Assembly Technology

A total commitment to excellence
Attention to detail.
For end-to-end efficiency.

A tailor-made answer to your needs
A system can be defined as a set of interacting components – intelligently combined to perform a defined task. Assembly systems from sortimat are designed to meet your specific requirements and master the challenges presented by your products – however complex. Innovative technology and imaginative engineering from sortimat help you minimize your production costs. You choose the level of automation: we supply everything from semi-automatic assembly machines, to sophisticated, fully automated and integrated assembly systems.

Key features
sortimat systems can perform even the most complex assembly tasks. Thanks to a high degree of standardization, your system can be up and running fast – and helping you to cut production costs. We now offer three high-performance, standardized assembly platforms that we configure in line with your needs. What’s more, sortimat’s feeder and handling technology integrates seamlessly into the system – creating an end-to-end solution. And all our systems can be engineered for cleanroom deployment.
Find out more about our platforms on page 14.

Complete solutions
Despite a high degree of standardization, our assembly systems are not off-the-shelf products: They come with a variety of value-added services. You benefit from the extensive experience and expertise of our project managers. And we develop a future-proof system that delivers maximum efficiency. With our outstanding project skills and comprehensive services, we support you throughout the entire lifecycle of your sortimat system.
Read more from page 18 onwards.

Geared to your industry
Every industry has unique characteristics and challenges. For almost fifty years, we have been developing and building assembly systems for international manufacturers in the medical, pharmaceutical, healthcare and diagnostic-device markets. Today, sortimat is the world’s No.1 maker of assembly machines for medical products and pharmaceutical dispensing devices. And we are committed to getting every single detail right. Our ability to deliver innovative solutions for the most complex processes has earned us global recognition. And that ability guarantees tangible benefits for you. We have defined five product groups – and we would like to present key processes and abilities for all of them.
To find out more, turn to page 4.
Assembly – key considerations

- Infusion products and associated processes
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sortimat added value

If you have any questions on the topics covered in this brochure, or would like more information, simply call our hotline: (+49) 7195 702283.
Infusion products and associated processes

Infusion products generally include flexible tubes, and these are a challenge for automated assembly. Sortimat has extensive experience of handling components like these. We offer solutions ranging from assembly systems for complete sets, to machines for assembling individual components, such as Y-pieces, drip chambers and three-way stopcocks.

Example: Infusion sets

Sortimat assembly lines can be used to produce tube sets that vary in design, with various tube lengths and components. During assembly, parts such as adapters, pumps and drip chambers are bonded to the tube with solvent, a procedure that sortimat systems perform with impressive reliability. Tube sets can comprise up to three separate coils. Items such as bags, which cannot be processed automatically and inline, are assembled at integrated manual workstations. Finally, the system places paper banding around a set that is as compact as possible – ensuring the efficiency of your integrated packaging system. A typical mid-range system can assemble 40 sets a minute.

Process

Tube coiling and uncoiling

Due to the material’s flexibility and elasticity, tube coiling requires a great deal of experience. Tubes of exact length require a coiling method that avoids tube stretch. Sortimat uses servomotors to control this process. This enables tubes up to two meters in length to be coiled extremely quickly – in under a second.

Process

Applying solvents

Generally, tubes and components are bonded using solvent adhesives. Sortimat offers a choice of techniques for applying solvent to the tube interior or exterior, while precisely controlling the process. This requires maximum precision – a perfect bond of perfect appearance is achieved through precise dosing and uniform solvent distribution.

Sortimat added value

Where required, we can design your sortimat assembly machine to accommodate multiple product variants from the outset. Simply talk to us about your specific needs.
Process

**Tube insertion with vision-system checks**

Where required, sortimat can deploy vision systems for precise quality control of the tube/component bond. These systems check the insertion depth of the tube into the component, as shown in the drip-chamber diagram. By adding a colorant to the solvent, it is also possible to check the presence and distribution of solvent on the assembled component.

**Post-assembly:**

Inspection of the gap between tube and connector
Injection products, such as safety syringes and IV catheters, must be precision manufactured to meet the high standards applied to medical devices. The tip of the cannula is essential to the quality of the entire product. Because a well-made tip ensures reliable and painless insertion into the vein. That means that all components – especially the cannula – must be handled with great care during production.

