AUTOSTORE®
HIGHEST PERFORMING FLEXIBLE WAREHOUSES. NO. 1 AUTOSTORE INTEGRATOR WORLDWIDE.
Ultra-Efficient Storage
Seamlessly Integrated by Swisslog

AutoStore offers maximum storage capacity, flexibility and scalability for today's warehouse. E-commerce fulfillment and small item order picking are delivered by autonomous robots traversing the cube-based system. The size and form of the aluminum grid can adapt to any warehouse for optimal space utilization.

Swisslog is the world's favorite AutoStore integrator with over 160 projects worldwide. We played a key role in AutoStore's development and continue to advise on its effectiveness and capabilities. Our unique experience and proven track record help customers to get the most out of their investment and future-proof their operation.

AutoStore integrates seamlessly with our SynQ software and other Swisslog automated systems, including our innovative single item robotic picking solution ItemPiQ. Efficient, Powerful, Scalable.

AutoStore can be upgraded without interrupting operations. Extra throughput capacity is provided by simply increasing the number of plug-and-play robots, bins or ports. Multiple robots mean there's no single point of failure, built-in redundancy and reduced downtime.

Key Benefits:
- The most space-efficient automated system available
- Easily integrates into existing buildings
- Future-proof, scalable, modular design
- Energy efficient & Low Total Cost of Ownership
- Low maintenance costs
- Ultra-efficient processing at all goods-to-person workstations

10 years of Experience:
The Swisslog Difference

Not all AutoStore systems are deployed in the same way. Understanding customer requirements and providing the highest levels of advice, assistance and customer service is fundamental to Swisslog's approach. Whether it's 5,000 or 300,000 bins, dozens of order lines per hour or thousands, we have the knowledge and capability to deliver a solution for any requirement.

Through close collaboration we get to the heart of our customers' businesses, understanding their challenges and implementing their strategies. It's one of the reasons why we have an impeccable record of success delivering AutoStore across the globe, from Europe to the Middle East, Asia to the Americas.

Swisslog is an expert in combining AutoStore systems with conveyors, or conveyor-based workstations, allowing operations to efficiently cope with small batch sizes and then scale up a facility as business grows.

Small-scale project: Ludwig Meister, Germany
40,200 bins, 26 robots & up to 6,500 picks per day

Medium-scale project: Varner, Sweden
55,000 sqm² distribution center, 60,000 bins & 104 robots

Large-scale project: Competec, Switzerland
55,000 sqm² distribution center, 175,500 bins & 212 robots
As a system that never stops, it is important to keep the components well-maintained. For over 15 years, robots have worked in 24/7 operations around the world with control systems that ensure the battery always stays healthy.

Warehouse operators and technicians also receive special training and assistance from Swisslog. A global helpdesk with an average response time of just 17 seconds also guarantees 24/7 support that keeps your warehouse operating at maximum efficiency, helping to identify malfunctions and assign them to the correct department.
ItemPiQ
The Next Level in Automation

Ideal for both new and existing AutoStore customers, it takes picking automation to the next level.

Picking can be a cost-intensive and inefficient process, with manual roles hard to fill, particularly during peak seasons. Our robotic experts, together with customers have therefore integrated automated small item picking into AutoStore systems in the e-commerce, retail and pharma industries that demand high performance and picking accuracy.

ItemPiQ can be implemented on a stand-alone basis or as part of an integrated goods-to-robot solution, reducing operational costs and improve the picking performance during multiple-shift operations or where operator costs are high.

<table>
<thead>
<tr>
<th>FACTS</th>
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<tbody>
<tr>
<td>Performance</td>
<td>up to 1,000 items/h</td>
</tr>
<tr>
<td>Robot reach</td>
<td>over 1,100 mm</td>
</tr>
<tr>
<td>Product weight</td>
<td>up to 1.5 kg</td>
</tr>
<tr>
<td>Product dimension</td>
<td>min. 20 x 25 mm</td>
</tr>
<tr>
<td>Software</td>
<td>Standard interface to any WMS-System</td>
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</table>
Software is at the heart of every automated system and AutoStore is no exception. SynQ AutoStore Director is our proven and reliable standard package to orchestrate an AutoStore system. The package covers all functionalities needed to run AutoStore as a “black box”. Local inventory management components and sophisticated material flow strategies are included to leverage the overall system performance in the best possible way. Due to its universal user-interface supporting numerous devices such as touch-screens, handhelds or smartphones, it is intuitive to use and administer.

SynQ software easily adapts to change and growth. For instance, it allows for different order batching strategies that ensure the most efficient use of the system overall, including utilizing the same workstations for picking and storing goods.

