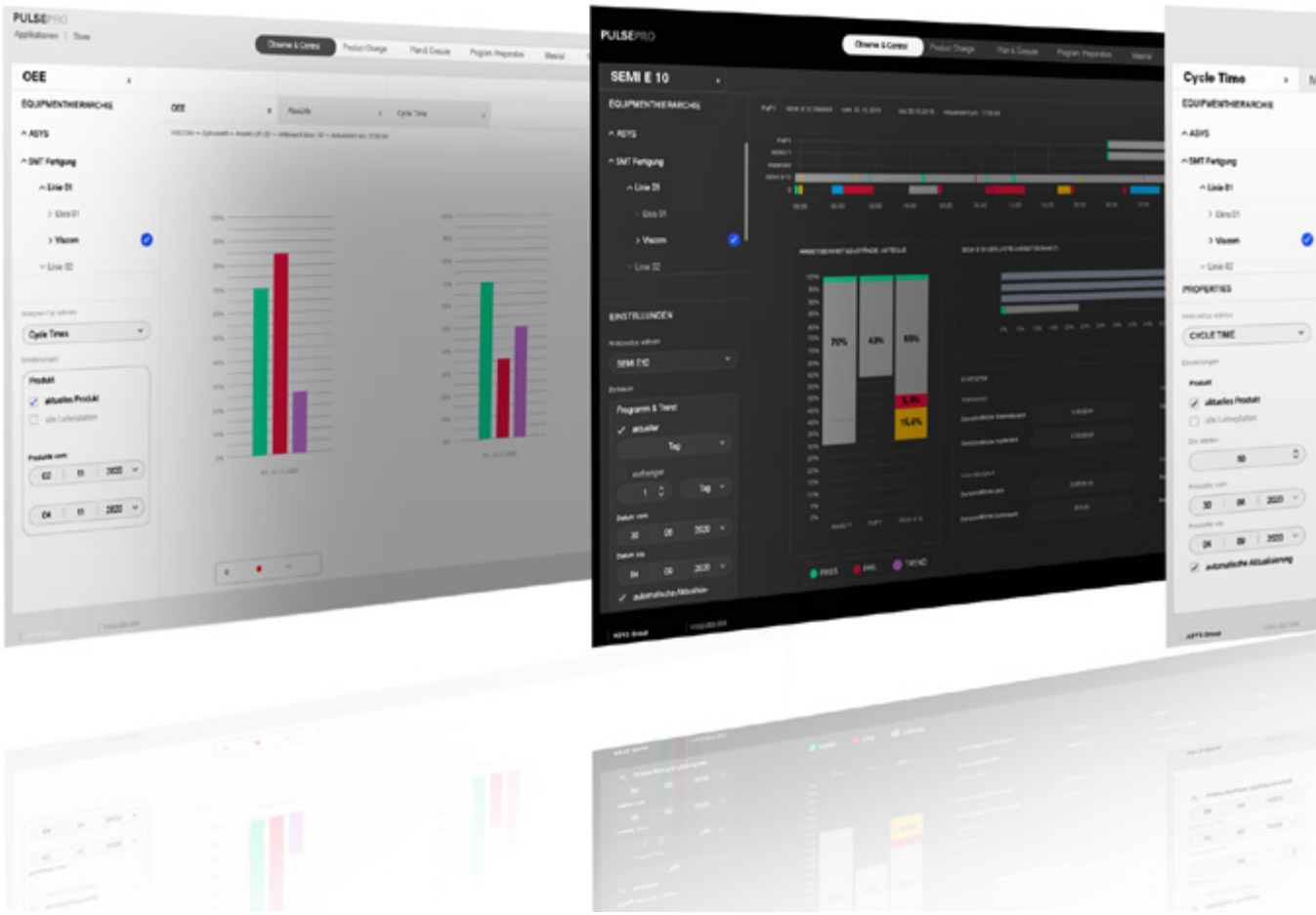
DIGITALIZE

… is the inspiration behind every innovation. Every new ASYS solution takes our customers one step further on the way to digital manufacturing. In the context of industry 4.0, we rely on our comprehensive software solutions. They lay the foundation for linking processes at factory level. Our self-understanding is to accompany and support our customers in this development and change process.

CONNECT

… describes the way we think. The focus is on openness. We share our knowledge, connect it and let new things emerge from it. We connect machines with machines, machines with software, machines with people and people with people.

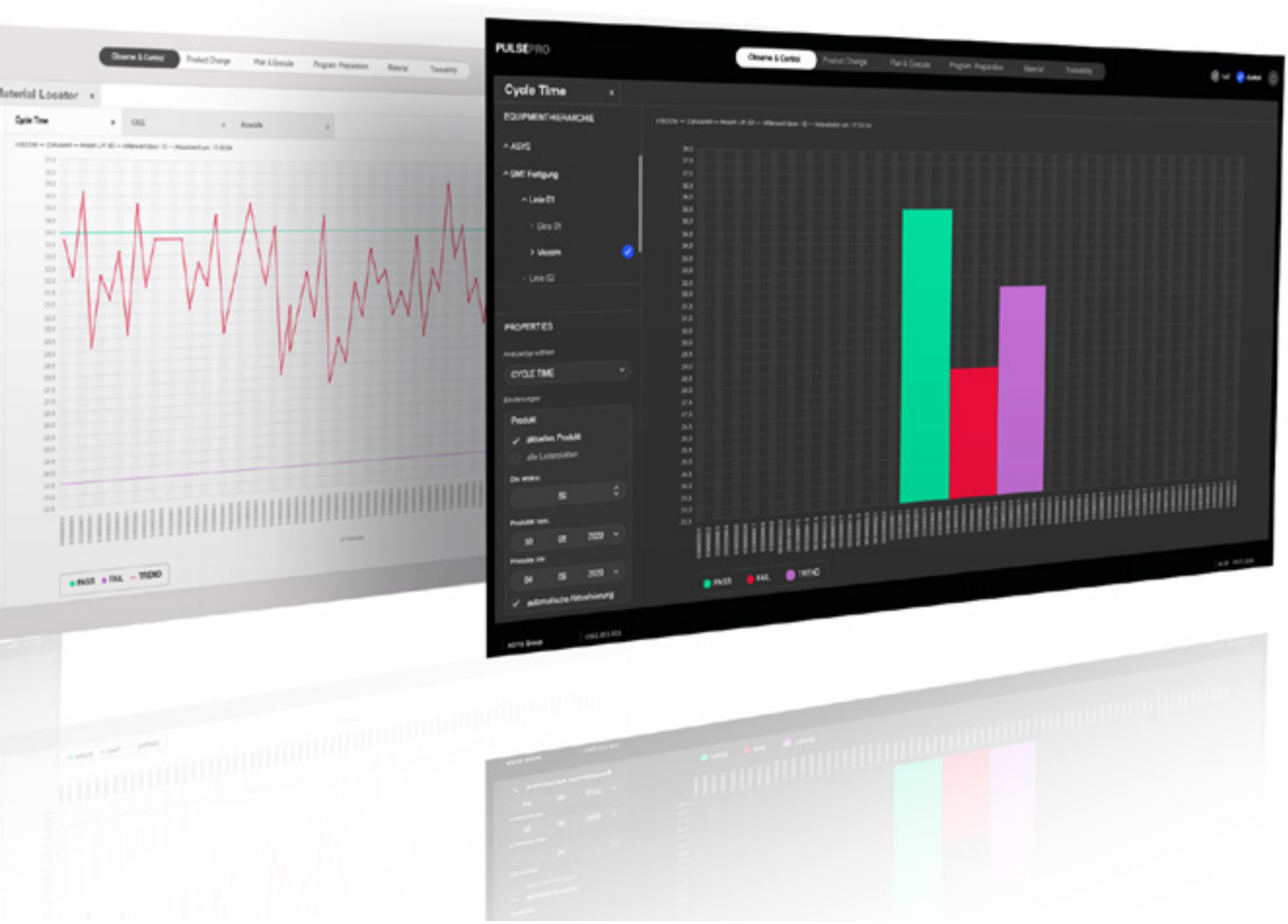
Smart Factory Manager



PULSEPRO
SMART FACTORY MANAGER

Discover the compact software solutions from ASYS to optimize your production. PULSE PRO offers software modules that will help you to control automated material flows on the shop floor, to achieve a dynamic just-in-time supply for each production step and to track all data flows.

PULSE PRO is easily operated via a cockpit and meets the highest demands for simple handling. The high quality usability is based on the tasks of the operators. Even with complex contents and functions, the users find their way to their goal quickly and easily.



Software Modules

The PULSE PRO Smart Factory Manager consists of modules, which contain various smart functions. These can refer to single machines, a whole line or the complete factory.

Observe & Control
Performance of the entire Shopfloor

Material
Automate, Control, Trace all Material Flows & Types

Plan & Execute
Precise Order Planning of the entire Shopfloor

Product Change
Stop Losing Time on Product Changeover

Program Preparation
Offline Programming of Machine

Factory Connect
Import & Export of Data

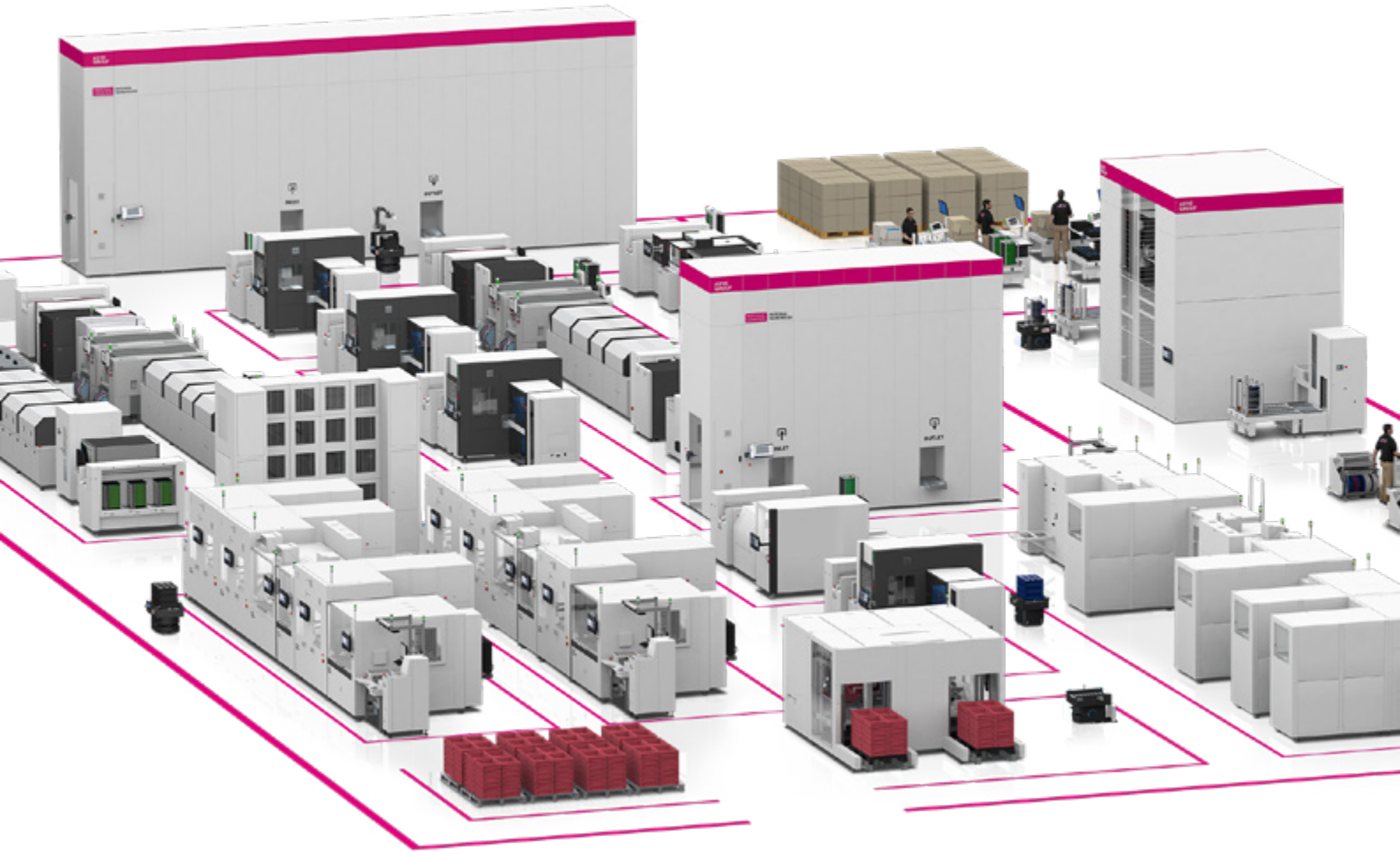
More Transparency and Efficiency on the Shopfloor

We are your competent partner when it comes to your smart factory. We cover more than two thirds of the equipment of an SMT production line with our broad product range.