Example: Catheters

Catheters are sensitive items, and sortimat machines reliably handle the tasks associated with their manufacture. The stations insert the cannula, apply adhesive, perform checks, silicconize, form the tip, and label the finished product. The catheters are then transferred to the integrated packaging unit to be sealed in blister packs. The assembly machines produce up to 70 catheters per minute. sortimat also builds solutions that can assemble multiple catheter designs, with varying cannula gauges (from 16 to 24 G) and lengths.

Tip forming

Tip forming comprises precisely shaping the tube around the cannula. sortimat is highly proficient in the process technologies this entails – from coiling and cutting the teflon tube, up to the final task: forming the actual tip. The teflon tube is cut to the required length and molded through the application of heat. Specialist knowledge is required to design the mold, and to heat the tube using a high-frequency generator. In addition to the needle bevel and tip, the shape of the tube end has a major impact on the quality of the catheter, and is key to pain-free injections.
**Process**

**Cannula orientation**
To ensure the required catheter quality, the cannula bevel must be precisely positioned. For this purpose, the sortimat machine is equipped with sensors that monitor the orientation of each cannula after separation. A servo-driven gripper then turns the cannula to the ideal position. The correctly oriented needle is directly transferred to the cannula hub, guaranteeing maximum precision. The machine operates at up to 40 cycles a minute.

**Cannula inspection**
The final key process in assembling a catheter is quality control of the cannula and tube. sortimat machines check all relevant quality criteria, from the needle bevel and tip, to the shape of the tube end and the lie distance between the bevel end and the tip of the tubing. The system detects even the slightest damage to the needle.

Using mirrors: 360° inspection of the cannula for damage
**Insulin pens are the most popular devices for injecting user-controlled doses of insulin. But autoinjectors and insulin catheters also play a key role in safe and reliable treatments. Sortimat assembly systems are geared to the special requirements of manufacturing subcutaneous and intramuscular injection products.**

**Example: Pen systems**

During final assembly of insulin pens, product quality is ultimately dependent on the correct handling of fragile glass components. Sortimat systems process these products with the greatest care, yet in a highly efficient manner, yielding up to 520 pens per minute. And the logistics for the corresponding parts plays a key role. Components are delivered to the production facility on Euro pallets, and then automatically fed to the assembly process.

We also build fully automatic assembly lines for pen cannula. These lines are linked to the corresponding packaging machines. Sortimat assembly systems for pen cannula operate at up to 900 parts per minute.

**Process**

**Handling and inspection of glass cartridges**

Glass cartridges containing injection solution are key components of all insulin pens and autoinjectors. And these items require careful handling because damaged cartridges can no longer be detected after pre-assembly. Sortimat systems check each and every cartridge immediately before insertion into the pen subassembly. The inspection unit is synchronized with the assembly machine. Once checked, the cartridges are loaded onto the indexed assembly machine. Because the force applied when placing cartridges into the subassembly is defined and controlled, we can be confident of damage-free handling at this stage, too.
Bonding cannula by induction welding or UV adhesive

Sortimat is skilled in all process technologies employed in pen-cannula manufacture. Cannula are bonded to cannula hubs by UV adhesive or induction welding. And Sortimat is experienced in both. Handling during induction welding is particularly demanding because the cannula is magnetizable.

An induction coil heats the cannula to form a reliable bond with the hub.

Feeding springs to the assembly process

Sortimat has many years’ experience of feeding complex parts that can easily become entangled. This knowledge is of great benefit when it comes to feeding springs for autoinjectors and pens. We utilize a variety of feeding methods:

- Sortimat bowl feeder of conventional design or with an external spiral
- Sortimat SMIK bowl feeder – a vision system ensures that only individual, separated springs are fed to the assembly process
- Sortimat drum feeder – for springs suitable for automation; available with a special spring detangling system
- Sortimat Clearliner – for small parts that cannot easily be fed in bulk

Alternative method: Integration of a spring coiler into the assembly process.

Process


We are uniquely equipped to give you a one-stop answer to your needs, combining assembly and feeder technologies from the same supplier: Sortimat. We can evaluate your spring design and develop an end-to-end solution. Simply mail us at cr@sortimat.de.
Today’s diagnostic products are easy to use, and deliver high-quality, high-speed results. Until recently, hematology tests required complex laboratory equipment. Now, blood-analysis devices and test cartridges are available that enable the swift determination of blood counts and other parameters. sortimat assembly machines support this technological breakthrough. Precise, rapid-reaction components, such as those used for in-vitro diagnostic cartridges, are highly sensitive and correspondingly challenging in terms of assembly. sortimat equipment ensures that all filter materials and analysis strips are handled with care to prevent thermal and other damage.

