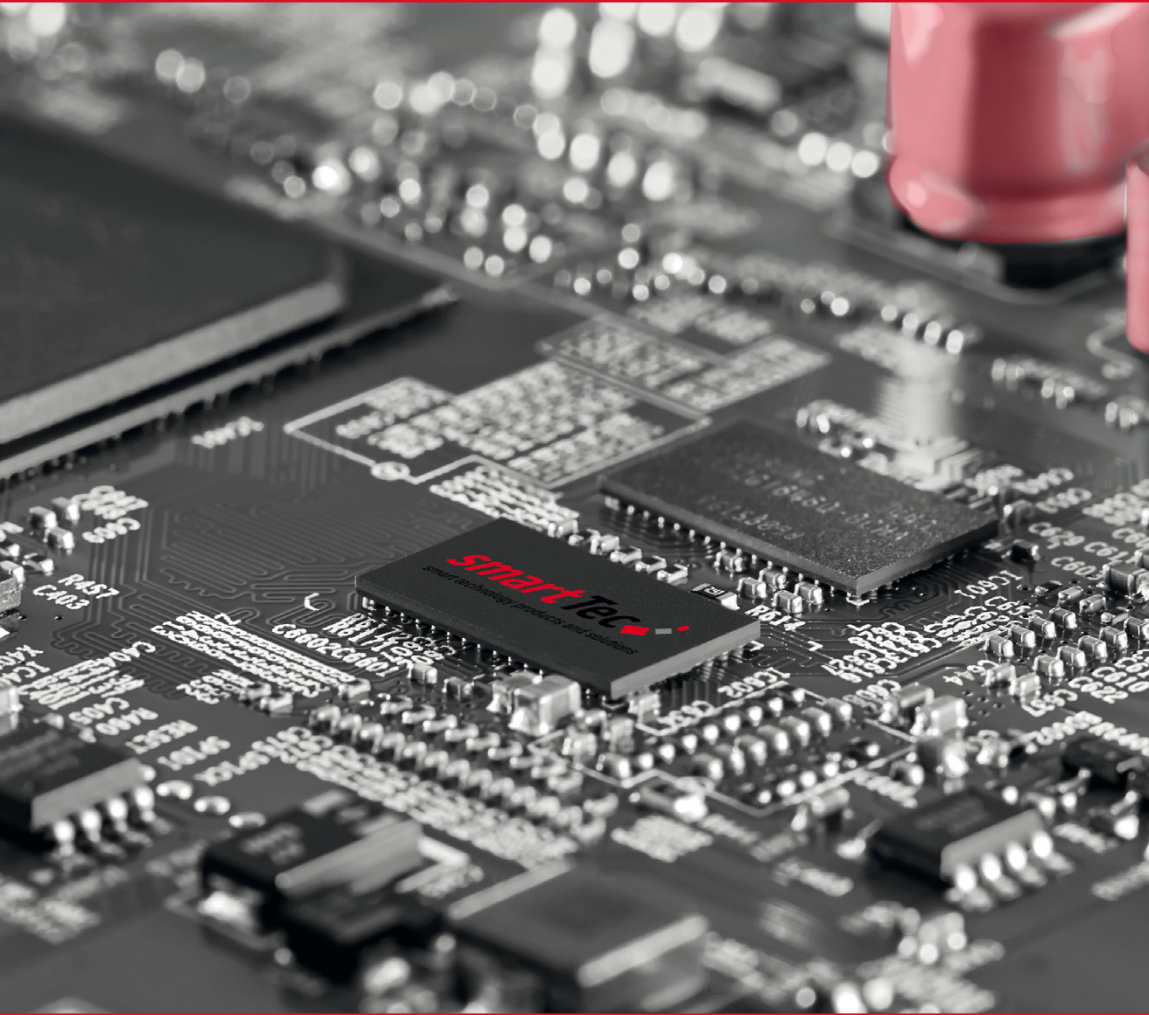




smart Factory Solutions



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From National System Supplier to Global System Integrator

The smartTec Group has been your solution provider for Europe for over 20 years! With comprehensive line solutions, strong partner companies, and an excellent warehousing and logistics system, we offer a uniquely wide portfolio.

Shortly after the founding of smartTec GmbH in 2003, we positioned ourselves as a recognized system supplier for electronics manufacturers in the DACH region. With the acquisition of Peter Jordan Nordic (now smartTec Nordic) in 2008, we expanded into the Scandinavian countries. The restructuring into three business divi-

sions in 2014, the development of our own smartControl line control software in 2015, and finally, in 2018, the market launch of the process and transport modules under the name smart.e.connect, allowed us to grow further. Finally, in 2024, we expanded into the Baltic States and Finland.

Today, we are a globally valued system integrator with a multitude of line installations worldwide.



WE ARE YOUR PARTNER FOR SYSTEMS & TOTAL LINE SOLUTIONS

Expertise and Partnership

A Success Story + 20 YEARS

2003

Ready for a Strong Team

Uwe Geisler, Frank Wiethüchter and Roland Feuser found smartTec GmbH. Their aim is to provide customers with solutions with renowned partners for all processes and with the best ROI from a single source.



2008

Expansion in Scandinavia

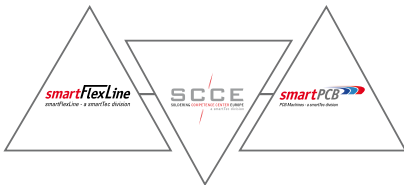
In 2008, the current smartTec Nordic is founded in Copenhagen through an acquisition. This also establishes the company's market entry in the Scandinavian countries of Denmark, Sweden and Norway.



2014

New Paths, New Business Areas

It is organised into three business units: smartFlexLine, SCCE and smartPCB. Users can therefore be offered even more comprehensive, effective and holistic solutions with optimum ROI from a single source.



2015

The Time is Right for smartControl

With the innovative development of smartControl, smartTec offers its customers a centralised control system for flexible line concepts. It makes it possible to integrate and control the entire production process.



Stay up to date!
Follow us on
LinkedIn

2018

Perfectly Connected with smart.e.connect

The interaction between smartControl and smart.e.connect forms the basis for the efficient networking of all processes. The best prerequisites for the intelligent and automated realisation of production lines.



2023

Professional Logistics Concept

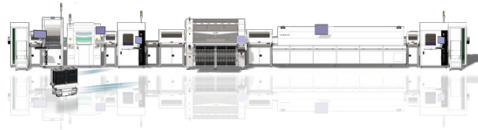
With the innovative and fully automated storage and logistics solution smartProLog, smartTec guarantees with '5 Times Correct': The correct material, in the correct quantity, at the correct time, in the correct place and with correct, seamless traceability! The concept was honoured with the productronica Innovation Award in 2023.



2024

On Course for Continued Success

Today, smartTec is a globally recognised system integrator with a large number of line installations all over the world. The aim is to provide customers with comprehensive solutions for electronics and semiconductor production from a single source and to integrate processes into a fully automated line concept.



JOIN OUR TEAM!

We are looking for smart techies!



smartTec Divisions

smartFlexLine *PCB Assembly - a smartTec division*

Manufacturing processes with placement systems for SMT/THT/OF, stencil printing, 3D-AOI, and 3D-SPI, as well as X-ray inspection, are part of this business segment. This also includes end-of-line processes such as dispensing and selective conformal coating. Additionally, the intelligent and fully automated interlinking of these processes into a highly efficient overall solution is a key focus.



We take a holistic approach to the soldering process, considering its numerous influencing factors as a whole. Our core expertise at the Soldering Competence Centre Europe lies in selecting the right soldering materials, applying the most suitable method and soldering system, and ensuring optimal line automation.



smartProLog is the professional and unique storage and logistics solution, awarded the productronica Innovation Award. We guarantee „5 Times Correct“: the right material, in the right quantity, at the right time, in the right place, with complete and accurate traceability!