In addition, we offer customized and turnkey material logistics solutions for different levels of automation. We offer the largest product portfolio and the most experience on the market when it comes to the automation of material logistics in SMT production.

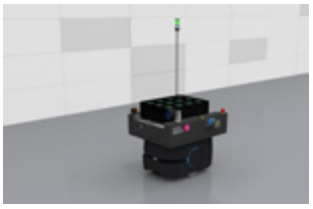
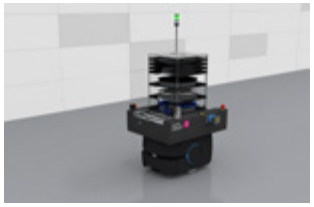
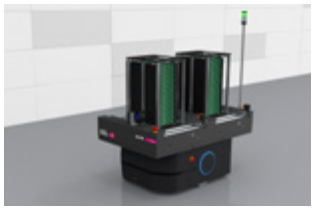
Here we bundle the know-how and experience of ASYS automation systems, as well as our subsidiaries like Totech and motives.

Thanks to a modular approach, we are able to implement material logistics solutions in various degrees of automation. In this way, existing factories with their prevailing conditions are adapted step by step to the specific requirements of our customers.



Transport Solutions for the Smart Factory
In production, all materials, such as PCBs in different production states, components in form of component reels, JEDEC trays or sticks as well as consumables, for example for the printing process, must be considered.

The material is distributed via autonomous transport systems – the ASYS AMRs (Autonomous Mobile Robots).

Storage Solutions for the Shopfloor
With our central storage systems, local storage areas close to the line can be reduced. They can be supplied autonomously and are able to store component reels, boxes and magazines in a traceable manner.

Smart Buffer
The Smart Buffer is a modular and scalable buffer system for printed circuit board magazines, KLT boxes and tray stacks. The buffer consists of 3 to 5 buffer levels as well as upstream and downstream vertical lifts.

Material Warehouse
In the Material Warehouse, printed circuit board magazines or other materials are automatically stored in KLT boxes in a shelf system according to a chaotic storage concept and can be retrieved at any time.

Dry Tower
The Dry Tower is a fully automated system for the storage of component reels and JEDEC trays and enables autonomous material handling without operator interaction.

Automated Solutions for Material Inbound
The Material Inbound can be configured individually depending on the scenario. The modules are the Material Station, M-Station Reel, Scan&Label, Component Counter and Loading / Unloading Station. The station can be approached manually, by trolley or by AMR.

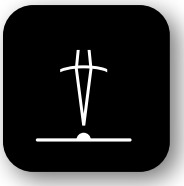
Customized Solutions for a Wide Range of Processes

Laser Marking

Labeling

Screwing

Tray Handling



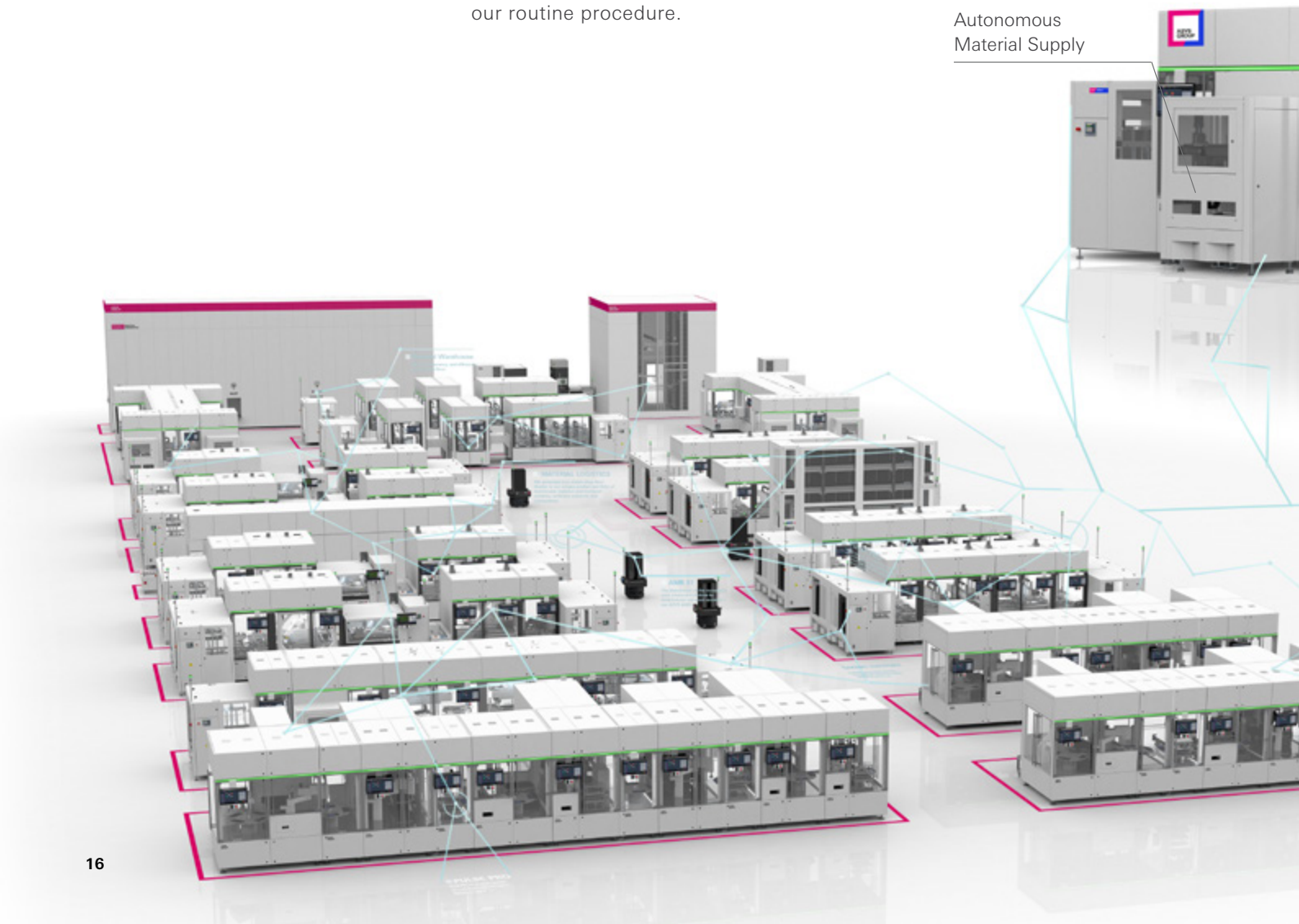
Laser Welding

Laser Cleaning

When it comes to intelligent and high-efficient manufacturing solutions, the unique portfolio of the ASYS Group offers the perfect toolbox for the configuration of automated solutions. Whether it is a single system, island solution or interconnected line network, ASYS is the partner from the initial idea to the turnkey solution.

Cross-divisional Synergies
Processes are the central and value-adding elements of every automation solution. Due to this, we focus on the specific requirements of the corresponding process and combine or complete them as needed. Thereby, we make use of our standardized toolbox, which makes flexible and individual solutions possible. Through this approach we ensure maximum reliability for the overall application.

Efficient Solutions Through Know-how and Collaboration
To create a demand-oriented and economical solution, we rely on close collaboration with our customers from the very beginning. According to the project requirements we use the knowledge of experts from our divisions and process department. Tests to ensure the product quality and validate the solution are also part of our diverse repertoire. For this purpose, our laboratories for image processing, laser application, process development and investigation, as well as our partners are available. In addition, we use our simulation programs to analyze motion sequences and connected systems at an early stage to ensure the planned performance. FMEAs and Ishikawa diagrams, as well as passing through our internal quality gates, performance and stress tests are part of our routine procedure.