**Example:**

**In-vitro diagnostic cartridges**

sortimat systems automatically perform all of the 75 complex steps involved in assembling in-vitro diagnostic cartridges. These include insertion of all reagents, as well as various cutting, punching and sealing processes, on aluminum foil and various filter materials. The equipment also applies a variety of labels, in accordance with the product variant, and performs checks. Particular attention is paid to the correct insertion of the glass capillaries.

**Process**

Cutting and ultrasonic welding of filter materials

sortimat has in-depth experience of many different filter materials, such as cellulose and laminate. This is evident in many ways. For example, we are able to prevent electrostatic charge throughout the process. And waste-free cutting is used for costly materials. And once cut to shape, filters are transferred directly to the welding unit. To safeguard product quality, heat-sensitive coated materials are handled with great care during welding.

A challenging process: Filters are cut to shape without producing any waste material, put in place, and then ultrasonically welded.
Process

Microdosing of fluids
Highly accurate, highly reproducible microdosing is vital to consistently high standards of production. Tiny quantities of reagent, from 20 microliters upwards (1 microliter or µ-liter = 1/1000 cm³ = 1 mm³), are applied with a tolerance of +/- 2 percent. Among the practical benefits of sortimat systems are that they are very easy to handle and to clean. For example, pump systems can be cleaned in place (CIP) without the need for disassembly. For highly viscous media, we heat the dosing system to improve flow characteristics. Where required, we can also perform tests to verify that bubbles do not form during dispensing.

Process

Washing, siliconizing and drying blood collection tubes
Blood collection tubes are washed in a closed-cycle chamber, with up to 80 percent of the water being returned to the process after filtration. To achieve the required purity, sortimat deploys multistage filtering technology, capable of removing particles 0.2 μm in size. Where required, this can be followed by siliconization. The tubes are then dried at a controlled temperature.

sortimat added value
Where required, we can provide a qualified assembly system (DQ, IQ, OQ), including qualification documentation to GAMP 4.
Inhalation products used to treat asthmatic attacks must be totally reliable and deliver the correct dose – time after time. The design and shape of these expensive, complex products presents significant production challenges. Many components are sensitive, and also difficult to feed and to assemble. In view of the high cost of the product and the risk to patient health, manufacturers require virtually zero-fault production – made possible by systems from sortimat.

**Example: Powder inhalers**

sortimat has proven expertise in assembly systems for inhalers. Many of the world’s leading pharmaceutical players employ sortimat machines for the pre- and final assembly of their inhalers. Our systems deliver optimum results in all areas. For example, all processes are designed to avoid the generation of particulates. And printing is performed using a range of state-of-the-art technologies for perfect results. Assembly concludes with sophisticated checks that guarantee outstanding inhaler quality. What’s more, our machines can produce between 20 and 140 inhalers per minute.

**Process**

**Ultrasonic welding of inhalers**

Ultrasonic welding is a challenging process. And when it comes to integrating this technology into your assembly system, we work hand in hand with the manufacturers of welding equipment. Together, we create perfect weld seams and spots for products that function correctly, reliably and without leakage. And there are other assembly challenges we master – for example, we understand the need for products of unblemished appearance. So where necessary, we use protective films to prevent damage during welding.

**sortimat added value**

Contact the experts:
Our pre-sales service can assist you in the development of your inhalers, ensuring components can be assembled quickly and cost-efficiently. You can mail our application engineers at cr@sortimat.de.
Process

Printing counter wheels
We use various printing technologies for counter wheels, including tampon, inkjet and laser, and hot stamping.

We can also provide plasma and corona-discharge treatments for plastic components. Some methods also support multiple colors, and sortimat can guarantee the accurate positioning of the product required for perfect results. If necessary, the printing process can incorporate a drying process for the inks. The final step is a visual inspection of the quality of the printed image.