With years of experience and extensive expertise in all processes of PCB manufacturing, we offer our customers first-class solutions in the smartPCB Division.

smartFlexLine

PCB Assembly - a smartTec division

smart Automation with smart.e.connect and smartControl

smarteconnect **smartControl**^{4.0}

Premium Process Components

For a line concept designed for demanding electronics manufacturing tasks.

SJ INNO TECH
Vizion Screen Printer



Paste Printing

Universal
Instruments



SMT Highspeed,
THT & OF

Nordson
TEST & INSPECTION



2D/3D-AOI,
3D-SPI & CMM

Nordson EXELSIUS
ASYMTEK



Dispensing &
Coating

Xtreme
Series
AUTO DRY CABINETS



Component
Storage

HP Series: The Proven Paste Printer



The proven high-end paste printers in smartTec's range impress even in their standard version with features that are often only available elsewhere as expensive extras.

- High precision for 0.3 mm QFP, 0.2 mm BGA
- Auto-calibration
- Robust, low-vibration welded steel frame
- COAXIAL vision system with RGB lighting
- Digital control of squeegee speed and pressure (up to five programmable settings)
- Patented side clamping for bounce-free printing
- Three-stage conveyor with automatic width adjustment
- Freely programmable underside cleaning (wet, dry, vacuum, and compressed air) including 2D solder paste inspection

smartTec offers more than just a paste printer:

- Consultancy
- Project planning
- Hardware and software development
- System integration
- Training
- Installation
- Process support
- Service hotline
- Maintenance
- Service
- Spare parts
- Documentation
- Custom-built solutions on request

Fuzion Series – SMT and OF



SMT- and OF-Assembly

- Available with one or two insertion heads
- XC models (Extra-Capacity) with up to 272 feeder inputs
- Throughput of up to 66,500 CPH
- Industry-leading in cost per placement, flexibility, and accuracy
- Closed-loop processes to ensure maximum yields
- Maximum performance and utilisation for any volume or product mix
- Comprehensive toolset to accelerate NPI and achieve 100% first-pass yield
- Capability to produce prototypes on a single module
- Lowest labour and operating costs

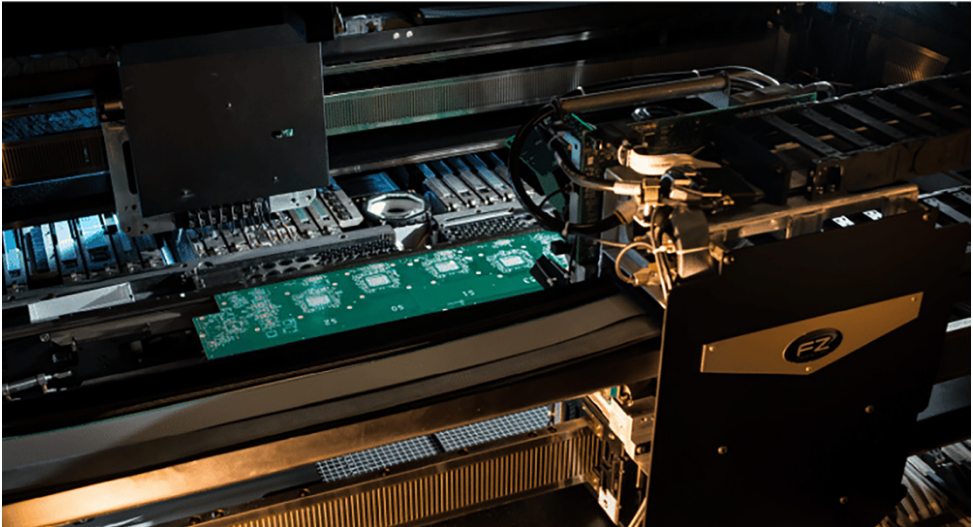
With their exceptional flexibility, these machines are designed to professionally handle dynamic production environments. Whether placing high-speed chips, extreme odd-forms (OF), 01005 components,

large parts up to 150 mm, or handling 5 kg placement force and 30 mm component heights – Fuzion runs everything on the same platform.

The system offers up to 272 x 8 mm feeder inputs and supports a wide range of feeding methods, including tape, reel, bar, odd-form, and trays. It accommodates boards up to 1300 x 610 mm, with a broad component range and seamless high-volume line integration. A top-tier choice for NPI demands and high-mix manufacturing.

Thanks to dual-beam architecture with two flexible high-speed heads, the system can function as a high-speed multifunctional solution. Available in Single Beam, Dual Beam, and XC models with double feeder capacity.

Fuzion Series – SMT und OF



The **Single Beam models** include the Fuzion1-11, an IC placement platform, perfect for specialised processes such as Pin-in-Paste, Flip Chip, and Odd-Form (OF) placement, the Fuzion1-14 with two spindle placement heads for dual tool holding, and the Fuzion1-30, designed for NPI environments with high mix ratios and large board sizes. A true high-volume line booster!

The **Dual Beam models** include the Fuzion2-14, a best-in-class, high-speed multifunctional system for broad component ranges, high flexibility, and maximum performance per line length, the Fuzion2-37, a true multi-purpose platform, versatile standalone prototyping solution, flexible line balancer, or high-performance multi-function system, and last but not least, the Fuzion2-60, providing flexible high-speed productivity for mid-volume environments. A powerful line booster or high-perfor-

mance small-part placer.

The **XC models, featuring double feeder slots**, include the FuzionXC-14 Single Beam, ideal for applications requiring maximum feeder capacity for non-standard components, the FuzionXC-37 Dual Beam, a powerful NPI, all-in-one, line balancer, or multifunction solution supporting a complete component range, as well as the FuzionXC-60 Dual Beam, a cost-efficient, high-performance turret head replacement or high-throughput chip shooter.

Uflex OF

- Designed for flexible automation of end-of-line processes such as THT and odd-form placement, assembly, dispensing, and more
- Also designed as a scalable platform
- Compact footprint – only 1.0 m wide x 1.7 m deep
- Large substrate handling up to 630 mm x 500 mm
- For components up to 60 mm high, 50 mm diameter, and 0.45 kg weight
- Equipped with up to three fully independent tool modules and a vision inspection camera



The Uflex system is a highly flexible, modular automation solution for end-of-line processes such as THT and odd-form placement, assembly, dispensing, test handling, and screwdriving. It provides a cost-effective alternative for tasks that are too expensive to perform manually or require costly specialised fixtures.



Various placement heads and tools are available for a wide range of applications

The Uflex systems offer significant advantages in terms of cost, quality, and throughput. Even smaller batch sizes can be produced economically and with repeatable precision.

For more advanced requirements, Uflex is designed as a scalable platform. An especially interesting combination is its integration with through-hole systems for axial/radial components and pins.

For changing or new tasks, Uflex can be quickly and easily configured using existing apps.

With up to three fully independent tool modules and a vision inspection camera, the system is highly adaptable. Thanks to its open interfaces, a wide range of additional tools can be easily integrated or removed as needed. Depending on specific project requirements, Uflex can be configured - even with custom tool solutions.

Radial 88HTi – THT Placer



- Insertion heads available in various pitch sizes
- Expandable from 20 stations to 100 stations (in 20-station increments)
- Speeds up to 22,000 placements per hour, 300 ppm
- Exceptionally fast (0.16 seconds per insertion)
- Jam-resistant feeding technology
- Durable tooling for RoHS-compliant components

The Radial 88HTi provides consistently high throughput regardless of component type, offering single, dual, triple, and quad span mounting options.

With the capability to mount PCBs (Printed Circuit Boards) up to 10mm, labor-intensive manual assembly is no longer necessary, thereby increasing throughput, product quality, and output per footprint while reducing associated labor costs and time investment, leading to higher profitability.

The Radial 88HTi offers exceptional flexibility with over 100 available inputs on the expandable sequencer.

An intuitive user interface, identical to other 88HTi generation systems, provides easy operation, diagnostics, data management, and graphical product editing.