Testing

Depaneling

Tray Load/Unload

Press-Fit

Feeder Solutions

Riveting

Plasma Cleaning

Dispensing/Potting

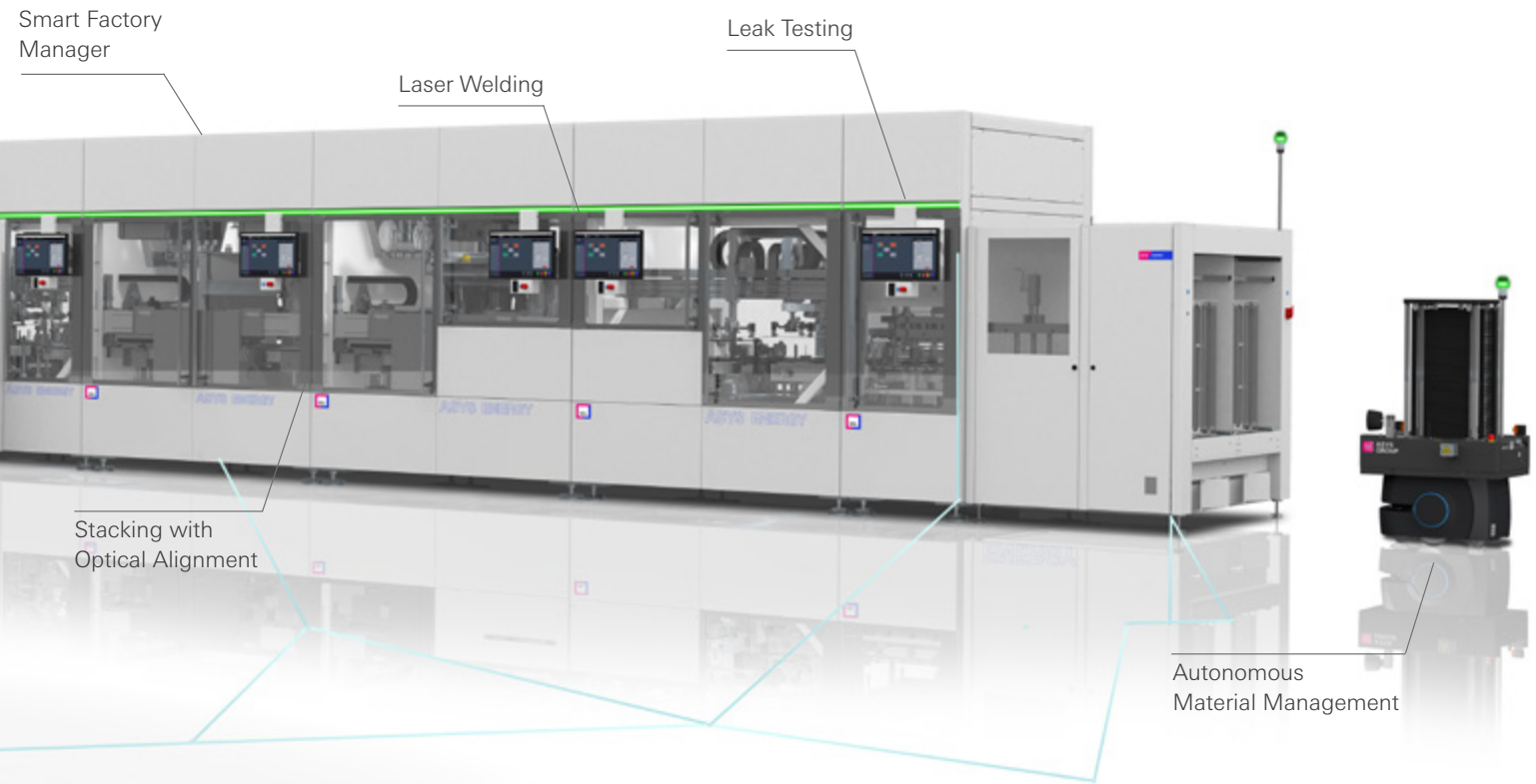
Resistance Welding

Transport

Laser Depaneling

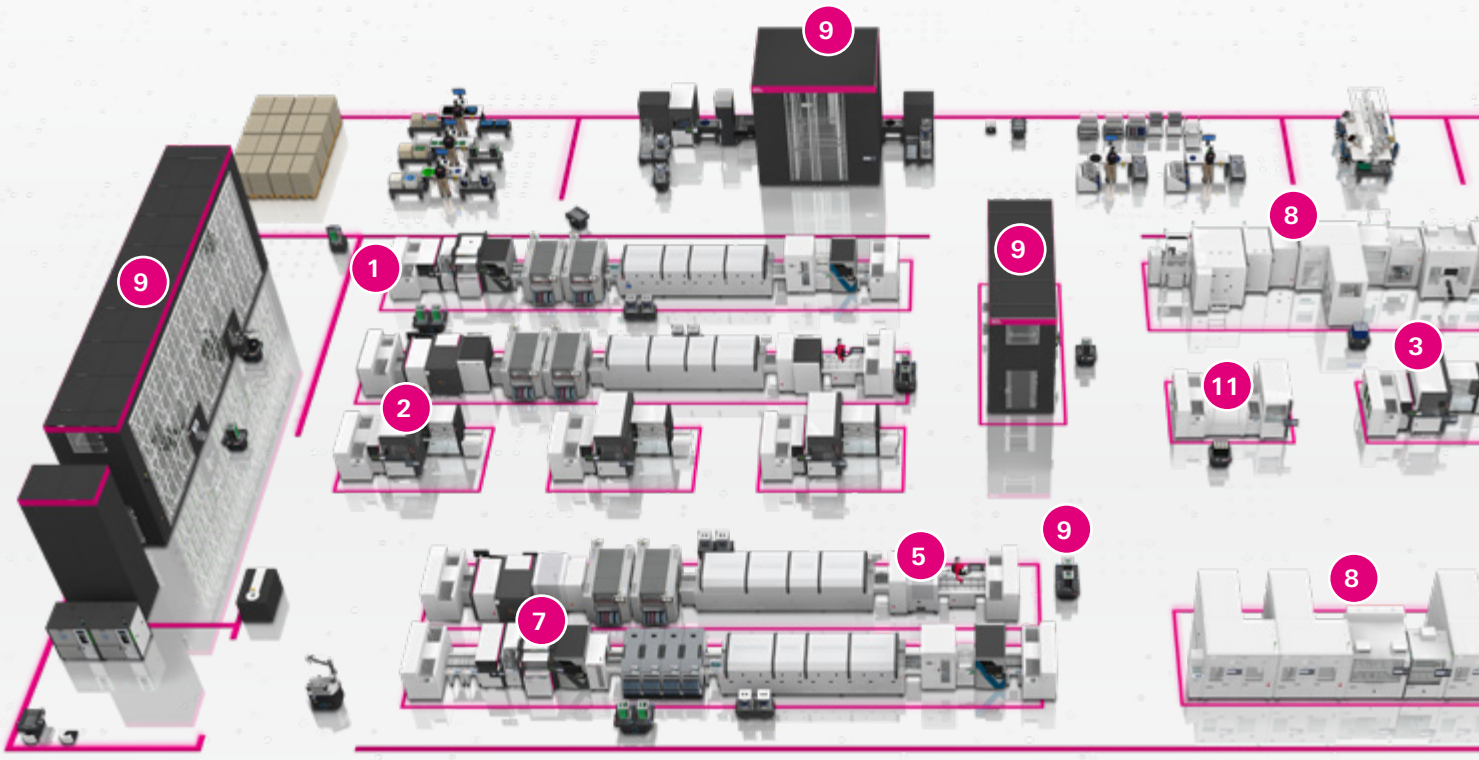
Laser Cutting

Laser Reflow Soldering



Automation Solutions for the Electronics Industry

The roots of the ASYS Group are in automation. The initial idea of offering standard systems for handling in electronics production marked the beginning of a steep success curve. In the meantime, the ASYS Group covers 75 percent of an electronics production with its products. The initial urge to automate is becoming established in all product developments.



1 HANDLING
VEGO

COMPACT
Standard handling systems using proofed ASYS technology

DYNAMIC
High-end handling systems for highest demands

HYBRID
Handling systems for fragile substrates

2 MARKING & VERIFYING
INSIGNUM

LASER
Laser Marking Systems

LABEL
Label Application Systems

VARIETY
Marking and cutting labels by laser

SCAN
Reading Systems

3 DEPANELING
DIVISIO

ROUTER
Automatic and semi-automatic routing systems, perfect for cutting freeform contours

SAW
Highly efficient depaneling systems ideal for V-scored PCBs

LEAN PRODUCTION
Process Integration

DRILL
Drilling of holes for the assembly of LED-optics

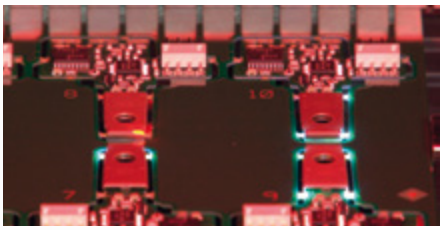
10 SMART FACTORY MANAGER

4 TRAY HANDLING & TRANSFER
TECTON

PARIO
Modular designed tray handling systems

MOTUS
Multi-purpose transfer systems for reliable process interconnection

5 LASER SOLUTIONS
POLYPHOS



DP Laser Depaneling

CT Laser Cutting

MK Laser Marking

WL Laser Welding

CL Laser Cleaning

SL Laser Soldering

MM Laser Micro Machining

6 CLEANROOM
ASYS CLEANROOM

CLEANUM
Turnkey Cleanroom Solutions

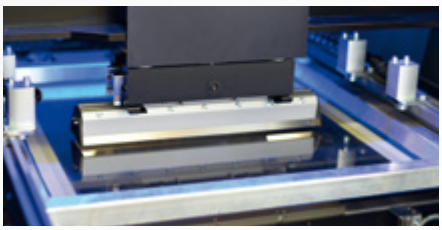
LAMINO
Laminar Flow Systems

MOVEO
Dynamic Storage Lifts

VERDICO
Climate Module

CONSIDUS
Storage & Active Drying

7 PRINTING
EKRA



SERIO
Screen and Stencil Printing

HYCON
Special and Thickfilm Printing

S10 SERIES
Consumables and Accessories

UPGRADE OPTIONS
Upgrades for increased print efficiency and for changes in future production requirements

8 INVENTUS FINAL ASSEMBLY

9 MATERIAL LOGISTICS

10 PULSE PRO SOFTWARE SOLUTIONS

11 TESTING

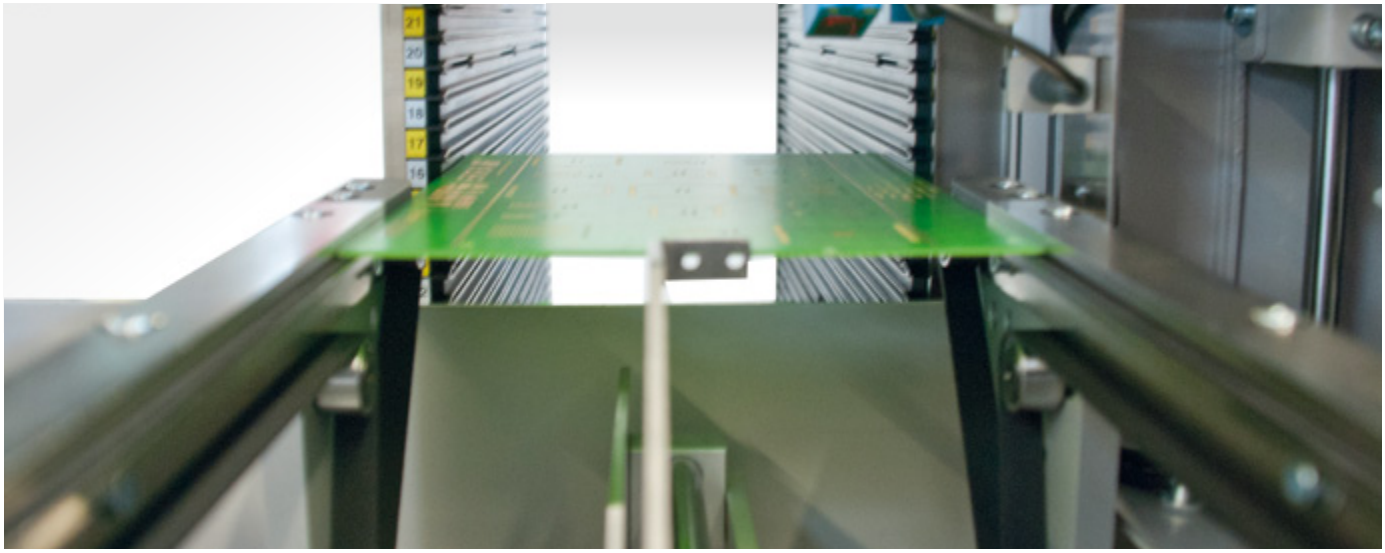
+ www.asys-group-onlineshop.com

Easy Order
1. Direct purchasing or
2. Select the required goods › download the order as a pdf file and send it via your purchase department to ASYS

HANDLING
VEGO

The VEGO series offers the highest reliability and maximum flexibility for SMT, THT, HYBRID and other products.

Operate your **VEGO Module via PULSE PRO!**



STANDARD HANDLING

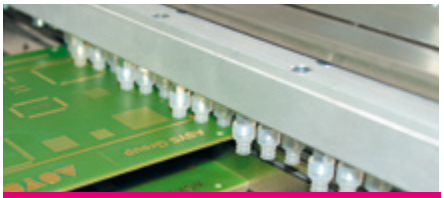
COMPACT

› “Efficient & affordable“: modular design with high quality components

› “Economic“: easy maintenance and operation

› Proven and reliable technology

HIGH-END HANDLING



DYNAMIC

› Highest flexibility and customized solutions

› For a wide range of materials and weights

› Different machine sizes

› Fully automatic product changeover

› Traceability

› Autonomous material supply

› Mobile monitoring and operation

FRAGILE SUBSTRATES

HYBRID

› Compact design, smallest footprint

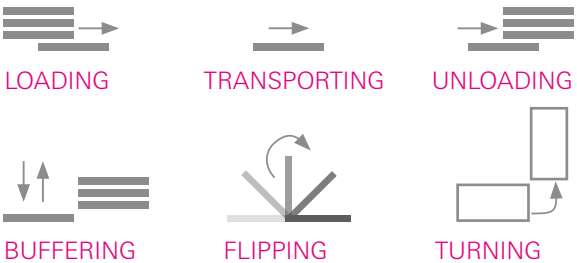
› Cleanroom-compatible

› Shortest cycle times up to 3 s

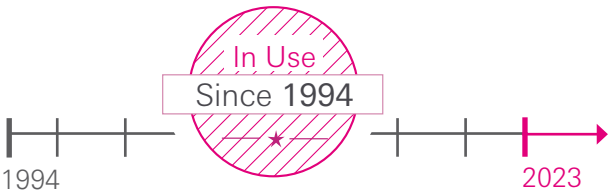
› Specially designed conveyor for ceramics

› Gentle transport for fragile substrates

+ FOR DIFFERENT **HANDLING TASKS**



+ **DURABLE!** 20 YEARS AND MORE

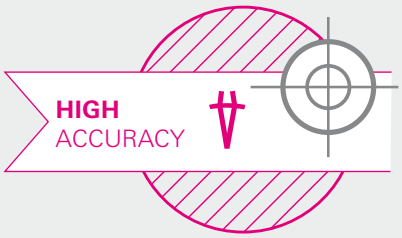


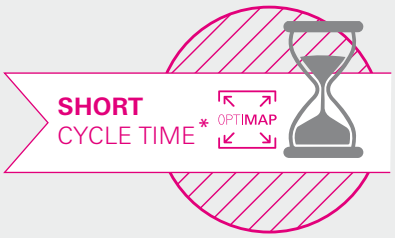
Oldest ASYS handling system in use since 1994

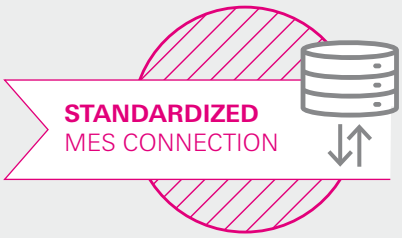
+ CONNECTED TO PULSE PRO

MARKING & VERIFYING
INSIGNUM

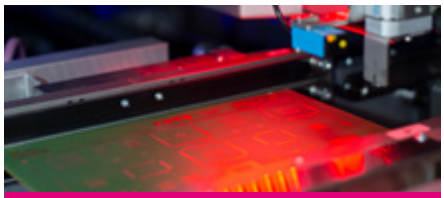
The INSIGNUM series offers a comprehensive product portfolio of traceability systems to meet the ever-increasing demands of traceability. High-precision marking in the smallest space, in order to cope with the highest cycle time requirements, up to the reading of multipanels in the shortest time, are part of the tasks of our systems. The realization of customized connections or the implementation of standardized solutions complete our portfolio.







LASER MARKING



LASER

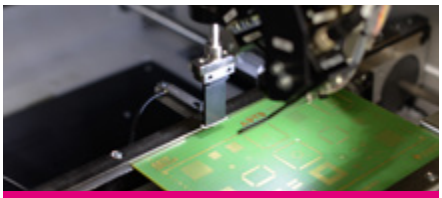
› Flexible laser solutions for any required application: Standard: CO_2-laser and fibre-laser

› Marking area: up to 610 x 460 mm

› Module size down to 3 mil

› Integrated flip-station

LABEL APPLICATION



LABEL

› Up to two printers

› Marking area 460 x 460 mm

› Module size down to 7.5 mil

› Different label sizes can be placed in one operation

READING

SCAN

› Scan area up to 460 x 460 mm

› Module size down to 5 mil

› Different scan systems can be integrated

› Scanning from above/below

LABEL APPLICATION WITH INTEGRATED LASER

VARIETY

› Marking and cutting of labels by laser in one step

› Flexible nozzle quick-change system

› Different label sizes can be placed in one operation

› Applies labels to components up to 40mm high

+ PRODUCT POOL

Quick access to product data of any machine. Programming times are reduced.