Process

Priming the inhalers
Primming is the machine-simulated inhalation of medication. This reduces tolerances, ensuring the patient receives a full dose the first time the inhaler is used. Tolerances primarily occur when the surfaces are not first coated with powder. During priming, inhalation is accurately simulated and the medication fully dispersed. It has proved advantageous to employ cyclones geared to the size of the powder particles. The system can also be designed to detect the powder cloud emitted from the inhaler.
Platforms

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<tr>
<th>The sortimat platform concept</th>
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■ Standardization means optimization
sortimat recognized the advantages of standardization at an early stage. Each sortimat assembly system consists of a platform that forms the basis for a made-to-measure answer to specific needs. Stations and assembly technologies are added in accordance with your requirements. Standardization and the use of proven cam-drive technology guarantee highly reliable production processes. In addition, the platforms enable rapid retooling. And generally, the platforms can be reused with new stations.

■ Flexible platforms
sortimat has developed ways of combining the various platforms to create systems of practically any size. We currently offer three proven standard platforms: Spaceline, Discovery and Jetwing. With the right platform and the right layout, any assembly task can be performed cost-effectively, however complex the product, and however many parts it has – and with the flexibility you require.

■ Subtle differences
The platforms differ with respect to flexibility, drives, and cycle speed. All three are cam–driven, and Spaceline and Jetwing are additionally equipped with a servo-driven spindle drive. At the heart of each solution is a proven controller, tailored to the system and application. We employ tried and trusted programmable logic controllers (PLCs) from Siemens and Allen Bradley, in combination with our user-friendly, PC-based human/machine interface, the sortimat User Pilot.

■ Special requirements
Where required, production solutions can be qualified to GAMP 4, and the technology required for compliance with 21 CFR Part 11 provided. A further advantage: all platforms are designed from the outset for cleanroom deployment, based on requirements of class 100,000 (ISO 8) to class 100 (ISO 5).

■ sortimat added value
Contact the experts: sortimat gives you the best possible blend of standardization with customization, for tailor-made yet cost-effective assembly. We choose the right platform for your products and your logistics processes. Call us on +49 7195 702283 to discuss your needs. We look forward to hearing from you.
Spaceline: Linear transfer for complex products comprising many parts.

Open design
Spaceline combines thoroughly-tested innovations to create a completely new concept, setting new benchmarks in flexibility, output, speed and cost efficiency. The focus is on customer-specific configuration for the assembly of complex products.

The right drive
Spaceline is the first linear assembly transfer line with a twin drive. This pioneering system features a highly reliable and robust cam drive for stations, and a servomotor-powered spindle drive for advancing pallets during assembly. Pallet cross transfer is accomplished with indexed forward and backward movements, saving space and providing additional workstations.

Efficient
Individual machine segments can operate with differing cycle times. As a result, one machine can be employed for multiple processes and technologies – while total output remains consistently high. In addition, Spaceline combines two pallet cycles and can operate with a variety of nests. As a result, final- and pre-assembly is possible on a single machine.

Modular
The modular standardization concept offers great flexibility. All indexed basic modules can be combined with up to two add-on modules in one assembly direction. The machine is available in two widths. And you can include pallets of varying sizes for multiple-track assembly, or for large products. Stations can be freely positioned, provided they are spaced at least 100 mm apart or multiples thereof, and can be situated either inside or outside the pallet cycle.

Future-proof
Spaceline gives you unparalleled versatility. First, when you opt for a specific type of product assembly, you can still easily adapt to changing needs. Second, Spaceline can be directly integrated with third-party equipment. For example, you can feed pallets from Spaceline direct to a packaging machine without having to remove the parts and transfer them to a new nest.

Spaceline – the benefits for you
- Reusable
- Flexible
- Twin drive
- Modular design
- Can accommodate a wide range of machine and pallet sizes
- Highly intuitive User Pilot human/machine interface

Technical data

<table>
<thead>
<tr>
<th>Machine</th>
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<tbody>
<tr>
<td>Lengths: 3,710, 5,110 or 6,510 mm</td>
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<tr>
<td>Widths: single assembly direction 1,200 mm, forward and backward assembly 2,300 mm</td>
</tr>
<tr>
<td>Number of stations: between 13 and 54 with 200 mm indexed feed (example only)</td>
</tr>
<tr>
<td>Number of tracks: up to 24</td>
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<tr>
<td>Cycle speed: up to 80 cycles per minute</td>
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<tr>
<td>Positional accuracy: +/- 0.1 mm, +/- 0.01 mm with indexing</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Trays</th>
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<tbody>
<tr>
<td>Indexed feed: 100, 200 and 400 mm</td>
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<tr>
<td>Length: 200 or 400 mm</td>
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<tr>
<td>Width: Between 140 and 220 mm</td>
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</table>
High performance guaranteed
The Discovery rotary indexing machine is a proven solution, tried and tested in harsh production environments. It delivers outstanding performance and reliability for non-stop operation thanks to a variety of innovative features.