The following configurations are available:

- Single: Single Span Radial 88HTi for 2.5 mm lead span components (e.g., LEDs)
- Dual: Dual Span Radial 88HTi places components with 2.5/5.0 mm lead spans
- Triple: Triple Span Radial 88HTi supports 2.5/5.0/7.5 mm, 2.5/3.5/5.0 mm, or 5.0/7.5/10 mm components
- Quad: Quad Span Radial 88HTi handles 2.5/5.0/7.5/10 mm components

The Radial 88HTi can be configured in a Straight-Back or In-Line Sequencer setup, with either manual or automated board handling.

Jumper Wire 88 and VCD 88HTi – THT Placer



- Machine throughput of 33,000 CPH
- Zero Scrap – No wire wastage
- Very high reliability (75 ppm)
- Programmable clinch angles from 25° to 75° from the vertical
- Manual loading or automatic loading/unloading of PCBs
- User-friendly interface
- 5 mm to 33 mm span range

- Machine throughput of 26,000 CPH
- Axial sequencer/placer with the highest “true” throughput
- Very high reliability at 200 ppm
- Expandable from 20 to up to 220 inputs
- Manual assembly or automatic PCB loading/unloading
- Programmable clinch height to prevent damage to SMT components

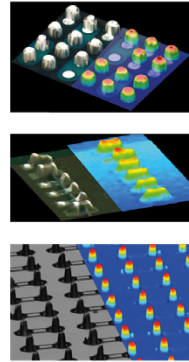
The **Jumper Wire 88** inserts wires from large bins onto printed circuit boards, offering the flexibility to process a wide range of wire spacings without the need for tool changes. The exceptional quality of the outgoing boards at 75 ppm and better, along with high assembly speeds and zero wire wastage, ensure a very good price-performance ratio and high ROI. An intuitive operator interface, similar to that used in other Universal Through-Hole systems, provides easy operation, diagnostics, data management, and a graphical product editor.

The **VCD 88HTi** is designed for sequencing and inserting axial components and wire jumpers in a single process, providing reliable productivity at industry-leading throughput rates. With a very low error rate of 200 ppm, the system ensures high reliability. Component changeover is minimized by the availability of over 220 inputs on the expandable sequencer. An intuitive operator interface, consistent with other devices in the 88HTi generation, offers easy operation, diagnostics, data management, and a graphical product editor.

3D AOI – SQ Series



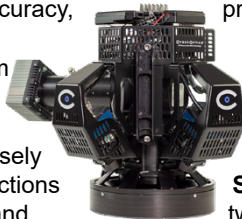
AOI System
SQ3000



- Multifunctional System (AOI, SPI, CMM)
- Upgrade through simple sensor exchange
- Maintenance- and calibration-free sensor
- High throughput
- Simultaneous 2D and 3D
- Solder joint inspection according to IPC possible
- Significant quality improvement
- Optimized process control and operational efficiency
- Reduction of rework costs

The SQ Series systems set a new industry standard by combining high accuracy, speed, and resolution. At the core of every SQ Series system lies the award-winning MRS (Multi-Reflection Suppression) sensor technology, which precisely identifies and suppresses reflections caused by shiny components and surfaces.

Effectively eliminating multiple reflections is essential for highly precise measurements, making MRS technology the ideal solution



for a wide range of demanding applications.

The SQ Series is equipped with award-winning AOI software that combines powerful performance with an intuitive user interface for easy accessibility. It features multi-touch control and 3D image visualization tools, ensuring a highly user-friendly experience with quick programming capabilities. This accelerates system commissioning, simplifies workflows, reduces training requirements, and minimizes operator interaction. Additionally, the highly intelligent Cyber Report SPC software integrates real-time data with recorded analyses, providing detailed process insights.

Further innovative 3D AOI systems:

SQ3000+: Ultra-high resolution MRS sensor for top accuracy & speed

SQ3000-DD: Dual-lane variant with two MRS sensors, switchable to single-lane

SQ3000 CMM: Measurement system

SQ3000-X: Optimized for extra-large PCB inspection

2D AOI – QX Series



AOI System
QX600

- Maintenance and calibration-free sensor
- Cost-effective alternative to 3D AOI systems
- Space-saving table-top variant available
- Flexible inspection tasks for various applications
- Reduction of training time, personnel requirements and rework costs

The SIM sensor is the heart of all 2D AOI systems in the QX Series. Developed with efficient LED lighting, it enables on-the-fly inline inspection.

With an 80-megapixel sensor, you get crisp and precise images for accurate defect detection. Common applications include pre-reflow, solder joint, post-wave, and post-selective solder inspection.

The QX Series comes in various variants. All systems feature the SIM sensor described above.

The QX150i AOI system enables automatic inline processing with high flexibility for numerous inspection tasks in electronics manufacturing.

Equipped with two SIM sensors (top & bottom), the QX250i allows inspections from both top and bottom simultaneously.

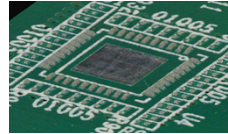
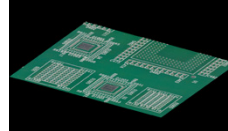
The best-in-class model for 01005 and solder inspections is the QX600. It can also be fully integrated into the production line for fully automated inspection.

The QX Series features powerful AOI software with multi-touch control and 2D visualization. It offers quick programming in just three steps, ensuring fast commissioning and streamlined processes. With its user-friendly design, it minimizes training efforts and user interaction. The intelligent Cyber Report SPC software connects real-time data with recorded analyses, providing comprehensive process insights.

3D SPI – SE Series



SPI System
SE3000



- Dual-mode MRS Sensor with high-speed and high-resolution modes
- Highspeed, on-the-fly inspection
- MRS technology for 3D SPI
- Feedback, feed forward ready
- Excellent, intuitively operable software
- Fast, scalable SPC solution

With the SE3000, the SE Series from manufacturer CyberOptics offers an SPI all-rounder with industry-leading performance in the semiconductor and SMT industries.

The SE3000 is ideal for measuring height, area, volume, registration, bridging, as well as detecting insufficient paste, excessive height, smears, offsets, and more. For handling extra-large PCBs, the SE3000 X is recommended.

The heart of every SE Series system is the multi-award-winning MRS sensor technology (Multi-Reflection Suppression). This technology enables precise identification and suppression of reflections caused

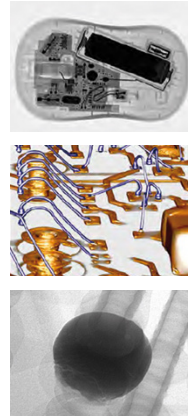
by shiny components and surfaces. The effective suppression of multiple reflections is crucial for highly accurate measurement and makes MRS technology an ideal solution for a variety of applications with demanding requirements.

The Dual-Mode MRS Sensor offers significant advantages:

- Maximum flexibility for specific solder paste inspection applications
- Featuring modes for high-speed inspection and high-resolution inspection

The SE Series comes equipped with an award-winning SPI software that is both powerful and easy to use thanks to its intuitive user interface. This software provides deep process insight and enables full traceability between AOI and SPI through AOI-SPI correlation.

X-Ray Inspection – MXI - Quadra Pro Series



- Crystal clear resolution - QuadraNT X-ray tube with automatic dual mode*
- Intuitive Revaluation measurement and control software
- Tube completely maintenance-free
- Industry-leading Onyx HL detector*
- Quick and easy creation of CT cross-sectional images with X-Plane
- Insp. images are clear and repeatable

- **Quadra 7 Pro** - Non-destructive properties and defects up to 0.1 μm object size

The Quadra 7 Pro delivers exceptional 3D/2D manual X-ray inspection with unparalleled resolution and precision for demanding applications. Its 0.1 μm feature recognition enables detailed fault analysis and reliable quality control in production.

The X-ray inspection of the Quadra Series goes beyond mere optical imaging. Equipped with Nordson's proprietary QuadraNT X-ray tube technology, it enables non-destructive inspection of even the most concealed areas within assemblies and components – with an impressive magnification of up to 68,000 times.