+ ASYS MES CONNECTION

Standardized and easy to implement.

+ OPTIMAP

Significant cycle time reduction by combining code positions. Labeling and verification take place in just one process step.

+ OFFLINE PROGRAMMING

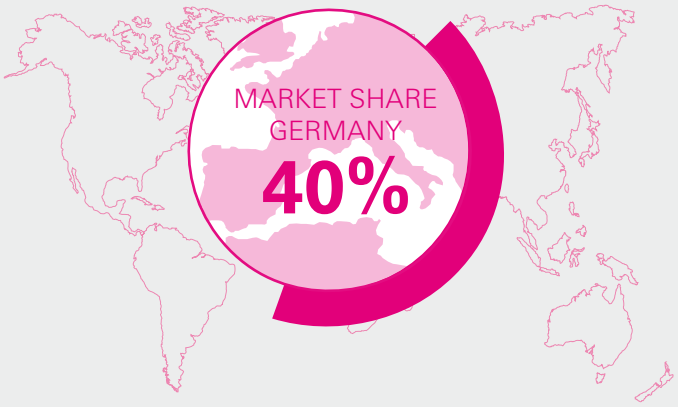
Programming of the plant without machine stop.

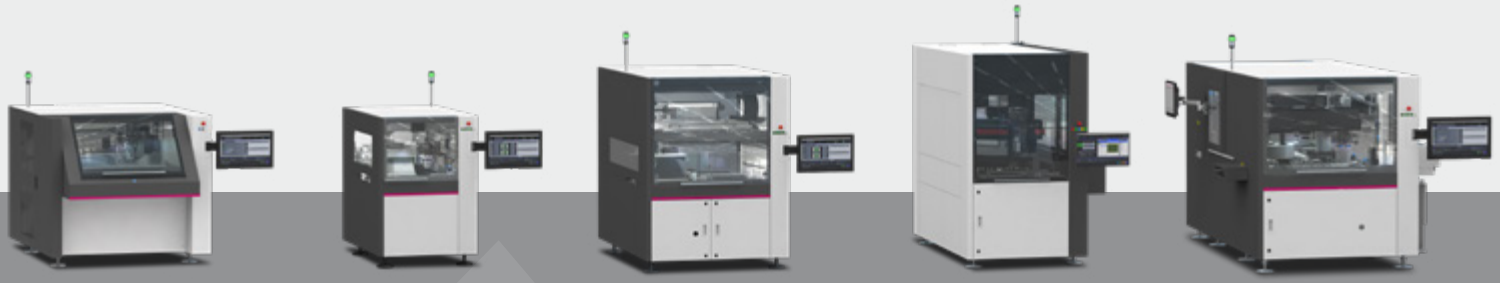
+ SIMPLEX User Interface

+ CONNECTED TO PULSE PRO

DEPANELING
DIVISIO

Every DIVISIO depaneling system has equipped the latest linear motor and carbon technology. Intelligent sensors ensure an automatic process optimization. Thanks to a smart tool management and “predictive maintenance” the production capacity will increase to 20.5 shifts.






Fully Autonomous Depaneling Island

ROUTING

ROUTER

Automatic and semi-automatic routing systems perfect for cutting freeform contours

› Panels up to 720 x 500 mm

› Routing from top or bottom

› Fully monitored tool management

› Predictive maintenance

Different models available:
semi-automatic or fully automatic inline and offline systems

SAWING

SAW

Highly efficient depaneling systems ideal for V-scored PCBs

› Panels up to 460 x 460 mm

› Sawing from top or bottom

› Five times faster than routing

Different models available:
semi-automatic or fully automatic inline and offline systems

PROCESS INTEGRATION

LEAN PRODUCTION

Efficient DIVISIO depaneling system with various integrable production processes

› Short cycle times

› Safe and tested assemblies production

› Direct interlinking with downstream processes

› Additional product handling not required

OPTO DRILLING

DRILL

Drilling of holes for the assembly of LED-optics

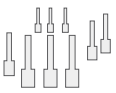
› Materials: FR4, IMS aluminum, copper

› Granite base, high resolution axes

› High resolution camera system for object recognition: LED, physical and synthetic fiducial, COB (chip on board)

+ EQUIPPED FOR EVERY CHALLENGE

One adapter set for all products thanks to magnetic pins



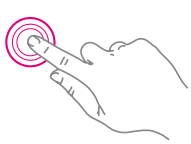
+ TORNADO EFFECT

Highly efficient suction for an almost dust-free environment

+ SELF-OPTIMIZING

Process control and optimizing due to intelligent sensors

+ SIMPLEX User Interface



+ CONNECTED TO PULSE PRO

EKRA
Screen Printing Technologies

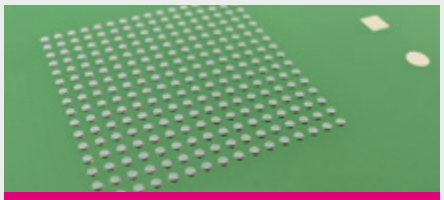
PRINTING
EKRA

The EKRA brand is characterized by decades of experience in the development of state-of-the-art printing systems and processes.

FOUNDING EKRA
1946

PRINTING SYSTEMS
SINCE 1976

SCREEN AND STENCIL PRINTING



SERIO

Under the SERIO product range, we offer stencil printers for standard to high-end applications. Each SERIO printer is individually scalable and can be retrofitted in the field at any time. This allows our customers to adapt to short-term changes in the market in a very flexible and uncomplicated way.

SPECIAL AND THICK FILM PRINTING

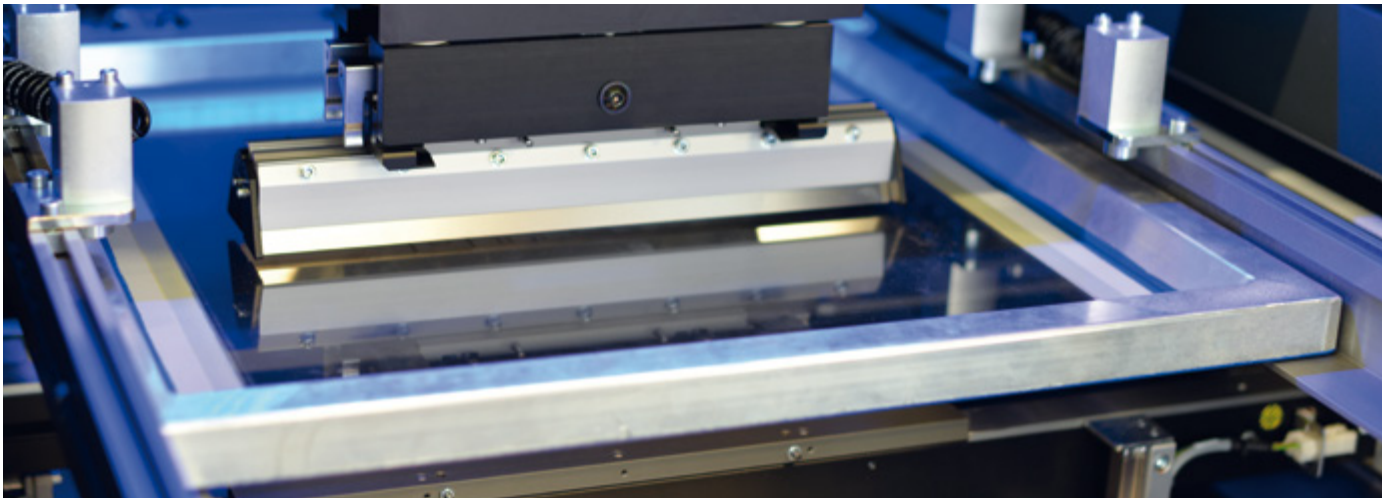
HYCON

In the HYCON product area, we bundle our many years of experience in thick-film technology. With special machines developed for the screen printing process, we can implement any special printing solution with our customers.

CONSUMABLES AND ACCESSORIES

S10 SERIES

We offer our customers an extensive range of consumables, accessories and spare parts, which can be ordered at any time in our online shop.



SCREEN AND STENCIL PRINTING

In times of miniaturization and increased performance, electronic products are becoming more and more complex in design – we respond to this with innovative options that are technologically at the highest level. We focus on quality that is transferred to our customers' products.

› High-performance screen and stencil printing systems for economical electronics production

› The scalable platform for integrating a wide range of options

› Grows with customers requirements: Field retrofits for flexible manufacturing

Different levels of automation:
From prototype and pre-series development to high-mix/low-volume and high-runner production. Manual, semi-automatic and fully automatic inline printing systems.

AUTONOMOUS PRINTER

The SERIO 6000 is the first fully automatic printer worldwide. The system offers automation in stages – adaptable to the automation level of the existing production. With the smart autonomous printer, squeegees and stencils can be set up during operation, for example. Set-up can be done manually by an operator or autonomously via a Cobot. The intelligent print head "Sphere" achieves a major plus in terms of sustainability: "Sphere" enables paste to be picked up from the screen and transferred to a new job. This saves resources and costs.

SERIO 6000

UPGRADE OPTIONS

MultiClamp – 3 in 1 Transport System
Reel transport with retractable top clamp and switchable side clamping for optimum fixation of any substrate variants.

APS – Automatic Pin Setting
Fully automatic setting and clearing of support pins. Including cyclic control and correction of pin positions.

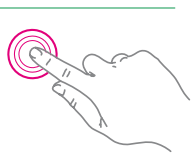
iPAG – Dispense modules for Paste and Glue
Additional material can be applied to increase the size of the solder deposit or to fix heavy components.

Optilign – align individually and print together
Individual optical alignment of multiple substrates shortens cycle time and increases accuracy. Fluctuations in substrates and printing form are compensated.

+ PROCESS DEVELOPMENT & EVALUATION

We ensure the perfect printing process!

+ SIMPLEX User Interface



+ CONNECTED TO PULSE PRO

Standard & customer specific line solutions

Automation	Cleaning/ Weighing	Print	Inspection/Weighing	Handling	Drying

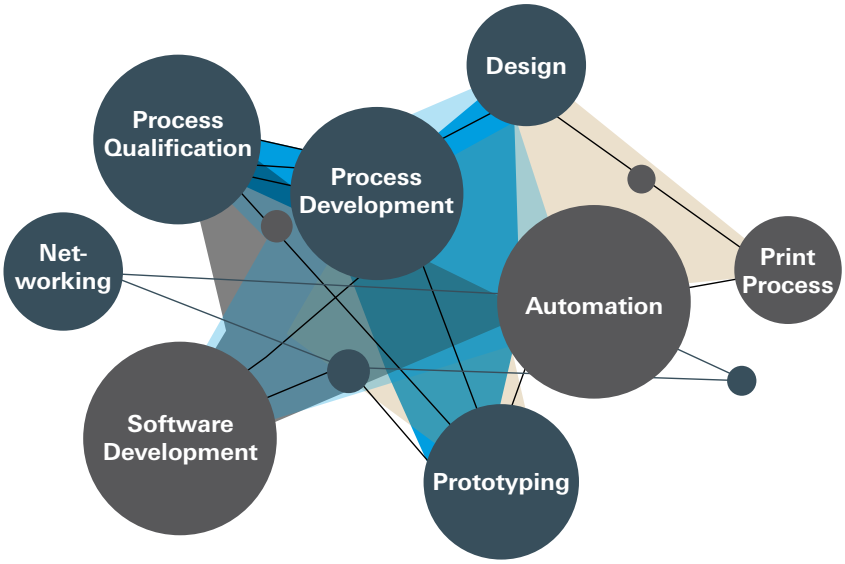
HYCON

We apply different paste systems to a wide variety of substrates with the highest precision. Together with our customers, we develop the right solution for any application – from paste selection to the production line. Our expertise extends beyond the printing process: Among other things, we also develop handling and drying solutions.

- Process development for various applications
- Integrator of third-party processes for customer-specific line solutions
- Cooperation with research institutes and universities

The right machine concept depending on the area of application:
From single-table semi-automatic machines in laboratory environments to multi-stage inline solutions in fully networked shop floors.