Swisslog’s SynQ platform is cost efficient, quick to implement, easy to install, and integrates with your existing ERP, WMS and MFCS installations.

With SynQ in full control and no other third-party logistics software required, the system is easy to maintain and use, is less prone to errors and gives you continuous productivity and peace of mind.

As one of Swisslog’s many software modules for warehouse management, AutoStore Director can help quickly integrate AutoStore with other automation systems, such as conveyors and pallet systems, and is well positioned to support emerging technologies that enhance AutoStore's operation. A wealth of business intelligence can also be gleaned from the datasets provided – helping you to improve processes or prepare for peak times.

“No Swissslog’s SynQ and our own WMS, we have added the intelligence needed for AutoStore to prioritize and make fast moving products easily accessible”

Jonas Kolehmainen
Logistics Manager at Sportamore, Sweden

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AutoStore components
All modules, from the Robots to the Ports, operate in one perfectly synchronized workflow.

The Grid
The structure’s vertical rectangular cells can be configured to different heights and widths, meaning all manner of customer needs and building shapes can be supported.

The Bins
The standard bins come in three different heights (220, 330 & 425 mm) and are molded from high grade HDPE, while electronics can be safely stored via an anti-static option. Bins are stackable up to 5.4 meters in height (16 bin stack for 330mm and 24 bin stack for 220mm). Fast movers are positioned in bins at the to of the grid, while slow movers are in lower sections.

The Robots
Each moves in four directions and can reach any position on the grid. The self-monitoring robots recharge automatically; lift and gripper functions allow the pick-up, carry and release of bins, while communication with the control system is achieved via RF. There are two types of robots:
• R5 (Red Line) the standard robot for medium throughput of up to 350 order lines per hour per port.
• B1 (Black Line) for higher throughput systems of up to 650 order lines per hour per port.

The Ports
AutoStore workstations are called Ports. A number of different port options are available for different requirements:
• ConveyorPort is a simple, clear but functional workstation configuration. A conveyor belt moves the bins to the operators through an opening outside of the grid.
• CarouselPort provides better pick performance. It operates with three rotating arms, each holding one bin tray allowing a rapid bin presentation.

SwingPort is a ground floor workstation, enabling AutoStore to be mezzanine mounted.
• RelayPort is a super-fast, dynamic workstation for high demand operations. It is specially designed for the black line.
• ClusterPort is a special Swisslog design that optimizes the putaway process.

Where the operation requires it, ports can be installed at all sides of the grid or in tunnels, while new bins are delivered back-to-back, resulting in fast processing.

Software
For reliable operations Swisslog offers its own Warehouse Management System SynQ, or an SAP EWM solution.

The SynQ platform can be installed on a dedicated on-premises server, the customer’s existing IT infrastructure or anywhere in the cloud. Open source-based deployment options exist. For cloud and remote deployments, bandwidth and network responsiveness of typical enterprise networks are enough, e.g., 100 Megabit Ethernet, 25,000 kbit/s WAN connection. Swisslog also offers "rapid deployment" for AutoStore based on the Microsoft Azure cloud.

Current releases of SynQ are certified to run on Microsoft Windows Server, RedHat Linux, Oracle or Microsoft SQL Server databases, Oracle Weblogic or the Wildfly application server. The SynQ UI is entirely Web-based so it can be displayed on any devices that come with a Web browser.

FACTS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>Bin outside measurements</td>
<td>L: 649 mm x W: 449 mm x (H: 220, 330 or 425 mm)</td>
</tr>
<tr>
<td>Low bin inner measurements</td>
<td>L: 603 mm x W: 403 mm x H: 202 mm</td>
</tr>
<tr>
<td>High bin inner measurements</td>
<td>L: 603 mm x W: 403 mm x H: 312 mm</td>
</tr>
<tr>
<td>Extra high bin for B1 robot</td>
<td>L: 603 mm x W: 403 mm x H: 404 mm</td>
</tr>
<tr>
<td>Height of the grid</td>
<td>up to 5.4 m</td>
</tr>
<tr>
<td>Payload</td>
<td>up to 30 kg</td>
</tr>
<tr>
<td>Throughput red line</td>
<td>up to 350 order lines per hour per port</td>
</tr>
<tr>
<td>Throughput black line</td>
<td>up to 650 order lines per hour per port</td>
</tr>
<tr>
<td>Storage capacity</td>
<td>from 5,000 to 300,000 bins per system</td>
</tr>
<tr>
<td>Temperature</td>
<td>2 – 35°C</td>
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