Designed for industries like PCB, wafer-level manufacturing, automotive, aerospace, medical devices and LEDs, it inspects a wide range of materials and components.

Powered by Nordson's QuadraNT X-ray tube, it features Dual Mode Tube Technology for automatic switching:

The Quadra Pro is available in three versions:

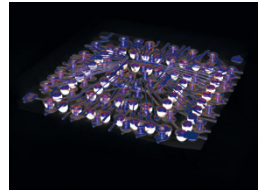
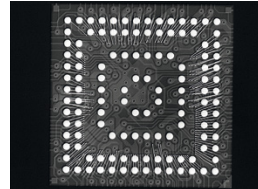
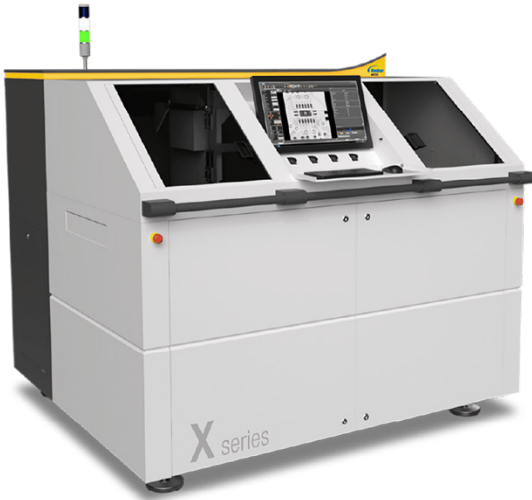
- **Quadra 3 Pro** - High-quality X-ray inspection for production applications - up to 0.95 μm object size
- **Quadra 5 Pro** - Flexible X-ray inspection up to 0.35 μm object size

- High-resolution mode:
Ideal for sensitive semiconductor samples
- High-power mode:
Perfect for dense, thicker samples

This flexibility ensures superior imaging quality, revealing intricate component details with enhanced stability and a smaller spot size at any voltage.

* Quadra 7 Pro

X-Ray Inspection – AXI - X / XS / X# Series



With the **X-Series**, Nordson presents a specialized concept for automatic high-speed X-ray inspection systems for inspecting printed circuit board assemblies for single/multi-panels or samples in trays. All solder joints of SMD and PTH components are detected by a specialized AXI algorithm library. Nordson's AXI system solutions offer a modular inspection concept.

The system offers four technologies in one:

- Transmission X-ray imaging (2D) with patented Slice Filter Technique (SFT)
- Off-Axis Technologie (2,5D)
- 3D SART (Simultaneous Algebraic Reconstruction Technique)

Available configurations:

- X2: 2D + SFT
- X2.5: 2D + SFT + Off-Axis (2,5D)
- X3: 2D + SFT + Off-Axis (2,5D) + 3D SART

Additional AXI Systems:

XS Series

- Specifically designed for the semiconductor market
- Highspeed inline AXI platform with minimal footprint
- High oblique angle
- Radiation filter
- Microfocus X-ray tube (sealed tube / maintenance-free)

X# Series

- Highly flexible AXI platform
- Customisable for multiple application fields (SMT and solder joint inspection, power hybrids, FATP)
- Radiation filter
- Sealed & maintenance-free tube

X-Ray Component Counter – Assure Series

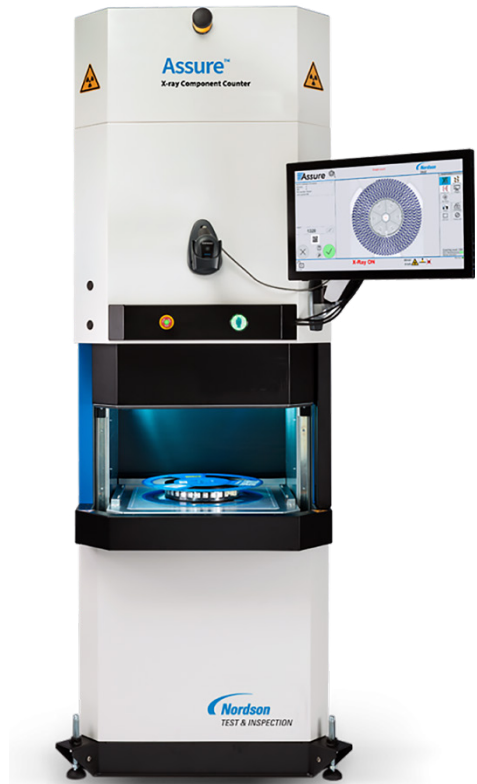
- Increase productivity and minimize downtime due to component shortages
- Smart algorithms – a self-learning database
- Simplicity in design – one-button handling and intuitive touchscreen operation
- Fast counting – counts components in seconds
- Reliability – counting accuracy of over 99.9%

The Assure Series by Nordson Test & Inspection guarantees you a smooth and cost-effective production process. It's the fastest, simplest, and most reliable way to implement permanent inventory security in your company.

Intelligent algorithms and a self-learning database enable operators to quickly and easily count even unknown components. There's no need for time-consuming programming or setup, and operators are not dependent on cloud or other external solutions.

One-button handling and intuitive touchscreen operation make it possible to learn how to use Assure within minutes. Installation is quick and easy due to its remarkably small footprint and extremely low weight. Assure is maintenance-free and allows for uninterrupted 24/7 operation.

Fast counting optimized for speed: The Assure Series counts components in seconds, saving time and manpower during inventory. A single reel is counted within 10 seconds, and the Quad Count (counting of



four reels) within 15 seconds.

The Assure Series immediately and automatically validates counting results through plausibility checks. Counting accuracy of over 99.9% (for nearly all components available on the market) ensures the highest precision standards.

NEW: smartTec's own component counter – **smartCCount** – replaces Assure Flex, featuring award-winning Nordson software.

High-Performance Dispensing Technology

With our partner Nordson Asymtek, we offer patented coating processes (selective protective coating) and precision dispensing systems with specially developed high-end jet and spindle dispensing valves that are used in numerous assembly and semiconductor manufacturing processes.

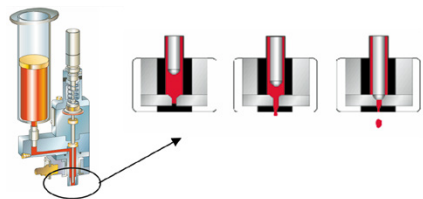
The Asymtek machine platforms offer an optimal performance spectrum for every requirement profile, providing decisive advantages:

- Dispensing of adhesive, solder paste, epoxy, and other materials
- Jet Dispensing – fast and contactless
- Closed loop process control
- Jetting on the fly
- VPotting (underfill, dam & fill), FlipChip, CSP etc.

The high-speed dispensing of SMD adhesives in combination with the patented Dispense Jet for contactless SMD adhesive dispensing capacities of up to 50,000 dots/h.

The jet valve can be used to precisely dispense a wide range of different materials without contact - epoxy adhesives, silver conductive adhesives, FlipChip underfill media and even fluxes.

A range of additional dispensing valves and pumps complete the Asymtek lineup. The „Heliflow“ screw dispensing valve, for example, utilizes an archimedean screw to precisely dispense small amounts of high- and low-viscosity materials in dot or bead form.



Contactless and Precise Dispensing with the DispenseJet

While the Heliflow valve is ideal for dispensing high-viscosity materials such as solder pastes, the precision volumetric dispensing valve is used for flip-chip underfill or encapsulation applications.

More Efficient and Precise: Selective Coating of Assemblies

Nordson Asymtek is the global market leader in advanced, patented selective coating systems.

With Nordson's proprietary processes, protective coatings are applied contactlessly, eliminating the need for additional masking or demasking. Depending on the application, various patented coating methods with specialized coating heads are used.

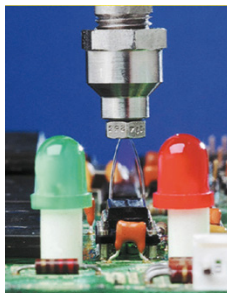
Non-Atomizing Coating

Under low pressure and using Nordson's patented Cross Cut nozzle along with freely programmable drives, PCBs are selectively coated with high precision and without spray mist.