SPECIALISTS IN NETWORKING FOR TOP SOLUTIONS

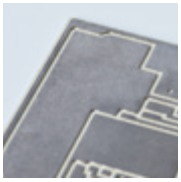


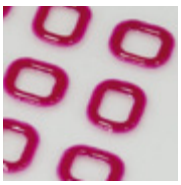
PRINTING PROCESS CONSULTING

We support and advise our customers in all aspects that contribute to a stable printing process and output at the highest quality level:

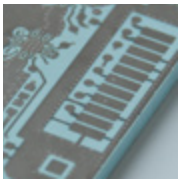
- Specially trained printing engineers as process consultants
- Highly functional coating systems
- Coordination of materials, such as screens, squeegees and pastes
- Identification and validation of the correct process parameters

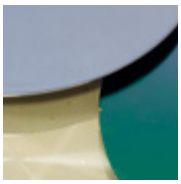
Specialists for different applications and processes


DBC/DCB


Sealing Print


Hybrids

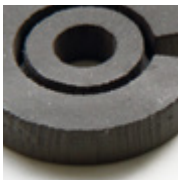

LTCC/HTCC


Wafer


Fuel Cell


Glass


Foils


3D Print

and more...

S10 SERIES CONSUMABLES

The S10 Series product range takes us a step further to provide customers with solutions that go beyond printing. We offer an extensive range of consumables, accessories and spare parts, which can be ordered at any time in our online-shop. The materials are perfectly matched to our printing systems so that optimum process quality is always achieved. It is possible to obtain all necessary materials directly from the system provider and save time-consuming searching.

- Consumables, accessories, supplementary products and spare parts for all areas relating to the printing process
- Cleaning rollers, special squeegees, mobile set-up and storage systems

S10 CABINETS

In our S10 Cabinets, customers can store all process materials compactly, intelligently and as needed.

We offer an intelligent material storage system for consumables in manufacturing:

- FiFo Withdrawal
- Traceability
- Personalized, controllable material output
- Smart Factory ready
- and many more

Onlineshop

+ www.asys-group-onlineshop.com

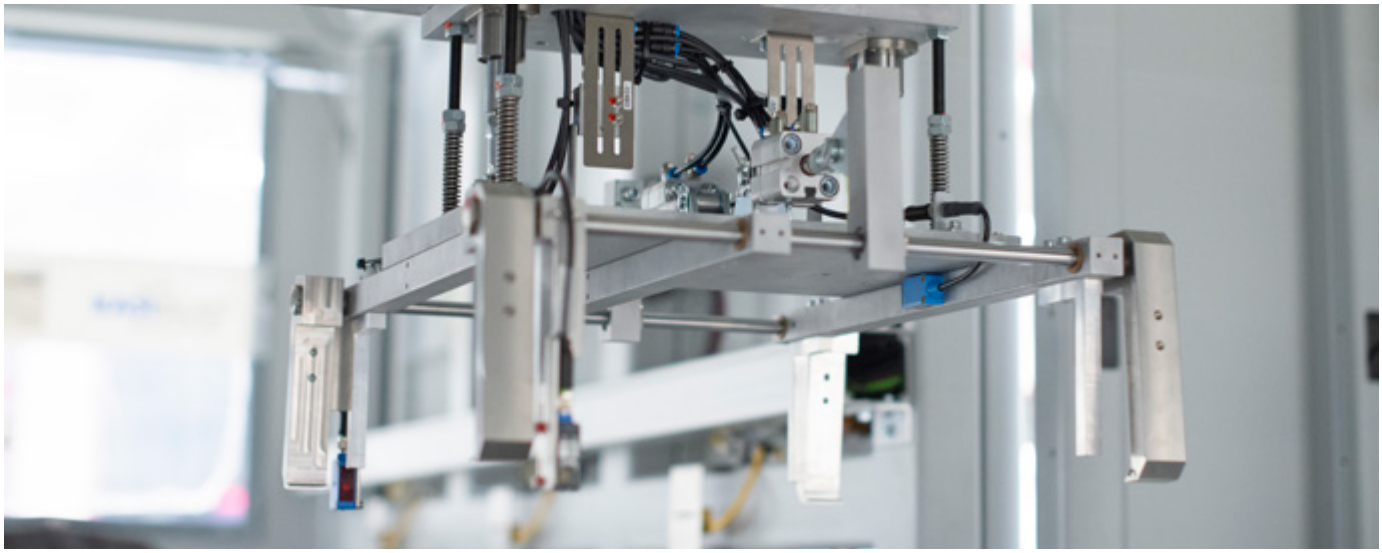
Easy Order
1. Direct purchasing or
2. Select the required goods › download the order as a pdf file and send it via your purchase department to EKRA

+ ESD conform according EN 61340-5-1

TECTON | *Tray- and Transfersystems*

TRAY HANDLING & TRANSFER
TECTON

ASYS TECTON designs and produces high-quality handling and transfer systems. The solutions cover all applications from the smallest trays to euro-pallets. ASYS TECTON has been a partner of companies in industries such as life science, automotive or electronics for over 20 years.



TRAY HANDLING

PARIO

From the smallest trays up to euro-pallets, the PARIO machine series covers all application areas in tray and component handling.

› A lot of variants are possible:
  › Stand-alone systems
  › Integrated in automation lines with or without MES connection
  › With autonomy extensions, AMR connection or customized tray transport
› Tray changing in 3 seconds
› Handling of different tray sizes and types
› Many years of experience in the development of industry-specific & customized grippers
› Homogeneous surface and stainless steel versions for life science and clean room applications
› All systems basically in ESD design
› Additional tasks like scanning, cleaning oder ionization

TRANSFER SYSTEMS

MOTUS

MOTUS transfer and puck systems are the right choice for fully automatic assembly systems. Thanks to standardized modules, complex requirements can be optimally implemented even in the smallest production areas. The transfer systems can be flexibly set up, for example, with 90° or 180° curves, as a square or with lifts in underfloor technology. The orientation of the workpiece carrier always remains the same.

› Possibility to expand the system at any time thanks to modular design
› ESD and clean room version
› Traceability guaranteed thanks to workpiece carriers with RFID tags
› Direct connection to MES/ERP

+ FLEXIBLE CONNECTION (vertical & horizontal)

+ INDUSTRY-SPECIFIC OPTIONS (ESD design, clean room, etc.)

+ SI SIMPLEX User Interface

+ CONNECTED TO PULSE PRO

+ FOR VARIOUS **HANDLING TASKS**


PROVIDING


DESTACKING


COMPONENT HANDLING


TRANSFER


STACKING

Cleanroom Technology

PROCESS & CLEANROOM TECHNOLOGY
ASYS CLEANROOM

Optimized for technical cleanliness: from equipment testing to the realization of defined requirements, the specialists from ASYS Process and Cleanroom Technology accompany customer projects with particle-sensitive products.

For machines, production lines and production floors

LAMINARFLOW

LAMINO

The laminar flow systems LAMINO from ASYS create a restricted clean working area that flexibly adapts to every requirement.

Cleanroom classes ISO 5 – ISO 8 and freely plannable dimensions are only some of the extensive possibilities of this product range.

STORAGE LIFT

MOVEO

The MOVEO storage lift system from ASYS meets all requirements for temperature and relative humidity with the largest possible storage volume at the same time. If the products are stored in a cleanroom environment, ASYS also implements the storage lift systems in various cleanroom classes.

CLEANROOM

CLEANUM

The individual requirements for air conditioning, ventilation and cleanroom technology as well as for the wall and ceiling system are competently and effectively solved by ASYS.

From the first idea to a turnkey cleanroom including cleanroom equipment, everything from a single source.

DRY STORAGE

CONSIDUS

Our energy-saving drying storage systems - Made in Germany - meet all necessary guidelines and standards and support you in storing and drying your moisture-sensitive components.

+ RELATIVE HUMIDITY IN <1 MIN

< 3% within one minute after closing the dry storage door

+ CONNECTED TO PULSE PRO

+ WAREHOUSE MANAGEMENT
+ MES CONNECTION
+ CDC CONNECT

CLIMATE MODULE

VERDICO

VERDICO modules for process machines make it possible to carry out demanding manufacturing or assembly processes under precisely measurable and controllable ambient conditions – independent of the surrounding production area.

› VERDICO Clean:
Cleanroom classes ISO 5–8

› VERDICO Dry:
Humidity range 3–60 %

› VERDICO Clima:
Temperature range 20–50 °C

› VERDICO Combi:
Combination of systems

LASER SOLUTIONS
POLYPHOS

In the POLYPHOS product group, we offer solutions for material processing using laser technology. Various materials such as FR4, polyimide, metals, ceramics, cSi solar cells, etc., can be processed using a range of laser techniques. These include laser marking for traceability during the SMT process, processes to enhance the efficiency of solar cells, joining techniques such as soldering and welding, as well as micro material processing. Depending on your specific requirements, the laser system can be configured individually.

HIGH
ACCURACY

INHOUSE
LASER LABORATORY

STANDARDIZED
MES CONNECTION

LASER DEPANELING

DP

Sets new standards in depaneling rigid and flexible printed circuit boards

› High cutting accuracy
› High throughput
› State-of-the-art laser beam source and optics for improved cutting results

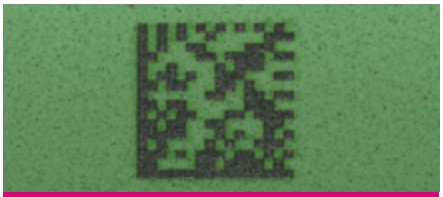
LASER CUTTING

CT

Laser direct cut process for IMS and ceramic substrates

› CNC controlled
› Low maintenance fiber laser
› Precision cutting head with on-axis camera

LASER MARKING

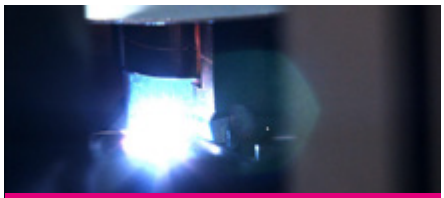


MK

The individual solution for metal, plastic and ceramic direct marking

› Product-specific beam sources and automation

LASER WELDING



WL

Laser plastic welding as an integrated process, aluminum laser welding as fully integrated process

› Hermetic seal welding of aluminum housings
› CNC welding head
› Remote welding with galvo scanner
› On-axis camera
› Fiber lasers from 100 W to multi-kW

LASER CLEANING

CL

Surface pretreatment of sealing and bonding surfaces

› Aluminum die casting
› Plastic injection molding
› Selective cleaning of bond surfaces
› Process-specific beam sources

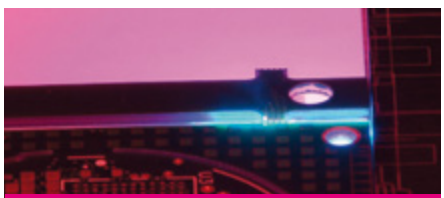
LASER SOLDERING

SL

Selective laser reflow of temperature-sensitive components

› Li-batteries
› Medical sensors

MICRO MACHINING

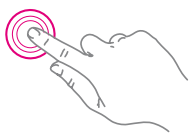


MM

Customized solution for micro material processing, such as scribing, ablation, drilling, etc.

› Metal, silicon or ceramics
› Product-specific beam sources and automation

+ SIMPLEX User Interface



+ CONNECTED TO PULSE PRO

ASYS Applications for the Life Science Industries

Increasing life expectancy combined with new possibilities of diagnostics and therapeutics offers new opportunities to help patients worldwide. Automation in the Life Science Industries is the key lever to reduce costs while increasing quality. We offer comprehensive and GxP-compliant machines and process solutions from one source.

MEDICAL ELECTRONICS

We have delivered various solutions for the manufacturing of medical electronics such as sensor technology for blood gas analysis at the point of care (POC), sensors for blood pressure monitoring or systems enabling continuous monitoring of blood glucose levels. We have also realized test systems for medical devices or the production of control units for hospital equipment.

DIAGNOSTICS

Fast and reliable test cartridges are required for the comprehensive diagnosis of microorganisms. We supply efficient and reliable production systems for manufacturers of diagnostic tests (IVD, POC, PCR, ...), who are required to manufacture these in accordance with ISO 13485 or FDA 21 CFR Part 820. On our ASYS systems, sophisticated consumables can be produced in a matter of seconds.

IMPLANTS

Implants, mostly class III medical devices, require special care in their manufacturing. Components for pacemakers or hearing implants, for example, are produced and tested on our ASYS systems. Our systems are also used to package class IIb medical products, such as knee joints or ceramic hip joints, or to mark them with a Unique Device Identification (UDI).

WOUND CARE

In the production of wound care material, there are challenging tasks. The printing of silicone strips on variable wound pads is one of them. Due to our competences in handling and thick-film printing on flexible wound pads, companies in this market segment trust us. We automate your processes around the production of high-end wound pads.

