

TEMPERATURE-CONTROLLED LOGISTICS FOR THE FOOD INDUSTRY

Efficient warehouse and picking solutions for deep-freeze, dairy and dry goods lines

ssi-schaefer.com



SSI SCHAEFER

COOL INTRALOGISTICS FOR THE FOOD INDUSTRY



Chilled food requires special care, which means companies in the industry are faced with particular challenges. Many things must be considered. Efficiency, cost-effectiveness, quality, freshness and hygiene standards fundamentally define the transport, storage and picking processes.

Challenges for intralogistics

- Providing full and picked pallets in order and on time for delivery, to ensure fast truck dispatch
- The shift in trend from “full pallet handling” to mixed pallets, which consists of cases and individual products
- Traceability and safe processes
- Increased outbound deliveries due to smaller customer orders
- Pressure regarding price and delivery times
- Green logistics
- Workplace ergonomics in the picking process

From your initial idea to a turn-key system, the industry experts at SSI SCHAEFER provide flexible and scalable solutions that will significantly increase efficiency and productivity for deep-freeze, temperature-controlled and dry goods lines storage. Our compact, space-saving, all-in-one solutions will optimize utilization of labor, energy efficiency and fire protection within your temperature-controlled environment.

We will also supply a software that adapts and evolves with your company for manual, semi-automated and fully automated warehouses.



SOLUTIONS BY SSI SCHAEFER

- Efficient mobile racks, channel storage systems and standard rack systems
- Scalable storage systems with storage-retrieval machines and shuttles
- Perfectly tailored pallet conveying systems, electric floor track and monorail systems and automated guided vehicles
- Flexible picking systems, from manual to fully automated
- Effective case handling using robots
- Automatic picking with articulated and gantry robots
- High-performance WAMAS® and SAP software solutions

SSI SCHAEFER – YOUR FRESHNESS SPECIALIST FOR THE FOOD INDUSTRY

Future-proof logistics solutions need to seamlessly blend in with your individual processes. They must be infinitely variable and able to flexibly adapt to new framework conditions. You need specialists for this. You need experts who don't just focus on individual services, but on full solutions.

All-in-one solutions from a single source

Our wide range of products and services forms the basis of industry-specific solutions that we can tailor to your needs. With such a portfolio, our experts can provide bespoke solutions that cover all areas of your internal material flow. Our customers benefit from the fact that we make all of the SSI SCHAEFER Group's components ourselves. Having more than 10,000 employees globally makes us a strong and reliable partner.

At SSI SCHAEFER, holistic thinking has been the key to our success for many decades. As a global general contractor, we implement complete logistics systems. Our team of consultants provide comprehensive system planning and project management services, which are certified by the International Project Management Association (IPMA). This approach enables us to provide turn-key systems with tailored service and maintenance packages. Upon request, we can also plan and build your project with our in-house construction department.

Dedication and commitment

If you know anything about SSI SCHAEFER, you will be aware that we put our customers at the center of everything we do.

This includes the obligation:

- ✓ to always provide the optimum solution
- ✓ to always be there for our customers
- ✓ to always keep our word

You can expect us to be fully dedicated to your concerns. Whether it be the devotion that our employees give to developing new solutions or the all round service we ensure during the life cycle of your systems, we will always be by your side, no matter where you are in the world. As a family company, we always think of the future and plan for the long term.

Experienced specialists in the food industry



To make your intralogistics more efficient and sustainable, SSI SCHAEFER can support you with its modular and scalable system solutions for the food industry – no matter the temperature range.

We provide perfectly tailored solutions from one source for your entire value chain, from connecting your production facilities to warehouse technology, picking processes and dispatch. When it comes to efficient processes, the right IT solution is the key to success. As well as establishing a connection to the customer's ERP solution, the portfolio includes interfaces to MES and line management or BDE systems. This guarantees the smooth flow of information between production and logistics, production's supply of raw materials, reserve materials, operating materials and the acceptance of finished goods.





SPACE-SAVING, EFFICIENT, RELIABLE: FLEXIBLE SOLUTIONS FOR DEEP-FREEZE AND TEMPERATURE-CONTROLLED STORAGE

Changes in eating habits, all year-round availability of food, the rise in single households and the growing demand for convenience products have led to a significant growth in the deep-freeze and temperature-controlled food segments.