Compact
Discovery is based on space-saving design and is ideal for the assembly of large quantities of complex, market-ready products. 12, 16 or 20 stations are available as standard. These cover 70 percent of all rotary indexing applications.

Customizable
In addition to the standard versions, Discovery is available in custom formats with between 8 and 32 stations, or as a solution comprising two interlinked rotary tables, tailor-made for your product.

The right drive
Rotary indexing tables are based on a central cam drive, enabling rapid, precise and reliable assembly of extremely complex products. The rotary table is indexed by a gear synchronized with the main drive shaft.

Easy to clean and maintain
Discovery’s layout guarantees easy access from all sides. It is made from easy-to-clean materials such as anodized aluminum and stainless steel. For exceptionally stringent requirements, stations can be equipped with hoods.

Discovery – the benefits for you

- High productivity
- Easy access
- Standard version for class 10,000 (ISO 7) cleanrooms, up to class 100 (ISO 5) possible
- Multiple rotary indexing machines can be combined

Technical data

| Stations: | 12, 16 or 20 available as standard |
| Number of tracks: | up to 12 |
| Cycle speed: | up to 150 cycles per minute |
| Features: | high precision, durable, robust |
| Options: | special versions such as two interlinked rotary indexing machines |
| PLCs: | Siemens S7 or Allen Bradley CLX |
Exceptionally versatile
Jetwing was specially developed for assembling items that need to go into production quickly or require frequent design changes. The compact, linear assembly system enables you to switch to a new product virtually overnight. That makes it ideal for products that have a small number of parts, or that are still under development. What’s more, it’s perfect for manufacturing high volumes of items with short lifecycles, and for both semi- and fully-automatic assembly.

Modular
Jetwing is based on standard modules that can be easily combined for an assembly line tailored to your needs. You can connect the standard platform, functional stations, test/inspection and transfer modules via standard interfaces to create an end-to-end solution. Stations can be quickly retooled for new products or variants. This not only saves you a huge amount of time – but also makes you more responsive to changing market demand. In fact, Jetwing lines are often designed to handle multiple product variants from the outset.

Customizable
Jetwing comes with a wide variety of customization options. For example, you can include manual workstations, feeder units or a sortimat tray handler. Up to six Jetwings can be interlinked to handle even very complex tasks. All process technologies and testing systems can be integrated, such as vision systems and tests for leakage and back pressure.

The right drive
Jetwing is equipped with a twin drive, comprising a cam drive for the stations with a servomotor-powered spindle drive for the trays. The pallets are mechanically indexed forward on the assembly platform, and returned via a conveyor belt.

Jetwing – the benefits for you
- Modular design
- Can be combined with manual workstations
- Twin drive
- Short lead times and rapid retooling
- Reusable
- Individual functions can be replaced
- Optionally available for cleanrooms up to class 1000

The sortimat platform concept
Jetwing: For rapid time-to-market and product modification.

Technical data
Basic dimensions: 1,120 x 1,540 x 2,300 mm
Number of stations: up to 12
Number of tracks: multiple-track assembly possible
Cycle speed: infinitely variable, up to 80 cycles per minute
Positional accuracy: +/- 0.02 mm
Pallet dimensions: 100 x 100 and 200 x 100 mm
Our project philosophy
When it comes to state-of-the-art assembly systems, sound planning is just as important as the technology deployed. At sortimat we appoint a dedicated manager to oversee every step of the project lifecycle - from feasibility checks, to compliance documentation. The project manager also supervises the integration of add-on processes, technologies, and sortimat tray-handling and feeder solutions. As well as receiving regular project status reports, you are welcome to call or e-mail us for a progress update at any time.

Cutting-edge collaboration tools
sortimat deploys the latest communications technologies to maximize efficiency. We use Webex to hold design meetings over the Internet, gathering all project stakeholders around a virtual table. Participants can discuss Autocad and Solidworks drawings, and make proposals and changes that can be immediately implemented.