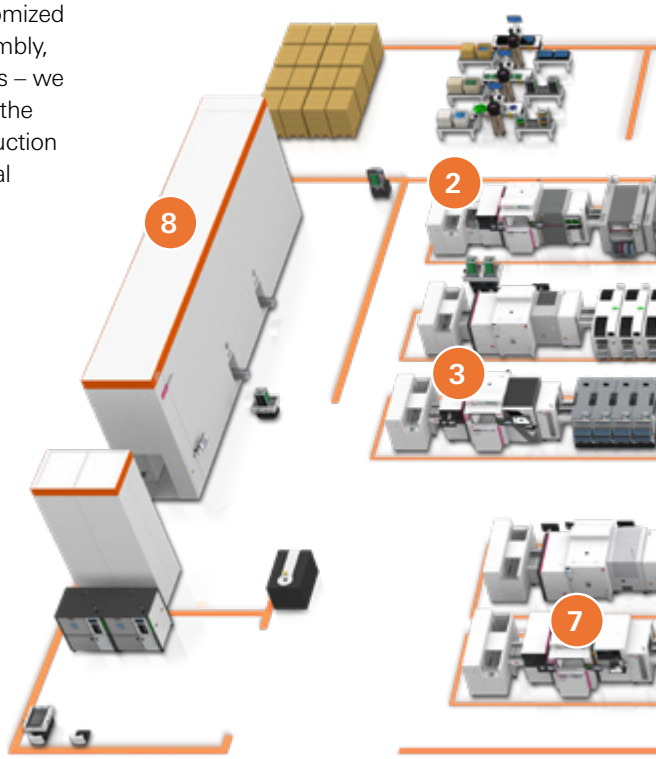
PHARMACEUTICALS

We also realize the automation of pharmaceutical production with our ASYS systems. This ranges from handling tasks when loading and unloading containers and trays, continues with stacking of glass vials for pasteurization processes and ends with the production, labeling and palletizing of combination packs.

Business Unit
Life Science

Automation Solutions for the Life Science Industries

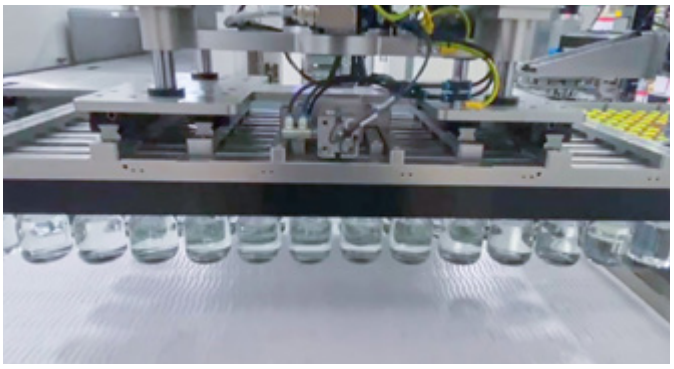
On our way to the Smart Factory, we offer solutions for all branches. This also includes the automation of products for the Life Science Industries. Whether individual standard machines, customized solutions or turnkey lines for assembly, handling and packaging processes – we are your competent partner: from the initial idea up to the finished production line for the manufacture of medical technology products.



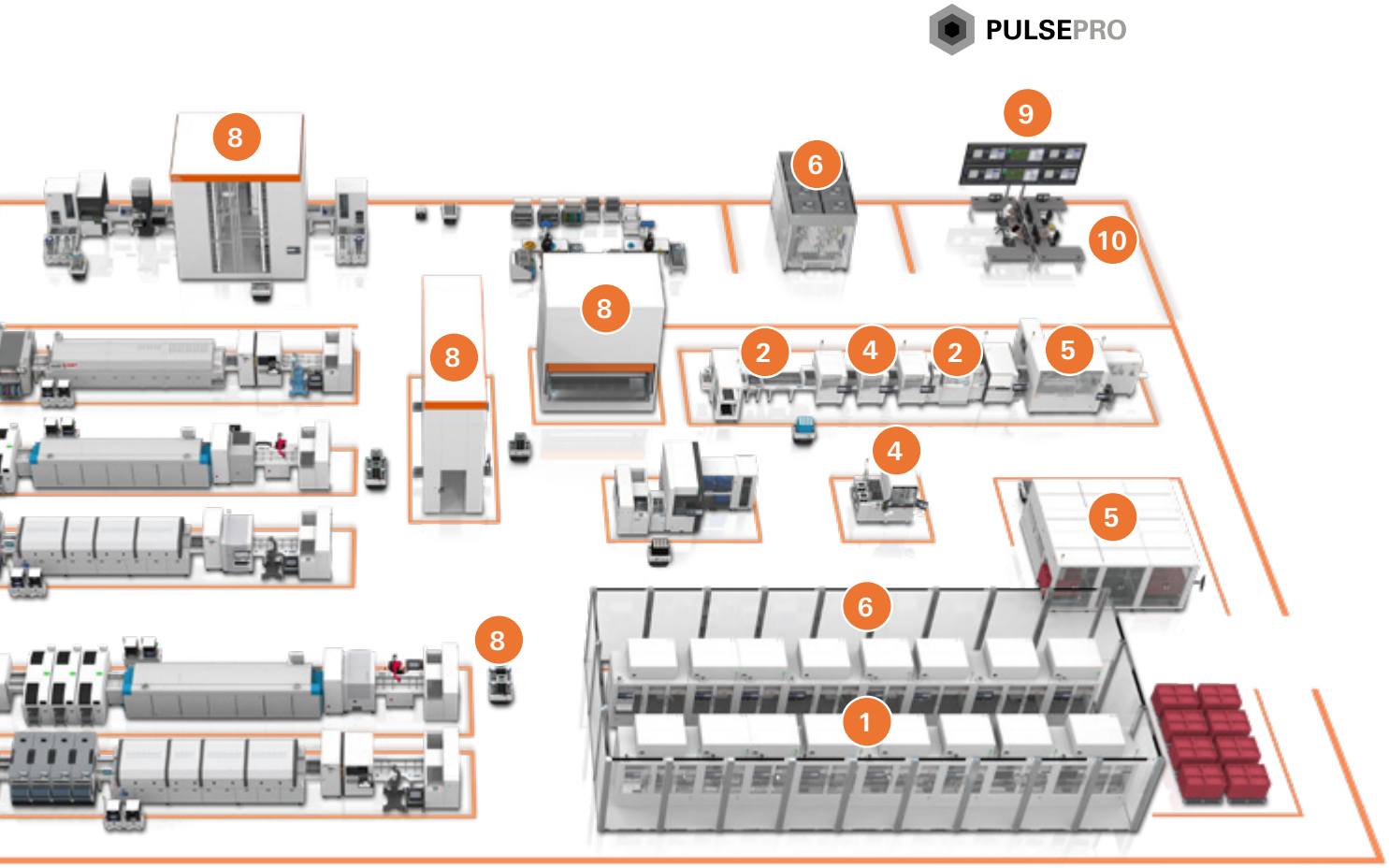
1 ASSEMBLY SOLUTIONS

We have developed an assembly platform especially for the Life Science Industries and tailored it specifically to the requirements of the regulated industry. In doing so, we use modules from all business areas. This helps us to provide a process-safe and GxP-compliant solution in a short time. We realize complete assembly lines and plants from one source.

2 HANDLING



We handle components as well as assembled parts or packaged products. We transport or stack them in controlled or clean rooms. In this way, we reduce distances and personnel costs as well as increase quality and production volume.



3 LASER MARKING

Laser processes enable the highest precision and reduce mechanical stress to a minimum. With our POLYPHOS series, we can process almost all conceivable materials using a wide range of laser processes. For example, our customers use our solutions for marking IVD cassettes, hand controllers for hospital beds, test cartridges, cardiac pacemakers, defibrillators or implants.

4 TESTING SOLUTIONS

We develop and integrate a wide variety of tests for the manufacturing processes as well as optical checks, leakage tests or functional tests. If required, machines can be delivered in compliance with FDA 21 CFR Part 11. For example, we have implemented advanced test systems for cardio management devices (e.g. pacemakers, defibrillators, ...).

5 Trayloading & Palletizing

We use our expertise in handling components, trays and pallets on a daily basis to perfect the automation process. For this purpose, we rely on our standard product PARIO, although we can adapt it to your process. For example, we have realized automated depalletizing machines for the separation of different vial sizes and subsequent connection to a packaging machine.

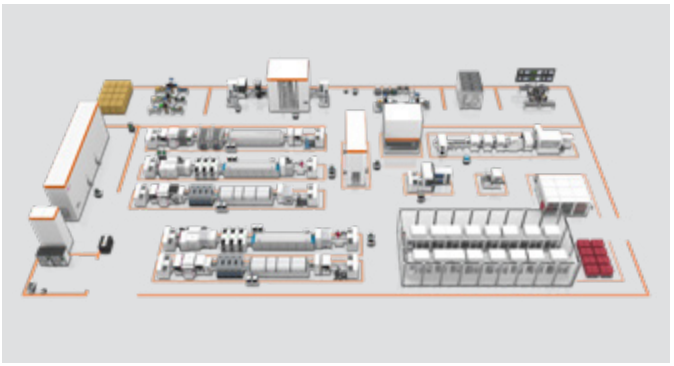
6 Cleanroom Solutions

From the first idea to the turnkey clean room – ASYS Prozess- und Reinraumtechnik develops individual solutions from clean workplaces, laminar flow units to drying storage cabinets and dynamic storage systems. With our solutions you protect your products in production according to GMP, ISO and VDI.

7 Printing Solutions

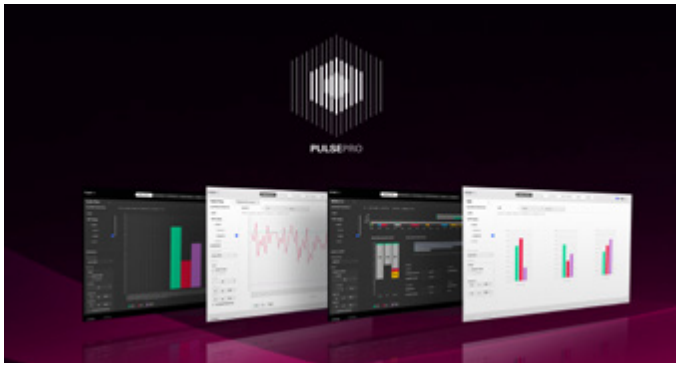
Our subsidiary EKRA offers standard printing systems and customized solutions for thick-film applications. Further fields of application are the printing of fine structures, three-dimensional bodies (3D printing) or functional layers on different materials. For example, we have realized the automated, reproducible production of multi-layer sandwich structures on flexible wound pads.

8 Material Logistics



We offer the largest product portfolio and the most experience on the market when it comes to the automation of material logistics in production. Thanks to a modular approach, we are able to implement material logistics solutions in various degrees of automation. In this way, existing factories with their prevailing conditions are adapted step by step to the specific requirements of our customers from the Life Science Industries.

9 PULSE PRO – Smart Factory Manager



The PULSE PRO Smart Factory Manager offers software modules that will help you to control automated material flows in the shopfloor, to achieve a dynamic just-in-time supply for each production step and to track all data flows. The operator has the production in sight and can achieve an optimum of productivity. In this way, the faster growing complexity becomes manageable.

10 Services & Qualifications

We are available around the clock worldwide to provide you with prompt support. Our teams are made up of experienced specialists who provide you with optimum support in their respective product areas. Please contact us, we will be happy to help you.

ASSEMBLY PLATFORM
FINAL ASSEMBLY

The assembly platform was developed in close cooperation with customers from the medical technology sector and meets the GxP regulations for production in the environment of both 21 CFR Part 820 and ISO 13485. Through the deliberate modular design, the highly flexible platform allows customized automation solutions in short project durations. The frames are pre-configured and can function as individual cells or as part of complete assembly lines. The process components (robotics, testers, laser applications, handling, etc.) are mounted on the base plates and aligned with the highest precision: accuracies of < 10 µm @ 6 sigma and greater can be achieved.