For companies within this growing market, warehousing concepts need to include intralogistics systems and processes with high performance and the best possible availability. SSI SCHAEFER's intelligent, partially and fully automated solutions are the key to success here. All temperature ranges can be covered with our technologies.

Tailored solutions for all requirements

SSI SCHAEFER develops and implements scalable, energy-efficient systems for all requirements. The systems can be controlled via the WAMAS® or SAP EWM logistics software, from mobile racks right through to multi-aisle high bay warehouses with storage-retrieval machines, pallet conveying systems and

shuttle systems. This all comes from one source and can even be made into a turn-key solution for warehouse renovations or construction of new warehouses with built-in fire prevention e.g. sprinkler concepts or oxygen reduction.

Implementing all legal obligations

With SSI SCHAEFER's deep-freeze and temperature-controlled logistics, all legal obligations are implemented as standard. This includes HACCP hygiene standards and BBD guidelines as well as the required traceability.



Mydibel: Centralizing storage capacities in one site

SSI SCHAEFER has implemented a fully automated deep-freeze warehouse for potato products of the Belgian food producer, Mydibel S.A., at its production site in Mouscron. Controlled by WAMAS® logistics software, storage-retrieval machines with ORBITER® shuttles and an intelligent material flow concept create a high level of transparency, significantly increase efficiency and improve the overall level of service.

The five 93 m long carousels in the channel storage system feature eleven shelf levels, each with 57 channels per level, which are stored 11-deep in the 32,000 storage positions. Apart from the two external channels, the main channels can be accessed via two aisles using the Schäfer ORBITER® systems. The advantage: one side of the channel can be used to put items into storage and the other side to retrieve them. This is an example of the First-In-First-Out principle. Another special feature is the WAMAS®-controlled pallet conveying system by SSI SCHAEFER with two stacked conveying sections, which can be used to separate or merge the material flows.



Cotriguaçu: Deep-freeze exports

As a general contractor, SSI SCHAEFER has updated the intralogistics within the automated cold warehouse for the Brazilian agricultural cooperative, Cotriguaçu, to state-of-the-art technology.



The meat products from four major chicken farms are stored in temperature-controlled chillers and prepared for export in this facility. An automated mobile rack system, controlled by WAMAS® logistics software, ensures the quality of the shipments and compliance with international guidelines for chilled food exports.

The result: a fully chilled warehouse spanning 4,600 m² featuring an extremely compact design with huge storage capacities in a relatively small space. Around 1,300 pallets loaded with chicken meat are processed every day in two-shift operations under the FIFO principle. Our range of services also includes customer service and support with a 24-hour hotline to ensure the facility runs smoothly.



DEEP-FREEZE LOGISTICS AT ITS BEST: THE HIGHEST SPACE UTILIZATION, PERFORMANCE, AVAILABILITY AND ENERGY EFFICIENCY REQUIREMENTS

The demand for deep-freeze products is continuing to grow. As the volumes increase, the requirements placed upon deep-freeze logistics also grow. SSI SCHAEFER offers flexible, modular and scalable solutions to significantly optimize the storage, picking processes and profitability within facilities of this industry.

When storing and picking frozen products, space-saving design and optimized labor utilization play a key role in reducing operating costs. Partially or fully automated intralogistics systems by SSI SCHAEFER offer huge potential for savings here. Using compact channel storage, mobile racks or high bay systems with a height of up to 45 m and multi-deep storage through fully automated storage-retrieval systems comes with a valuable benefit. You don't have to expand the

floor space. With such solutions, the number of pallet storage locations can be doubled and the costs significantly reduced.

Individual solutions by SSI SCHAEFER guarantee a closed product-specific cold chain, from storage to picking to loading.

Hochreiter: Intelligent meat storage in a very confined space

SSI SCHAEFER has created a 2-aisle deep-freeze channel storage system to achieve a high turnover performance and to store very high volumes in confined conditions. Up to 60 items can be stored and 60 simultaneously retrieved per hour. The system has a storage capacity of 4,743 euro pallets on nine storage levels. Its hardware includes two Exyz storage-retrieval machines with ORBITER® as a load handling device, a pallet conveying system, a platform built into a high bay around 20 m off the ground for the deep-freeze evaporator as well as deep-freeze and high-speed gates for sluices in the pre-zone production and incoming and outgoing goods areas. WAMAS® and its control technology were installed as a warehouse management and material flow system.