The material is supplied either from a pressurized reservoir or drawn in through a circulating coating delivery system, where it is tempered and fed to the film coater. Viscosities ranging from 50 to 120 cps are particularly well-suited for the SelectCoat process.

The advantages of the viscosity control system:

- Independent of Temperature Fluctuations
- Consistent Viscosity
- Improved surface wetting
- Faster drying



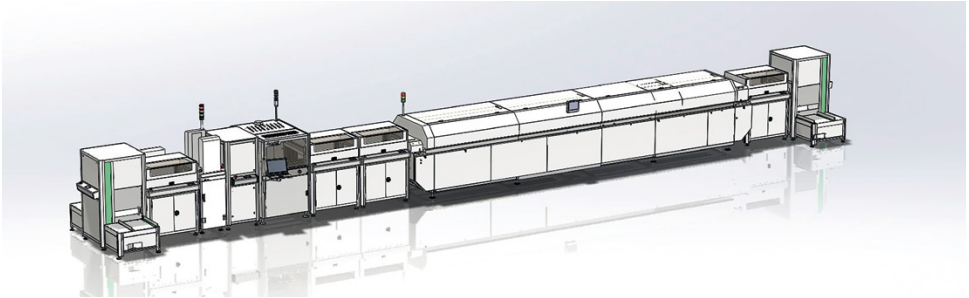
Nordson Asymtek has developed the patented SelectCoat process, an automated, selective conformal coating technology that completes the coating in a single operation.

It operates with precision, repeatability, and without spray mist, making it an efficient and reliable solution for seamless integration into production.

The SelectCoat process offers decisive advantages:

- Coating curtain without overspray
- Excellent wettability
- Uniform, closed film
- Exceptional flexibility
- Program change within seconds
- High coating speed

SelectCoat – A Proven Coating Concept with Decisive Advantages



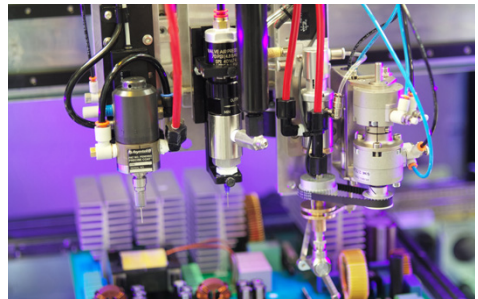
In the planning of coating lines for selective coating and dispensing, smartTec offers ergonomically optimized solutions.

The assembly return transport is integrated into the system, ensuring a continuous ergonomic and SMEMA-compliant working height.

To efficiently and flexibly apply both highly intricate coatings with very small deposition areas of any geometry and larger surface coatings on an assembly, multiple coating heads can be used in parallel, ranging from high-precision jet valves to film coaters.

The concept developed by smartTec and Nordson Asymtek enables full control and automation of the selective coating process through advanced closed-loop regulation.

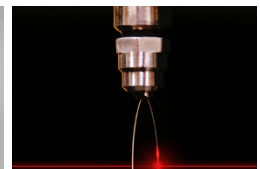
This includes continuous, controlled material delivery with a closed, circulating, and heated coating system, as well as the integration of a conformal coating AOI system for double-sided inspection of coated areas.



Multiple coating heads usable



Material flow at all times under control with smartFill



Sharp contours and spray-free: Paint curtain with laser-controlled application width and closed loop control

SelectCoat

Inline IR Drying Oven – TC Series



- Especially for drying and curing processes
- Combination of IR and convection technology
- Process lengths from 2.20 m to 6.60 m depending on throughput
- Individual heating zones
- Special extraction concept for materials containing solvents
- Large clearance for tall components
- Easy access for maintenance and cleaning

The inline infrared / convection drying systems of the TC Series are ideal for medium to high-volume production due to their flexible design.

Available in various process drying lengths, the TC ovens have been specially developed for drying thermally curing protective coatings.

The unique combination of infrared and convection enables the coating to be dried from the inside out in the shortest possible

time and with the highest quality. Thanks to the touchscreen, the systems are also very easy and convenient to operate.

The TC-Series inline drying systems integrate easily with Nordson Asymtek coating systems, providing precise, repeatable, self-contained control of transport speed and internal thermal environment. Users can manage process controls, system parameters and events through an intuitive graphical interface running on Windows-based software.

The specially developed exhaust air design provides a safe way to extract volatile organic compounds (VOC's) such as solvents. Each heating zone can be individually programmed for specific drying or curing profiles. The fast heating and cooling cycles also help to increase productivity.

Inline UV Curing Oven – UV-9 Series



- Industrial inline UV curing system
- Uniform intensity profile
- Adjustable power levels (mW/cm^2) and dose (mJ/cm^2)
- Patented irradiation and dose control
- Low maintenance
- Simple and intuitive operation
- Also available as a more energy-efficient UV9 LED version

The heart of the UV-9 cure system is in the arc lamp technology with adjustable UV intensity. It is combined with a unique ventilation design that dissipates heat generated from the UV lamp. This combination keeps the temperature and rate of rise at acceptable levels while maximizing production and lamp lifetime as the lamps run cooler.

An optional closed-loop feature ensures process reliability and compensates for the eventual lamp degradation by measuring and adjusting power levels for UVA. Further options and lamp types are available for

different applications.

The UV-9 system can also be easily integrated into an automatic coating line. It is operated via the interface of an upstream coating or dosing system.

The UV-9 drying oven is also available as an alternative UV-9 LED drying oven.

A major advantage of the LED version is the lower energy consumption and the ability to customise the multi-UV LED sources.

X-Treme Series Dry Storage Cabinets

- Patented dryer technology with ultra-fast dehumidification rate
- Compensates for door openings in just a few minutes
- High dehumidification performance with low energy consumption
- Reliable even under the harshest environmental and operating conditions
- Quiet operation – extremely low noise level
- Touchscreen control panel – user-friendly and interactive
- Data analysis with graphical display of relative humidity

The automatic dry cabinets of the X-Treme Series are suitable for nearly all dehumidification applications. These cabinets not only impress with their unique appearance but also rank among the most controllable dry cabinets with low humidity levels on the market. The patented drying system with an ultra-fast dehumidification rate at a relative humidity of $\leq 1\%$ is the ultimate cabinet to keep your sensitive products in perfect condition. The cabinets are available in the following configurations:

- XS Line (300 / 600 / 900-liter volume)
- XT Line (1,250-liter volumen)
- XL Line (1.840-liter volumen)

Three different dryer technologies are available:

The Auto Dry dehumidification, the Smart Nitrogen dehumidification, and, as a combination of these technologies, the hybrid solution.

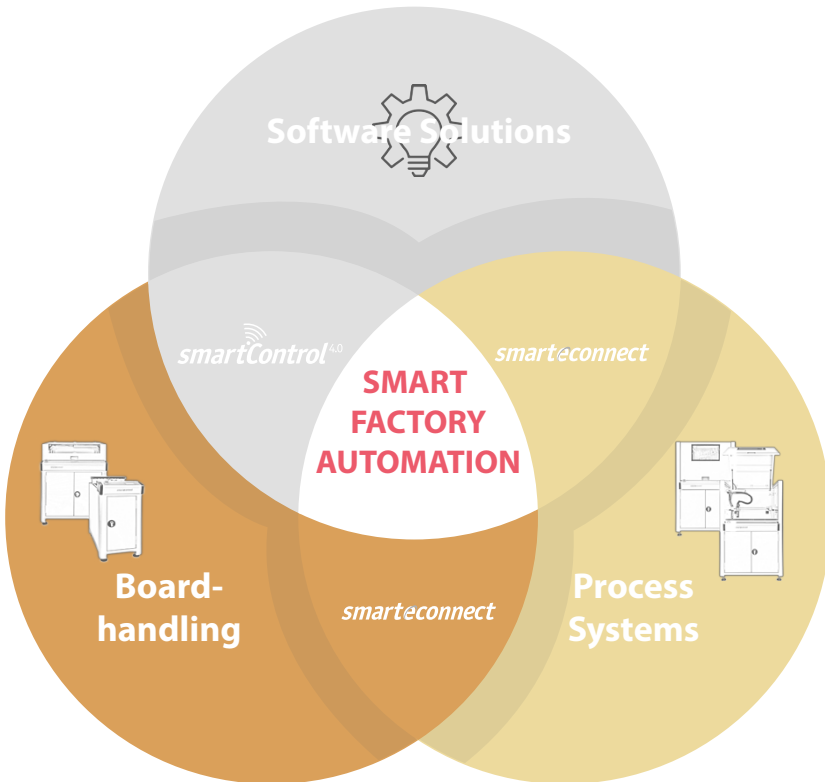


Auto Dry is the latest technological solution in the fight against moisture. Its main advantage is its plug-and-play nature and the fact that, once the cabinets are connected, they operate virtually autonomously without requiring consumables.