CUSTOMIZED SOLUTIONS FOR A WIDE RANGE OF PROCESSES

Laser Marking

Labeling

Testing

Depaneling

Tray Load/Unload

Press-Fit

Feeder Solutions

Screwing

Tray Handling

Riveting

Plasma Cleaning

Dispensing/Potting

Resistance Welding

Transport

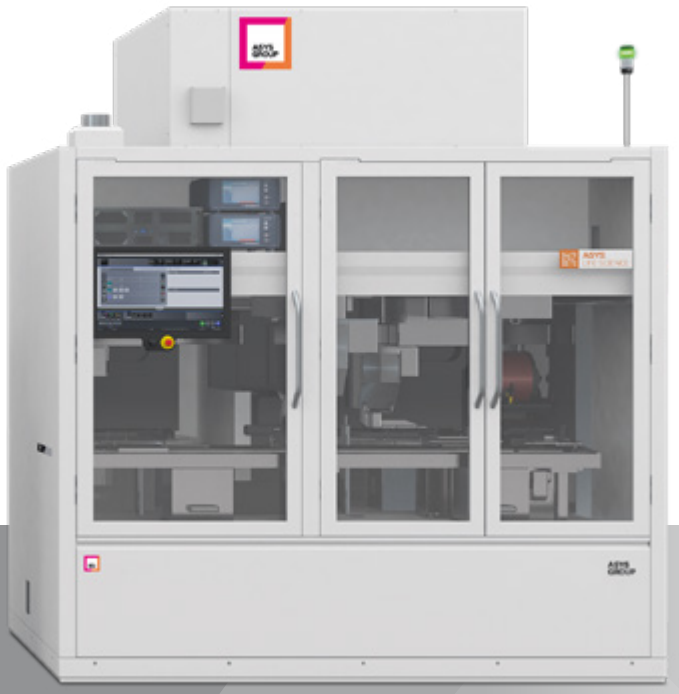
Laser Welding

Laser Cleaning

Laser Depaneling

Laser Cutting

Laser Reflow Soldering

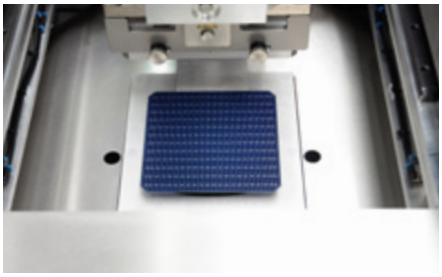


Examples of medical devices manufactured with our INVENTUS Assembly Platform

In the Energy division, we integrate the business areas of solar, fuel cell and battery technology, which make a significant contribution to securing the future of energy supply in a sustainable manner. We work for and with well-known manufacturers from the energy industry. Cooperations with strong partners in the field of research emphasize our ambition to find the best, innovative solutions for our customers.

For more than a decade, the ASYS Group has been successfully developing and building manufacturing solutions for the Energy business unit. The solar industry has played a key role in its success story by delivering hundreds of metallization back-end lines worldwide to this date.

SOLAR

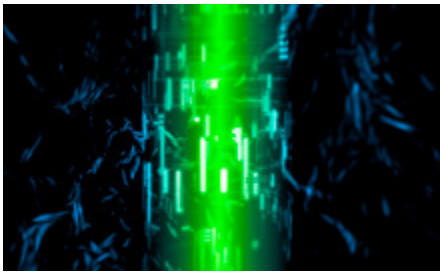


In the solar sector, we specialize in backend turnkey production solutions for cell manufacturing. Our range of services includes printed metallization systems, optical breakage and automatic post-print inspection systems, dryers, buffer systems, handling systems, laser edge isolation, cooling stations, cell testers as well as cell sorters.

FUEL CELL

We supply high-volume concepts for the production of fuel cells. As an established provider of production automation, we combine expertise in material logistics, screen printing, laser technology and customized assembly solutions.

BATTERY



In the field of solid state batteries we are currently in the elaboration phase. As innovation drivers, we see our field of application primarily in the area of printed electronics and battery. Thanks to our broad portfolio and know-how, we are also able to tap into the assembly of battery storage systems.

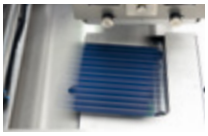
Solar

Our systems are Made in Germany in the best sense. We have customers who have been using our solar machines for more than 10 years. This is only possible because we have always attached importance to scalability and upgradeability. With the AIRON systems we go one step further.

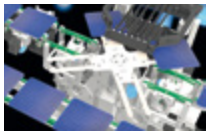
AIRON – METALLIZATION REDEFINED

The AIRON printer applies metallization paste so fast that the eye can no longer follow. Every second, a finished processed solar cell leaves the line. The line has a throughput of 7,200 cells per hour. It is also the market leader in terms of alignment repeatability: ± 12.5 µm at 6 sigma. The patented Air-Spin system sets new standards in gentle cell handling. Users are enthusiastic about the low cell breakage rates. The complete metallization line is optimized in terms of ergonomics and usability and grows with emerging demands, such as new cell technologies or line extensions.

HIGHLIGHT FEATURES



Revolutionary Printing Technology
Patented process for high-speed printing with highest accuracy



Test and Sort
Uniquely fast and gentle: EL test and electrical test in a single contacting process

Merged Machine Modules
Handling, inspection and printing processes integrated in one machine platform

INDUSTRY 4.0 READY – AUTOMATE PV PRODUCTION

Combined with high throughput rates, automation of the material flow is becoming an essential requirement for PV manufacturers. This is where we come in with our Industry 4.0 approach. With the PULSE PRO software solution, we have already set the course for automation in terms of operator work. As a pioneer in material logistics and supply automation in the electronics industry, we are also adapting our know-how to the solar industry.

AIRON

1.0 s cycles &
172,800 cells per day

Like on Air!
Soft and fast cell transport

New Patented Air-Spin Transport

INDUSTRY 4.0
Software and Robots in the PV Production

+ SIMPLEX
User Interface

+ CONNECTED TO PULSE PRO

Business Unit
Energy

Fuel Cells

We supply high-performance holistic concepts for the production of fuel cells. As an established provider of production automation, we combine expertise in material logistics, stencil printing, laser technology and customized assembly solutions.

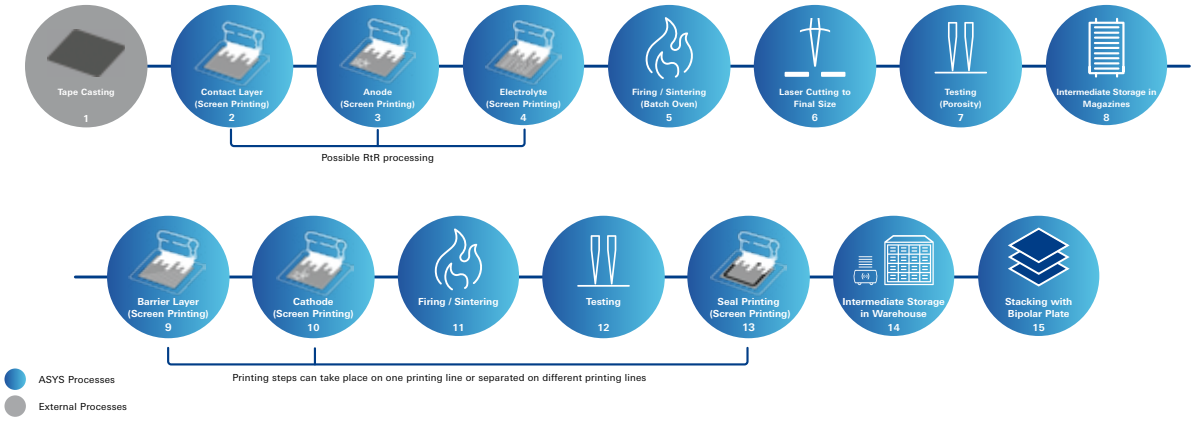
STRUCTURE AND TYPES OF FUEL CELLS

A fuel cell usually consists of a membrane electrode assembly (MEA), which is enclosed by two metallic pole plates (bipolar plates). A broad differentiation of fuel cells is based on the operating temperature. While “low temperature“ fuel cells usually operate in the range of <100°C, the operating temperature of a “high temperature“ fuel cell is in the range of 700°–1000°C. High-temperature cells are currently based on ceramic membrane materials (SOFC) or metallic membrane materials (MSC).

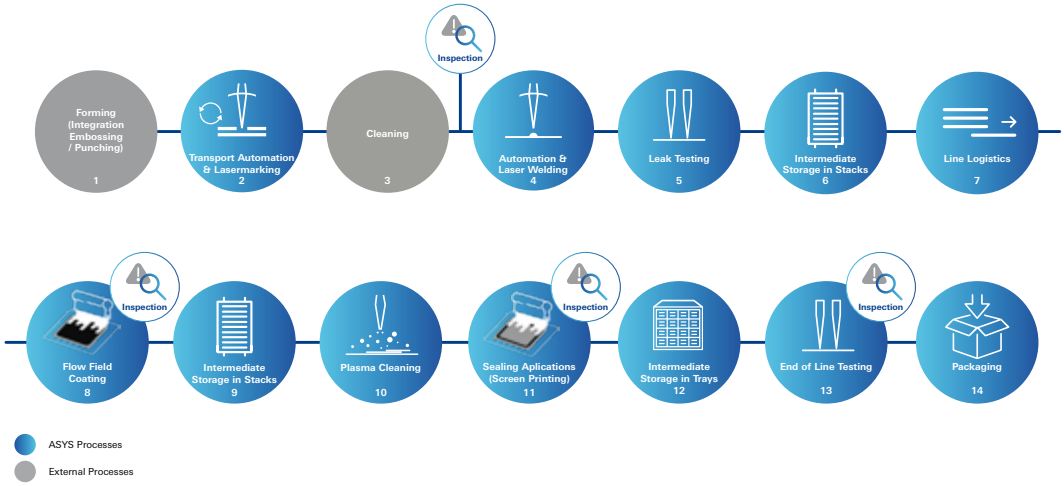
With our solution expertise, we cover almost the entire process of fuel cell production.

SOFC (Solix Oxide Fuel Cell)
SOEC (Solid Oxide Electrolyzer Cell)

TURNKEY SOLUTIONS FOR SOFC/SOEC

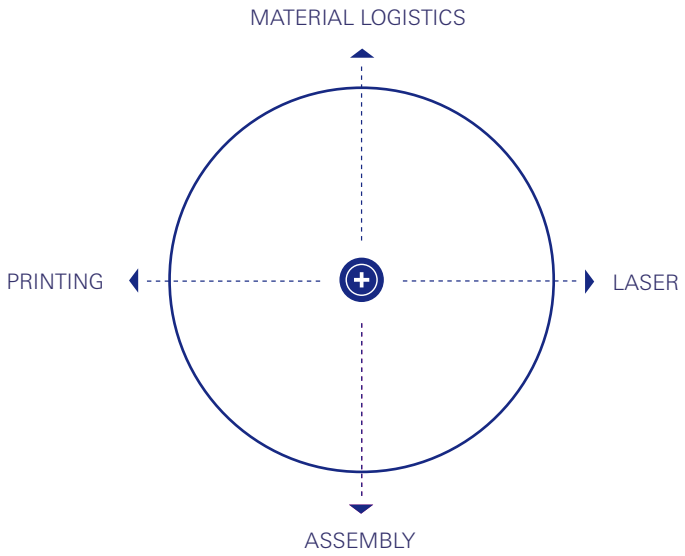


TURNKEY SOLUTIONS FOR MANUFACTURING OF BIPOLAR PLATES



CORE COMPETENCE: PROCESS INTEGRATION

The manufacturing process of the individual membranes and their following stacking to a powerful fuel cell module requires specific process know-how. Individual process steps are linked to a powerful overall concept. As an established supplier for production automation, we combine the expertise from the different areas with reliability and precision.

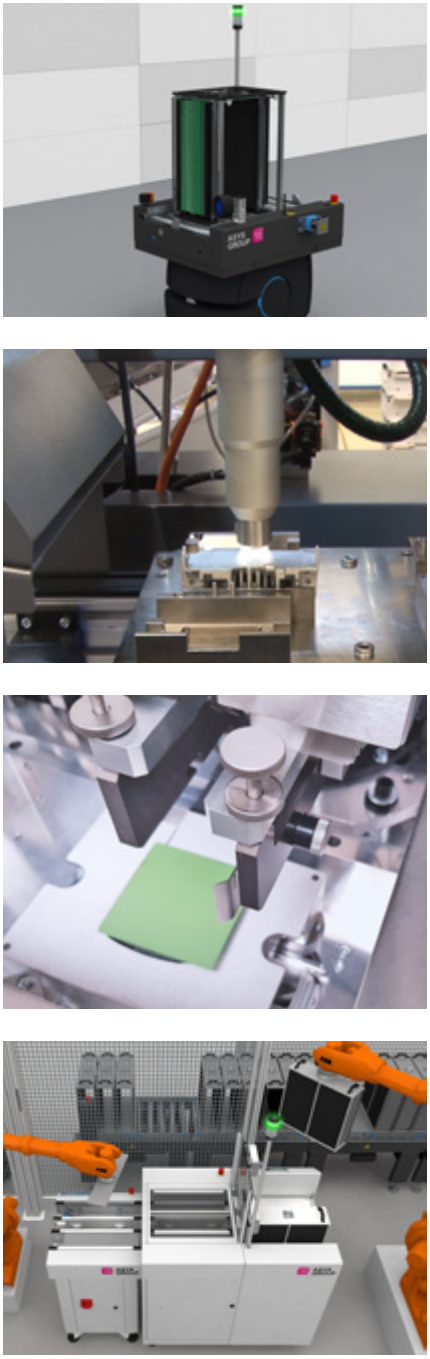


PARTNERSHIP AND KNOW-HOW EXCHANGE

In addition to the comprehensive process solutions for fuel cell production, we are the only manufacturer to offer holistic software solutions. They cover all processes from incoming goods to the assembled end product on the production line, spanning the entire factory.

In addition, interface implementation is one of our other core competencies. Sharing knowledge is our path to success in each of our business areas.