"The automated deep-freeze warehouse fits in perfectly with our operations and has contributed to making important processes more effective and economical. The decision to implement this project and the automated solution was the right one at the right time."

Gottfried Hochreiter, CEO of Hochreiter



La Lorraine: A fully automated deep-freeze warehouse for baked goods



SSI SCHAEFER has created a fully automated distribution center for deep-freeze bakery products for the La Lorraine Bakery Group in Belgium. It is one of the group's largest and most advanced centers.

The 3-aisle deep-freeze high bay warehouse is directly connected to production and has more than 15,000 pallet bays for double-deep storage of semi-finished and finished goods. Three energy-efficient Exyz storage-retrieval machines ensure a turnover performance of more than 150 pallets an hour and 3,600 pallet movements per day. One of the system's key factors for success is SSI SCHAEFER's process management, which is adapted from the SAP EWM suite and has been customized to the specific requirements of La Lorraine. The system guarantees perfect control of the automation and material flow components.

Another bonus for La Lorraine in addition to fire prevention is that the intelligent logistics concept is also highly energy efficient, consuming 30% less than conventional systems.



"Our contact person from SSI SCHAEFER proved to be very flexible when working with us and was always ready to fulfill our requirements, which sometimes only arose during meetings. Furthermore, SSI SCHAEFER has convinced us of their profound expertise by the work that they carried out even before the contract was agreed and their very detailed analysis of our requirements."

Jorge Fernández-Miranda, Director of Frinavarra

Frinavarra: Optimized efficiency for southern Europe's largest deep-freeze logistics center

The team of experts at SSI SCHAEFER have developed a fully automated deep-freeze channel storage system with more than 11,000 double bays for the Spanish logistics provider, Frigoríficos de Navarra (Frinavarra). 22,000 pallets are distributed across 500 channels, each with 22 pallet bays on five channel levels. The depth of the channels makes it easier for the food to be transferred to trucks for storage.

The WAMAS® logistics software controls and coordinates the process. It has a function designed specifically for Frinavarra, which enables additional process optimizations when ordering goods and loading the trucks. So the storage processes can still be kept in place, even in the event of seasonal workload fluctuations. This means that for capacity reasons, mixed storage units, which have already been created can be reorganized into a channel storage system at short notice.

MIGROS Migros: Fully-automated in arctic surroundings

SSI SCHAEFER planned and implemented one of the first fully automated deep-freeze plants in the world for Migros Verteilbetrieb Neuendorf AG with automatic tray and in-house high bay warehouses (HBW). A further feature is the picking solution with the award-winning Case Picking System, which operates from goods-in to depalletizing, buffering, picking, sequencing and palletizing, right through to goods-out.

All the processes are controlled by the logistics software WAMAS®, which processes up to 45,000 order lines per day in the deep-freeze section alone. The 20,000 m² installation manages around 1,500 different products across three levels. Depalletization in layers and sector-specific pallet arrangement is carried out by robots in a fully-automated process. Optimal interaction between IT and automated components means a performance increase of around 30%, meaning up to 60,000 cases per day.



La Lorraine: Fully-automated production and distribution warehouse

For the Belgian La Lorraine Bakery Group, SSI SCHAEFER implemented a fully-automated production and distribution warehouse for deep-freeze products in Kladno-Kročehlavy in the Czech Republic. For this project, the twin-mast Exyz storage-retrieval machines were used, which were especially designed for saving space and energy in the deep-freeze sector. They provide 27,300 pallet spaces for double-deep storage with 170 double cycles per hour for efficient processing in the 5-aisle HBW.

As well as full pallet handling, it also incorporates picking with fully-automated replenishment of A-items with fixed staging locations, as well as B and C-item picking for manual shelf systems. The SAP specialists from SSI SCHAEFER have also developed the necessary dialog structure for a fully-automated installation and material flow management directly from SAP EWM.