The Smart Nitrogen Method (N_2) uses nitrogen purging—an extremely effective approach, especially when oxidation is a concern. Nitrogen-rich environments are ideal for preventing moisture adsorption and corrosion.

X-Treme's Smart Nitrogen System adjusts the gas usage to minimize consumption while maintaining moisture levels at the desired threshold.

SMART FACTORY AUTOMATION



For the efficient automation of your production, smartTec combines flexible board handling concepts and specially developed process modules from the smart.e.connect product group with the intelligent manufacturing control of smartControl software.

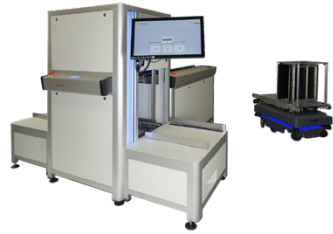
Boardhandling



Transport Systems



Functional Units



Magazine Stations

With its own smart.e.connect board handling product group, smartTec offers a complete range of transport and magazine systems for complex production lines.

This series enables smartTec to realise a wide variety of line concepts, e.g. magazine to magazine line, single and dual lane as well as workpiece carrier circulation lines.

Production systems are configured according to customer requirements for a wide range of processes, such as assembly, dispensing, painting or selective soldering, and installed at the customer's premises as turnkey systems including line CE.

Transport Systems

- Single- or dual-lane
- Belt or chain transport systems
- Automatic width adjustment
- Inspection modules, manual workstations (e.g. assembly station), etc.

Functional Units

- Belt or chain transport systems
- Automatic width adjustment
- Turning stations, traversers, rotation, and reject modules

Magazine Stations

- Wide range of magazine loading and unloading stations
- All loading and unloading stations support all common types of magazines
- Optional RFID-coded magazines for job control
- Optional loading and unloading by AGVs (MIR)

Lift Modules

- Belt or chain transport systems
- Optional automatic width adjustment
- Extraction nozzle for processing volatile substances
- Variants: Lifters for the beginning and end of a line & lifters that additionally support the integration of magazine loaders and unloaders

Process Systems



Marking Systems
smartLaser and
smartJet



Labeling
System
smartLabel



Reading
System
smartScan



Inspection
System
smartVision

smartTec can draw on many years of development experience in the electronics industry. The smart.e.connect process systems are always offered according to the latest standards and are continuously developed further.

smartTec offers almost all process systems based on the flexible TMZ-1000 production cell, especially for simple line integration.

All process systems have a SMEMA interface and transport height.

All systems are optionally available with automatic transport width adjustment.

Marking Systems smartLaser & smartJet

- For extremely fast, precise marking on various materials
- Wide application range with optional CO₂, Hybrid, and UV lasers
- Verification of marking through optional multifunction camera or 2D code reader

Labeling System smartLabel

- Extremely fast and flexible placement of labels on a wide range of products
- Verification of the label using an optional multifunction camera or 2D code reader
- Effortless integration into the production line and connection to an MES through smartControl

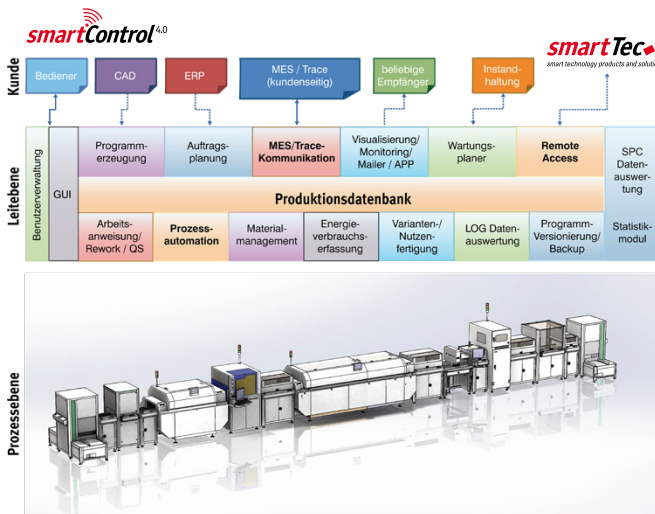
Reading System smartScan

- Autodetection of product codes on product carriers & assignment to an RFID tag
- Each subsequent system thus only needs to read the RFID tag
- Individually configurable – barcode capture on top / bottom / both

Inspection System smartVision

- An affordable solution for any inspection tasks.
- Reliable detection of even the tiniest features and defects.
- Depending on the requirements, 2D, 3D, or line cameras with various resolutions can be used

Software Solutions – smartControl



With smartControl 4.0, smartTec presents a modular traceability concept that can be integrated into any production environment, complete with software and hardware based on the latest RFID technology. The software organises the link between order and production-related resource management and the process modules and parameters.

The concept stands for:

- Visualization of complex production lines
- Central control of interconnected systems
- Intelligent process interlocking
- Central hub for traceability data across all processes

smartControl Dynamic is a modular line control system designed for any production line with machines from different manufacturers.

Standardized and specific interfaces to common production equipment, test and inspection systems, our own MES system or integration 3rd party MES systems from all major providers, as well as file import and export formats, and writing and reading devices, allow almost any system to be integrated into smartControl. Expansion modules communicate with customer-specific MES systems and implement traceability for components and auxiliary materials processed in the production line.

smart Factory Solutions

The new smartControl takes things a step further, extending its reach beyond the „production line.“

With the „smartLogistic“ module, smartControl can manage and visualise material flow across multiple production lines, ensuring seamless coordination and transparency.

SCCE

SOLDERING **COMPETENCE CENTER** EUROPE
a smartTec division

The use of the right soldering materials, the appropriate method and soldering system, as well as perfect line automation, are our core competencies at the Soldering Competence Center Europe.



Soldering Materials



Reflow Convection



Selective Soldering



Soldering Stations

Soldering Materials



MacDermid Alpha offers the world of electronics manufacturing a complete product line in the field of soldering, complemented by professional service for your soldering applications.

The company's philosophy is defined by the highest industry standards, excellent support in all aspects of the soldering process, ensuring smooth production, and the concept of the Lowest Cost of Ownership.

The advanced technology of our products helps you create real value with high efficiency - whether it's solder paste, solder preforms, stencils, flux, solder wire, bar solder, or cleaners.

The high quality of MacDermid Alpha

products ensures stable processes and proves itself day after day in key industries worldwide, such as the automotive industry, aerospace, medical technology, communications and telecommunications, computer manufacturing, and photovoltaics.

The programme includes leading lead-free no-clean technologies as well as halogen-free solder pastes for applications such as fine feature printing, low-temperature processes, and many other applications.

As a technology leader, MacDermid Alpha offers one of the most comprehensive ranges of solder pastes.

It includes a variety of alloys, including low-Ag SAXC Plus, which provides excellent



soldering performance at a significantly lower cost than SAC305. To ensure the highest quality and compatibility, it is also available as bar solder, preforms, and solder wire.