We put our customers' requirements first and are open when it comes to integrating third-party processes into our solutions. Networking our own processes with third-party machines is a matter of course for us. We rely on know-how exchange to achieve the best results.

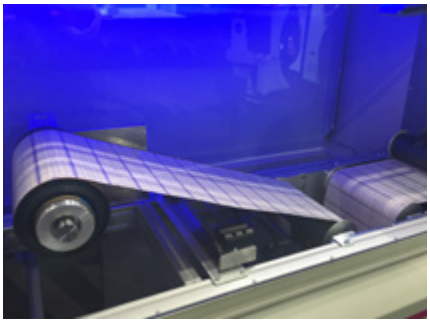


Images from top to bottom: Autonomous Mobile Robot (AMR); plasma cleaning; membrane printing; stacking

Battery

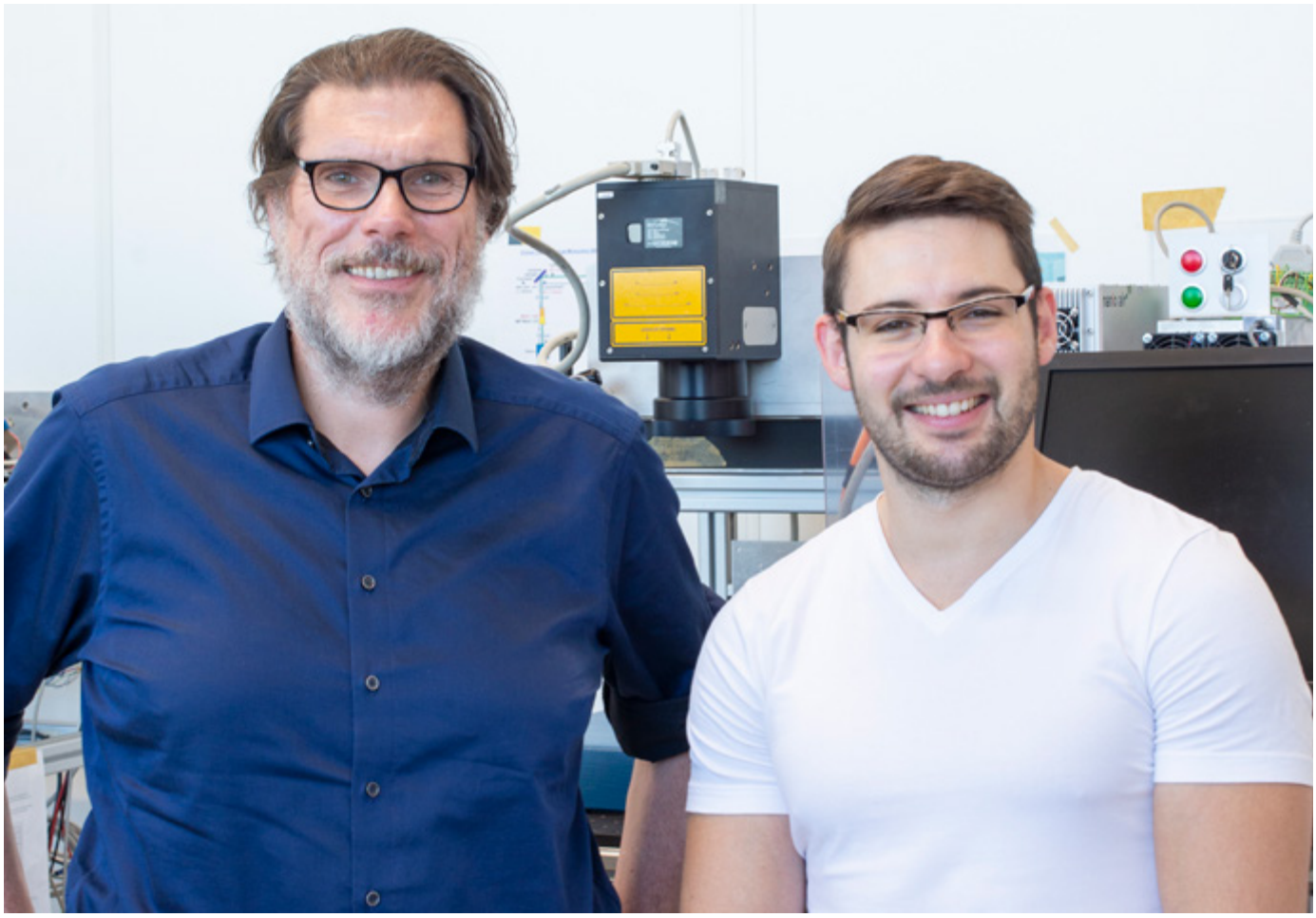
In the field of battery technology, we are currently in the elaboration phase. As innovation drivers, we see our field of application primarily in the area of printed electronics and battery. Thanks to our broad portfolio and know-how, we are also able to tap into the assembly of battery storage systems.

One field of application, for example, is the coating of electrodes. In this process, paste-like material is applied to the electrically conductive carrier film. There are different coating options: continuous and intermittent coating. For both processes, we can draw on the well-founded know-how from our special machine construction. Solutions from the HYCON product range are predestined for these applications. Here we apply our experience in the reel-to-reel process, in which pastes are applied to flexible film tapes.



Development & Application
Making Future Technologies Available Today

ASYS does not only want to satisfy our customers, we want to inspire them – with specialized test equipment and new solutions. More than 100 employees worldwide work for ASYS in research and development. Particularly in the areas of process technology, the experts offer unique know-how to draw on the latest manufacturing methods and processes.



Selected Research & Development Projects

ASYS is involved in leading Industry 4.0 projects that are funded throughout Germany and the EU. Promising synergies and solution approaches result from the cooperation with strong partners from the university and industrial environment. They can accelerate the progress of developments and serve as a basis for opening up new markets.

KOSMoS – Smart Contracting Platform for Digital Value Creation Networks

Today, manufacturing companies use the data they collect to control their production processes and optimize internal production. KOSMoS wants to show what can be possible or what is already possible, if it succeeds in exchanging production data not only internally but across company boundaries. The main obstacle to this is a lack of trust, because data collected at the machine level travels through a large number of internal systems (controllers, gateway, edge, MES, etc.) before it is actually transmitted. For a recipient, it has been impossible to track whether the data has been manipulated along the way.
By using blockchain technology, KOSMoS overcomes this challenge and enables the development and implementation of new business models. However, KOSMoS not only ensures the proper and unalterable transfer of sensitive data, but also provides a platform with ready-made software components, source code and tools. This allows in-house software and IT infrastructure to be integrated into the platform, which greatly facilitates the implementation of new business models. There are also integrated analysis and AI functions for storage, data pre-processing, aggregation, filtering, enrichment with meta-information, monitoring and alerting components. Additionally, there is the possibility to extend KOSMoS with cloud applications.
Through the cooperation of companies via KOSMoS, everyone gains an advantage, which can be reflected, for example, in lower maintenance requirements, increased product quality or more favorable prices.

Our Partners: Institut für Steuerungstechnik der Werkzeugmaschinen und Fertigungseinrichtungen (ISW) – Universität Stuttgart | Datarella GmbH | Frankfurt School of Blockchain Center | Hochschule Furtwangen | Inovex GmbH | Ondics GmbH | Alfred H. Schütte GmbH | Schwäbische Werkzeugmaschinen GmbH

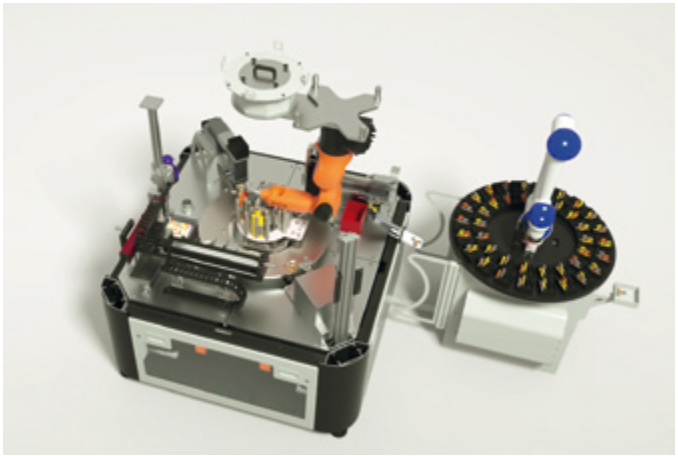
www.isw-sites.de/kosmos/

DEVEKOS – Revolution in Engineering

How can the efficiency of the engineering process be optimized? An intelligent modular principle is designed to solve the challenge. The aim is to enable developers and plant manufacturers to concentrate fully on their processes and pay less attention to the hardware components. At DEVEKOS, a new type of machine architecture is to be developed that makes it possible to generate independent modules from components. In addition, capabilities of the modules will be defined so that they can be used independently of manufacturers. Finally, a machine will only be configured from the modules, which not only speeds up engineering, but also makes the machine maximally changeable. To optimize the engineering process, software is also being designed in which systems can be simulated in advance. By means of digital twins, machines and plants can be virtually commissioned and tested.

Our Partners: Afag Holding AG | CODESYS Group | elrest Automationssysteme GmbH | eps GmbH | Festo Vertrieb GmbH & Co. KG | fortiss GmbH | Häcker Automation GmbH | Harro Höfliger Verpackungsmaschinen GmbH | inIT – Institut für industrielle Informationstechnik | ISW – Universität Stuttgart | NewTec GmbH | Schaeff Maschinen GmbH & Co. KG | Softing AG

www.devekos.org



DEVEKOS Demonstrator

Selected Research & Development Projects

Rock-it – Development of a Solar Metallization Line for High Throughputs

Based on the Rockstar rotary printer, handling and drying are now being further developed. ASYS and Botest are jointly developing an ultra-fast dryer that enables solar cells to be dried within just 100 ms.

Our Partners: ContiTech Elastomer-Beschichtungen GmbH | FMP Technology GmbH | Namics Europe Gmbh | HighLine Technology GmbH | Fraunhofer ISE e.V. | Gallus Ferd. Rüesch AG | Heraeus Holding GmbH

BIG – Passivation of a Solar Cell During Laser Cutting

Within the photovoltaic industry there is a trend towards larger solar cells. However, the area of a solar cell is proportional to its current intensity. Since a high current leads to large ohmic losses, it makes more sense to divide the cells and connect them in series. The conventional process is laser scribing and mechanical breaking. However, the new surfaces created by this process correspond to a defect within the crystal lattice, since an adjacent atom is missing. This defect is also known as dangling bonds and leads to recombination losses and thus to a decrease in the efficiency of the solar cell. If a foreign atom, e.g. hydrogen or aluminum oxide, is added, the defect is passivated and the efficiency is increased. Passivation of a solar cell while it is being separated using laser technology is the goal of BIG.

Our Partners: TAMURA ELSOLD GmbH | ISC-Konstanz e.V.

Guten Morgen – Solar Cell Tester Based on LED Technology

Photovoltaics is striving towards larger cell formats (see BIG). To keep the ohmic losses within a solar module low, the solar cells are connected in series. This approach has the disadvantage that the cell with the lowest current limits the current of the entire module. For this reason, each cell is tested and classified after metallization so that only similar cells are installed in a module. Within the project Guten Morgen ASYS is developing a solar cell tester based on LED technology which can characterize cells up to a size of 210 mm. The LEDs allow a better adjustment of the spectrum with increased energy efficiency and lifetime.

Our Partners: Fraunhofer ISE e.V. | M10 INDUSTRIES AG | AxSun Solar GmbH & Co. KG | WAVELABS Solar Metrology Systems GmbH | Plasma electronic GmbH | DELO Industrie Klebstoffe GmbH & Co. KGaA | InnoLas Solutions GmbH | Highline Technology GmbH

Rock-Star – Rotary Printing Process Si Solar Cells

The Rock-Star project, funded by the Bundesministerium für Bildung und Forschung (BMBF), was successfully completed. The project objectives focused on the development of rotary printing processes and innovative equipment concepts for the cost-effective metallization of highly efficient Si solar cells.

GeniusTex – Smart Textiles

EKRA and ASYS have dedicated themselves to the topic of "Possibilities of flexible materials" in the GeniusTex project. In cooperation with Ottobock, the Institute for Textile Technology at RWTH Aachen University and other partners, a line for the production of prototypes for smart orthoses made of textiles has been developed.

German Quality Across Five Continents – Worldwide Sales and Service Centers

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.

24 Hour Availability for Service and Support

Service has a high priority at ASYS Group. More than 80 service engineers worldwide are at the service around the clock. Customer satisfaction is the ultimate goal. To achieve this, ASYS installed a systematic feature to track service calls.

WE ARE

ASYS GROUP

AUTOMATE, DIGITALIZE & CONNECT

ASYS GROUP

Visit our Website:
www.asys-group.com

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