La Huerta: Earthquake-proof with high savings potential



SSI SCHAEFER has created an intralogistics project with a difference with an automated deep-freeze warehouse in Mexico. The static self-supporting HBW for the deep-frozen vegetable producer, La Huerta, fulfills all the requirements for an earthquake zone.

The almost 8,800 m², 33 m tall and 140 m long installation provides room for 13,200 pallet spaces across eleven levels. By automating the storage and picking processes, La Huerta were able to significantly shorten shipment and delivery times, reducing operation costs by 35%.



FROM THE COW TO THE CHILLER: SOLUTIONS FOR DAIRY COMPANIES

Dairy products, in particular, have certain requirements during storage and picking such as temperature management, comparatively short best before dates and, as a fast mover, a correspondingly high picking frequency. Basically, they need to move quickly through logistics processes. It is essential that the correct temperature zones for the products are maintained.

Maturing cheese with robots

Flexible solutions from SSI SCHAEFER provide efficient production lines for raw produce, operations and additional materials and they also streamline systems for the disposal, storage and picking of finished goods. For example, IT-controlled robot systems handle the automated storage of blocks of cheese in ripening boxes as well as the final storage and precise BBD picking.





Vinamilk: High bay warehouse with Southeast Asia's first in-floor conveyor

In their capacity as a general contractor, SSI SCHAEFER planned and built one of the most modern temperature-led logistics centers for Vinamilk, a leading dairy business in Vietnam. The facility includes an earthquake-proof structure with a direct link to the production facility, which combines the intelligent logistics software WAMAS®, a HBW, conveying system with customized components and the first in-floor conveyor in Southeast Asia. This combination of systems provides consistent automated processes with a high level of performance.

The in-floor conveyor's fully-automatic system loop is 370 m long with 15 rail-guided vehicles. As the center of the automated material flow, it deals with all the demands of the 32 m high logistics center, right through to shipping the pallets at the end of production. Up to 50 diverse items in three different product groups are stored in around 28,000 single deep storage locations in the 8-aisle HBW. Eight Exyz storage-retrieval machines handle the storage and retrieval of around 2,000 pallets every day.



Tine: Temperature controlled HBW with automated guided vehicle systems

SSI SCHAEFER has developed one of the most modern production and logistics systems with a temperature-controlled HBW for dairy products of the Norwegian market-leader, Tine SA, in Jaeren, Norway. 200 million liters of milk are processed into around 300 different dairy products in Jaeren every year. Through the use of consistently automated processes, the entire plant has seen enormous increases in efficiency. There are almost 7,200 spaces available for pallets in the four aisles of the channel storage system. Four storage-retrieval machines for pallets deal with the three to four-deep storage and retrieval, which aim to carry out 33 double cycles or 55 single cycles per hour. As a load handling device, they are equipped with a carriage. Automated guided vehicle systems take the storage pallets from production to the logistics center, where they are navigated by laser along the conveying system, which is approximately 400 m long.

The logistics software WAMAS®, together with the material flow system that it controls, handles the goods storage and retrieval information including loading control and stock and storage space maintenance.

Zott: Air-conditioned HBW for chilled products

In its capacity as a general contractor, SSI SCHAEFER created a temperature controlled, 9-aisle, HBW for gourmet dairy company, Zott GmbH & Co. KG in Mertingen, Germany. The system stores finished products, raw materials and additives for producing the refrigerated dairy products in 24,000 pallet storage locations. At the same time, a similar existing 9-aisle finished goods warehouse was renovated. The HBW with 18-aisles has 14 aisles for finished goods and four aisles for raw materials, additives and additional supplies, as well as storage for empty pallets. Above a platform situated in the loft area of the production, stacks of empty pallets are sent to the cup filling machine via a vertical conveyor.

The freshly filled yogurt passes through the cooling chamber in palletized form over a chain conveyor. After traveling over a buffer section to the automatic contour and fork clearance control, it is then stored by storage-retrieval machines according to the main criteria of availability in each aisle. When picking, by using retrieval conveyor technology, pallets containing the same items are automatically distributed on gravity roller conveyors and stored separately in adjacent pallet racks. Depending on the customer's requirements, individually packaged units are then retrieved and added to finished order pallets and, following automated film wrapping, they are re-stored in the HBW.