Systematic methodology
Our project management is based on proactive risk management, and on strict adherence to a highly systematic methodology comprising 26 steps, with clearly defined activities, roles, responsibilities and interfaces. Moreover, we provide an end-to-end quality-management program with complete documentation of all project phases.

High-quality proposals and specifications
At the project planning stage, we take an in-depth look at all aspects of feasibility and risk relating to your assembly task. Our engineers analyze your requirements and compare them with sortimat system specifications (using a delta matrix). You will receive a proposal that includes detailed timelines and resource plans. Once you place an order, your project is handed over to a dedicated project manager.
Ongoing progress monitoring
During the implementation phase, we define milestones, coordinate resources, and plan sourcing of third-party components. The project manager regularly checks progress against the timelines, and ensures everything runs to plan. Design, procurement, manufacture, assembly and shipment are carefully coordinated and supervised. Employing simultaneous engineering techniques, we plan and build your assembly machine while you finalize your product design – significantly reducing time-to-market. Where required, the project manager will also implement subsequently agreed modifications. We design our automation technology to evolve in step with your product – for example, by integrating additional processes or modifying existing ones.

Time-saving data management
The Sortimat knowledge database provides systematically organized content on typical tasks and solutions. It gives all project stakeholders easy access to our accumulated expertise.

A firm commitment to research and development
The quality and efficiency of Sortimat systems depends on us leaving nothing to chance. Our R&D specialists challenge conventional approaches in the quest for new and better solutions. We conduct feasibility and concept studies both as part of customer projects and as a stand-alone service. This includes verifying critical processes either before or during the design-engineering phase. We also conduct long-term studies, subjecting materials and replacement parts to a whole battery of endurance tests.

M7: Part 11 specification
M8: Receipt of sanctioned design reports
Task is complete
Purchasing of electrical components
Writing of PLC code

M12: Inspection of mechanical components
M13: Start of production of stations & feeders
M14: Inspection of electrical cabinet
M15: Installation of pneumatic elements
M16: Ready for software installation

M17: Delivery of assembly machine
Delivery & acceptance

M18: Final sheet for customer
Our services play a key role in making your assembly system a success at every stage: from plan, to build, to run. In other words, we provide support from the moment you decide to invest in an assembly system, to designing, building and commissioning, and throughout the operating phase. And to demonstrate the reliability of our products and services, we are certified to ISO 9001.

Certification to the medical-device standard ISO 13485 underscores our commitment to the special quality requirements of medical products.

We supply assembly systems for pharmaceutical and medical-device products complete with qualification documentation for design, installation and operation (DQ, IQ, OQ). That means you can dispense with in-house qualification, and start production that much sooner. Our qualification documentation is created in accordance with internationally accepted Good Automated Manufacturing Practice (GAMP 4) standards.

The manufacture of all food products and medical and pharmaceutical devices distributed and sold in the US is subject to American Food and Drugs Administration (FDA) regulations – specifically 21 CFR Part 11. This includes provisions governing computer systems, with strict rules on the use of electronic signatures and records in place of hardcopy documents and handwritten signatures. To fulfil these requirements, sortimat developed User Pilot, a PC-based system. This configurable standard solution provides the technological basis for compliance with 21 CFR Part 11, including audit trails and user administration. The User Pilot human/machine interface consists of hardware and software, including a monitor and keyboard.
Pre-sales
During the pre-sales phase, we develop specifications for all key automation requirements. We evaluate whether all components are suitable for automated assembly, because minor modifications to their shape can sometimes mean significant time and money savings. Where required, we carry out feasibility studies and experiments to determine the best way to assemble your product. In addition, we'll conduct proof-of-principle tests to establish whether a specific technology is suitable for volume production. You receive an in-depth report, for example detailing how best to align product design and production system (concept studies).

Commissioning
To ensure fast, efficient commissioning, we test your assembly system thoroughly before shipment. Every machine will have been put through its paces by sortimat prior to joint acceptance testing at your site.

After-sales
1. Training
Skilled personnel can make a substantial difference to systems availability. sortimat offers training for system operation, product retooling, maintenance, problem identification and analysis, and process data capture.

2. Problem resolution
If problems do occur, we'll resolve them as quickly as possible. Support is available round the clock via hotline, modem, or on site. And we are happy to conclude guaranteed time-to-repair agreements with you.