These products meet both customer requirements and environmental standards.

Leverage our expertise, experience, world-leading technologies, and excellent service for your application.

With the Soldering Competence Center Europe (SCCE), we are happy to support you in optimising your processes.

The MacDermid Alpha product range covers a wide spectrum of perfectly

matched products for various applications in thermal joining technology:

- Solder paste
- Preforms and spheres
- Stencils
- Flux
- Special alloys
- Solder wire
- Bar solder
- Cleaners
- Specialised products for automotive, sintering/semiconductors, LED, photovoltaics, and more

Reflow Convection - XRC Series

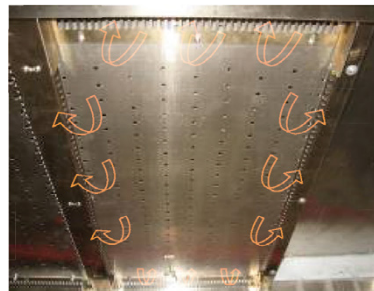


- Mutually compatible, application-specific configurations
- Maximum flexibility thanks to conversion and upgradeability on site
- Efficient flux management for minimal cleaning effort
- Particularly maintenance and service-friendly
- Heating zones with effective zone separation
- Improved profiling by avoiding crossflows
- Homogeneous heat transfer and excellent Delta T (temperature difference)

With the reflow systems of the XRC Series, Exelsius offers a product range that meets even the most complex profile requirements through the precise combination of heating and cooling zones. As the systems are fully compatible with each other, they can be adapted on-site at any time to meet growing demands.

The series includes five models:

- XRC-6 (6 heating and 2 cooling zones)
- XRC-8 (8 heating and 2 cooling zones)
- XREC-8 (8 heating and 2 cooling zones) same size as XRC-6, with shorter heating and cooling zones
- XRC-10 (10 heating and 3 cooling zones)
- XRC-12 (12 heating and 3 cooling zones)



The gas flows in four directions and is forcibly guided both laterally and longitudinally to ensure even heat flow while reliably preventing crossflows

Selective Soldering

The usefulness and profitability of selective soldering has not been questioned for a long time. It is more reproducible and cost-effective than manual and wave soldering and, on top of that, is even more individual (individual contact time or heat input) and flexible (double-assembled PCBs) in series production. Since assemblies move continuously through the entire process (fluxing, preheating, soldering), there is theoretically no limit to PCB length. To meet various requirements, we offer three series: Synchro, Integra, and Cerno.



With Synchronous Motion Selective Soldering – The next level in selective soldering – the Synchro offers:

- A quantum leap in the field of selective soldering
- High speed in the smallest footprint
- As fast as an 11 m system on a 2.50 m footprint (depending on the product)
- Unrestricted PCB length (with a maximum width of 460 mm?)
- Simplest program creation
- Best soldering quality due to compact design
- Eliminates wave soldering (depending on the product)
- Processing of various alloys possible
- Low maintenance effort
- Best ROI in high-volume manufacturing

The **Integra Series**, a flexible inline selective soldering system available in two sizes,

stands out with:

- Various processing modes – single – parallel – double
- Increased throughput through parallel processing
- Full-titanium solder pots with precision impeller for stable wave
- Compatible with all alloys – suitable for LOW-MELT
- Low maintenance effort
- Comprehensive process control

The **Cerno** offers a well-balanced combination of flexibility, throughput, and PCB size.

- The versatile solution for small and medium series
- Classic inline or inline/batch operation (L-R and R-L run)
- Minimal footprint
- Various processing modes – single – parallel – double
- Increased throughput thanks to parallel processing

Soldering Stations

With Connection Validation, Metcal raises the standard for the hand soldering process in the electronics industry. Connection Validation calculates the required duration of the soldering process for the formation of the intermetallic phase and provides the user with a „green light“ as direct feedback when the phase is optimally formed.

The patented „Chip-in-Cartridge“ technology, integrated into the soldering cartridge, enables bidirectional communication between the soldering tip and the soldering station. This allows for traceability of process sequences.

The new Metcal soldering station features a large, touch-sensitive display that shows power output, soldering tip temperature, password protection, and a graphical representation of the power curve.



SmartHeat-Technology – simply smarter

OK International, with its Metcal brand, is a global leader in manufacturing equipment for the electronics industry. The product range includes high-quality equipment for series production, development, and service hand soldering, dispensing systems with consumables, and fume extraction systems for soldering fumes and gaseous media.

smartTec provides professional service and support for these high-quality products, from seminars and training to regular maintenance and service visits.

This ensures that the performance of Metcal products is always fully optimised.

- No calibration required
- Self-regulating, dynamic power delivery
- Direct feedback
- Chip-in-Cartridge technology
- Traceability through data storage
- Bidirectional communication
- Data interface

PC Flex Mask - Cover Masks

- Natural latex, environmentally friendly
- Heat resistant up to 270°C
- Fast drying
- Easy to apply
- Manual or dispenser application
- Removes cleanly without residue
- No hazardous waste
- Good printability
- Also suitable for potting

PC Flex Mask is suitable for manual application and dispenser use.

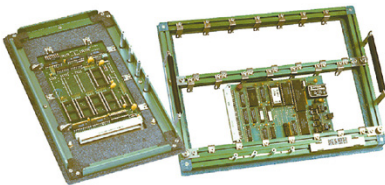


...*smart*Tapes and *smart*Dots

- Applicable for all processes
- Protection up to 400°C possible
- Removes cleanly without residue
- Cost-effective
- Also available as conductive or metal tape
- Preforms possible as required



Soldering Frames and Coating Removers



Our soldering frame and masking system has been successfully used for years, based on a special anodised aluminium profile, glass fibre-reinforced CDM, LCDM, and LGCDM composite materials, and titanium. All components are screwed together—there are no rivet connections. This ensures that the system remains easily adaptable, expandable, and reusable even after years of use.

We would be happy to provide you with detailed information on the optimal solution for your wave, reflow, and selective soldering process.

NoCoat Coating Remover –
A specialised spray for removing paint,
sealant, and adhesive residues.

Even cured coatings and superglue are no challenge for NoCoat – try it for yourself!



Trainings, Seminars & Workshops



A fundamental requirement for identifying and eliminating soldering defects is, on the one hand, extensive expertise in soldering materials such as alloys, flux systems, and solder pastes. On the other hand, it also requires in-depth knowledge of manufacturing parameters, including stencil printing, paste application, assembly, as well as thermal and „End of Line“ processes.

The smartAcademy follows a structured approach: analyse, identify, eliminate, and prevent defects.

In most cases, issues cannot be clearly attributed to a single factor such as human, machine, material, or method, but rather result from the interaction of these influences. However, human involvement often plays a significant or even decisive role in

soldering outcomes.

A solid understanding of the complex soldering process is key to reducing defects, increasing First Pass Yield, improving customer satisfaction, and ultimately enhancing profitability.

In addition to supporting defect analysis and developing solutions, we are also highly committed to the human factor through dedicated trainings and seminars.

Take advantage of these benefits:

- Experienced speakers
- Wide range of topics
- Networking opportunities



Winner of the
productronica
innovation award 2023

The correct material – in the correct quantity – at the correct time – in the correct place is the basis for a trouble-free production process. Not least when using MSL components, correct, seamless control and traceability of the stored and installed components is also essential.

From the receipt of goods to the storage, control and traceability of the components, special attention was made to the following features during the development of the award-winning concept:

- Modularity in software and hardware
- Flexibility and scalability
- Robustness and avoidance of potential faults
- Automation capability from manual to full automation
- Possible storage of all parts relevant to electronics production

smartInScan



Incoming goods

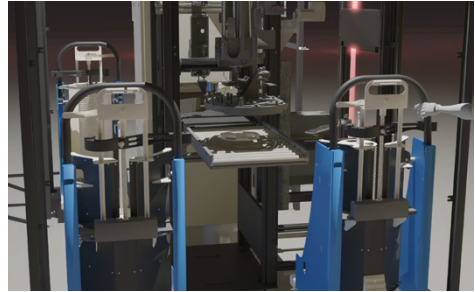
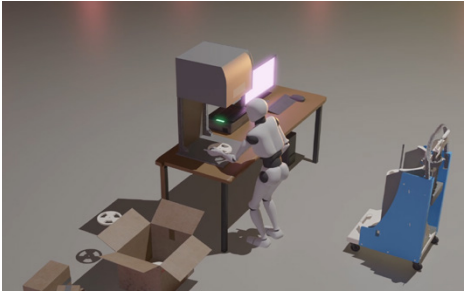


smartSCab



Automated Storage Systems

smartInScan – Incoming Goods



- AI autofocus camera & height sensor
- Automatic scan and detection of reel thickness
- Recording of barcode and plain text information
- Incoming goods posting in ERP and inventory recording
- Documentation and validation
- Various levels of automation possible
- From the semi-automatic table-top system...
- ...to the fully automated high-volume version

The **smartInScan** goods-in system combines cutting-edge software with innovative hardware, setting new standards in efficiency and precision. Its high-resolution autofocus camera, with an exceptionally large field of view, effortlessly reads even the smallest barcodes across a wide inspection area.

With **smartInScan**, rolls of any size can be placed under the camera without manual adjustments—laying the foundation for seamless automation in the goods-in process. A height sensor accurately measures roll thickness, ensuring precise material storage.

The system's AI-powered software intelligently detects bridges and free spaces, guaranteeing the optimal placement of unique ID labels.

For maximum efficiency, the camera, height sensor, and printer are integrated into a single unit, enabling fully automated component roll detection, ERP system reconciliation, and precise label application - all in one streamlined process.

When combined with **smartLoad** and Pike Trolleys, the system can automatically load and unload up to 120 rolls. An optional X-ray component counter provides real-time stock verification for even greater accuracy.

With its modular and fully scalable automation solutions, **smartInScan** adapts to the unique needs of any manufacturing environment - delivering an unmatched return on investment. Integrating it directly with the **smartSCab** storage system unlocks significant operational advantages, enhancing efficiency and productivity.

smartSCab – Automated Storage System

- Storage of reels, trays, bars, PCBs, cooled solder paste etc.
- Storage and control of MSL components
- Manual loading and unloading up to full automation
- Optional with automated goods-in process and X-ray component counter
- Modular, scalable, and individually adaptable
- Self-configuring and self-optimising
- Automatic inventory function



Our modular storage system combines a compact footprint with high storage capacity and low pick rates, ensuring maximum efficiency in any production environment. The flexible concept allows for customised adaptation and can be easily scaled and expanded as required. Special attention has been given to precision, reliability, low maintenance, and energy efficiency.

Recognised with the Innovation Award at Productronica 2023, this system stands out for its exceptional flexibility. It enables the storage of not only component reels but also bars, trays, cut strips, PCBs, assembly parts, and even cooled cartridges and solder pastes. This is made possible by the Multi-Function Deliverer (Gripper), which can retrieve both individual reels and larger carriers or boxes from either side.

The system's level of automation is fully adaptable to customer requirements. It can be operated with manual loading via a hand scanner or easily upgraded to a fully automated solution.

With the **smartLoader**, **smartInScan-Cell** (see **smartInScan**) and X-ray component counter **smartCCount**, combined with innovative Pike Trolleys, up to 120 reels can be automatically loaded, unloaded, identified, matched with the ERP system, and counted - all directly at the storage system. This seamless integration optimises the goods-in process, offering significant return-on-investment potential.

The system automatically configures itself based on the stored components and packaging units. Its auto-optimisation feature enhances pick rates, while the auto-inventory function (in combination with the X-ray component counter - **smartCCount**) provides continuous visibility of reel stock levels.

All in all, this award-winning system delivers a tailor-made, flexible, and highly efficient logistics solution for your production.

smartPCB

PCB Machines - a smartTec division

The types of PCBs range from single-sided boards to multilayers and special technologies. This requires a broad range of process steps, which we cover together with our partners, primarily in wet processing and surface treatment.

pola-massa

eleven_{dd}



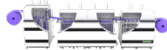
Brushing

cemco



Surface Finish

cemco



Electroplating



Metallising,
Passivating



Wet Process
Technology

Desmear und Direct Metallisation

Developing, etching, stripping, oxidizing, direct metallization, passivating, brushing, pumice treatment, desmearing, pre- and post-cleaning, chemical milling and final finishes
(HAL, chemical tin, silver, OSP)



Inline systems for PCBs as combined systems or standalone units from OcCLEPPO

SES Line (Stripping – Etching – Stripping) for outer layers - for stripping the photoresist, etching the exposed copper layer, and stripping to remove the metal resist from the protected copper areas.

DES Line (Developing – Etching – Stripping) for inner layers - the previously applied resist is developed, the exposed copper is etched in the second step, and the resist is stripped in the final step.

Surface Finish



Vertikal HAL - QS Blue

- Better soldering quality
- Quick air knife change
- Less maintenance
- 5 degree air knife angle for optimum performance
- Longer service life



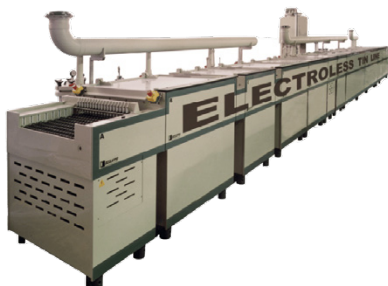
Horizontal HAL

- Significant cost reductions
- Increased capacity – typical throughput of 2000 boards per shift
- Increased uptime production availability in all 3 shifts
- Less error-prone due to improved quality and technology, among other things
- Convection preheating reduces thermal shock and flux pick-up



Single-sided tinning - Roller Tinner

- Maximum panel width 610 mm
- Integrated control cabinet provides start/stop, variable roller speed and temperature control
- Insulated 316 stainless steel sump fitted with enhanced double dip elements and temperature probes to withstand brazing temperatures up to 300°C



Electroless tin / electroless silver / OSP

- Better homogeneity of the surface structure
- Guarantee of consistent solderability of the printed circuit board

Brushing and Pumice Systems



Vertical brushing

- Compact solution with multiple vertical brushes
- Working widths 25" or 30"
- Single-sided or double-sided applications
- Selective brushing possible
- Quick and easy maintenance
- Consistent quality during production processes
- Long service life
- User-friendly solutions



Horizontal brushing

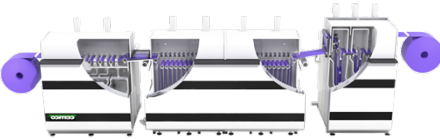
- Large selection of possible configurations
- Customised and flexible variants
- Applications with individual number of brushes, e.g. only one or six brushes in a row



Pumice

- Material PVC
- Stainless steel drive shafts with rubber coating
- No leakage of vapours and liquids
- Separation between pumice zone and wash zone
- Perfect rinsing

Electroplating and Wet Process Technology



Reel-to-Reel - MetalJet 6000

- Patented Cemco techniques
- Electroless coating system
- Faster reaction times and improved consistency
- Non-contact transport system
- 60 metre submerged track with speeds of up to 12 metres per minute
- Serpentine sump
- Less than 800 grams of tension
- Unwinding and rewinding devices



Horizontal wet process technology

- Our focus lies in the areas of horizontal wet process technology & vertical / horizontal hot air tinning
- We supply systems for the electroplating, metal and glass industries
- Additional range of used machines

Accessories and consumables

- In addition to the systems, we also offer accessories such as filter systems and consumables.
- The filter systems include centrifuges, belt filters, tower filters for 10', 20' and 30' filter cartridges or bag filters.
- The consumables include:
Filter cartridges, filter bags, filter fleece, masks for solder resist, solder bars and wire, flux, and much more.

Versatile,
high-quality
products



Electroplating and Wet Process Technology

Do you need more information?

Visit our website or get in touch with us by phone or email.



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