3. Maintenance
Regular and preventive maintenance ensures consistently high productivity and conformity with defined quality levels. A wide range of agreements are available – from 24/7 troubleshooting services to customer-specific maintenance agreements with defined checklists and spare-parts packages tailored to your needs. Our global service network guarantees that service engineers and replacement parts reach you fast.

4. Modification
Modifications for new product designs or variants and equipment upgrades are a key part of your assembly system's lifecycle. sortimat can perform both quickly and reliably. The same applies to integrating new technologies and introducing measures to increase efficiency.

5. Relocation
If you move to a new production site, we'll relocate your assembly systems for you. Our team of experts will oversee dismantling, transportation, re-assembly and commissioning. We will also provide training and support until production is up and running smoothly again.

sortimat added value
High-quality services available: Flow diagram for qualification
Going places. With expertise and innovation.

- **A technology leader**
  For 50 years, sortimat has provided the equipment and services to keep manufacturing companies at the cutting edge of innovation. We’ve successfully completed more than 80,000 feeder and assembly projects – so our customers benefit from a wealth of experience. We have become a key international provider of assembly systems for the medical-device, pharmaceutical and cosmetics industries, and a leading supplier of feeding devices to engineering companies and the automotive sector. In many areas, we are acknowledged technology leaders. Since 2005, we have extended our portfolio of automation solutions to include industrial handling systems – in the form of tray handlers. Whatever the system or application, we aim for maximum standardization in conjunction with flexibility for customer-specific requirements. But even if you require a completely made-to-measure solution, sortimat has the answer. Today, enterprises in more than 40 countries use over 2,500 sortimat assembly machines, mostly in cleanrooms. And in everything we do, we are committed to one overriding goal: providing cost-effective solutions that enable you to successfully master present and future challenges.

- **An international player**
  sortimat is firmly rooted in Germany. But we also have operations wherever our customers are – all over the globe. Sites in Europe, Asia and the US mean a strong international presence. Because we take a “glocalisation” approach to our business, you benefit from shorter shipping distances, and faster, more efficient services and support.

- **Lifelong learning**
  At sortimat, we encourage our employees to see the bigger picture: to contribute to the success of customers’ products – and our own company. Only a learning organization, one that seeks imaginative solutions for and with the customer, is a genuine partner in the long term.

- **Focusing on the future**
  It won’t be engineers who determine our future direction, but consumers on every continent. Against a background of international healthcare reforms and highly diverse personal-income situations, medical technology and pharmaceutical companies are being called on to handle higher production volumes more flexibly than ever before. Further challenges include unhealthy diets and environmental problems – leading to a rise in condi-
tions such as diabetes and allergies. As manufacturers, we bear some of the responsibility for helping international medical and pharmaceutical enterprises to offer solutions. For sortimat, in particular, this means continuing our highly successful strategy of combining flexibility with standardization. This ensures that the end-product remains affordable, despite the need for precision manufacturing, and today's stringent drug-safety requirements. To make further progress, we continue to invest substantially in research and development. Globally, automation still offers huge untapped potential. Year by year, sortimat will introduce further minor and major innovations, expand our product range in line with customer needs, and strengthen our role as an expert partner for our customers and their industry associations. To this end, we will continue to strive for sustainable growth.

**Reference customers**

sortimat creates assembly systems for key players such as:

- 3M
- Abbott
- AstraZeneca
- Axis-Shield
- Baxter
- Bayer
- B. Braun
- Becton Dickinson
- Bespak
- Core Healthcare
- Fresenius
- Gambro
- Gerresheimer Wilden
- Gillette
- GlaxoSmithKline
- Medifiq
- MGlas
- Nipro
- Nipro
- Owen Mumford
- Pfeiffer
- Pharmaplan
- Rexam
- Riwisa
- Schott forma vitrum
- Seaquist
- SkyePharma
- Tyco Healthcare
- Ypsomed

**sortimat at a glance**

- Founded: 1959
- Sites: Winnenden, Germany
  - Villingen-Schwenningen, Germany
  - Schaumburg, USA
  - Chinchwad, India
- Employees: 500
- Divisions: Assembly technology, Feeder technology, Handling technology
- Chief Executives: Hans-Dieter Baumtrog, Ulrich Klöpfer

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Reference products

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