Campina: Maximum storage capacity for optimal freshness

For international dairy business, Campina, SSI SCHAEFER implemented the overall logistical concept for the construction of a new 11-aisle HBW in Aalter, Belgium. The system enables the continual disposal of production lines together with efficient storage and supply of sequenced shipping at the same time. The result is a successful combination of different logistics systems. The partially temperature-controlled HBW has around 25,000 spaces for Euro and Chep pallets and three different height classifications. A maximum output of up to 230 goods-in processes and 300 goods-out processes

every hour is achieved by a high-performance conveying system for the goods-in process. The solution combines the following components: roller track, chain conveyor, loading and unloading station, corner transfer, vertical conveyor and scales. For the goods-out process there is a high dynamic electric monorail circuit with a live roller conveyor and route planning.



ALWAYS WELL ORGANIZED: SCALABLE SOLUTIONS FOR INCREASING DEMANDS OF DRY GOODS LINES

In food storage, dry goods line products such as preserves, coffee, tea, rice, pasta, juices, or general confectionary fall into an extensive product range, which continues to expand.

When handling such products, the demands for intralogistics are similarly high to other product ranges. All things must be considered such as intelligent material flows, high process efficiency for production supply and disposal, error-free picking and of course, supply of finished goods.

With modular, scalable logistics and software systems by SSI SCHAEFER, you can create partially or fully-automated turnkey systems for dry goods line warehouses from just one provider. These solutions will remain competitive for future market demands thanks to increased savings on business costs.

2XL: Automated guided vehicle systems for highly flexible use of space

Ready for the future: due to the constantly changing range of products, the Belgian logistics service provider, 2XL N.V., decided to adapt their bulk warehouse in order to continue using their space in a flexible way. They opted for an automated consolidation warehouse to ensure long-term competitive advantage. The central component of the redesign of the 30,000 m² warehouse is an 8-aisle HBW and automated guided vehicle system linked to the static warehouse complex by SSI SCHAEFER.

The fleet of vehicles is linked to the server system of the warehouse management system through an interface, which uses a laser-localization system to guide the fleet around the area. Exyz storage-retrieval machines carry out the fully automated storage and retrieval processes, which are combined with an ORBITER® System as a shuttle solution. At peak times, as many as 8,400 pallets per day can be handled.

“The transport automation through the automated guided vehicle system has provided the necessary flexibility and efficiency. We are benefiting from barrier-free transport. The solution as a whole gives us optimal stock management and enables high performance and fast deliveries.”



Jean Van den Poel,
Business Founder 2XL N.V.





HARIBO: New central warehouse – a perfect choice

After nearly 100 years in the city of Bonn, Germany, the candy producer, HARIBO GmbH & Co. KG, is relocating its headquarters to Graftschaff, Germany. A 27-hectare area houses HARIBO's newly-built headquarters, the world's biggest production facility, a packaging plant and the automated logistics central warehouse. As a general contractor for building and logistics, SSI SCHAEFER developed this as a turn-key project in May 2017. HARIBO benefits from the system's high redundancy, as all the material flows are carried out on two levels, which run identically. The HBW for finished goods, raw materials, supplies and operating materials is 120 m long, 100 m wide and 43 m tall with a capacity for 92,800 pallets. The 22 energy efficient Exyz storage-retrieval machines offer a goods-in process performance of up to 645 pallets per hour. For the retrieval process, the maximum capacity is around 590 pallets per hour, of which around 400 pallets are prepared for

loading on a declining gravity roller conveyor. The remaining pallets are prepared in the picking and assembly area.

One Hundred Percent sequencing for goods-out

A technical highlight of the system is the one hundred percent automated sequencing for goods-out through the use of a multilevel goods-out buffer. This is where pallets are prepared for loading across several buffer stations in an optimal sequence for outbound delivery. This improves shipment efficiency, route development and the ability to be customer specific, route specific and day specific. The HBW supplies the picking area automatically with replenishment. Connecting all areas across two levels is a conveying system, 2.6 km in length, which includes two circular running in-floor conveyors. For direct delivery of pallets from production, the production warehouse is linked to the logistics center via a passage.

Customized software support

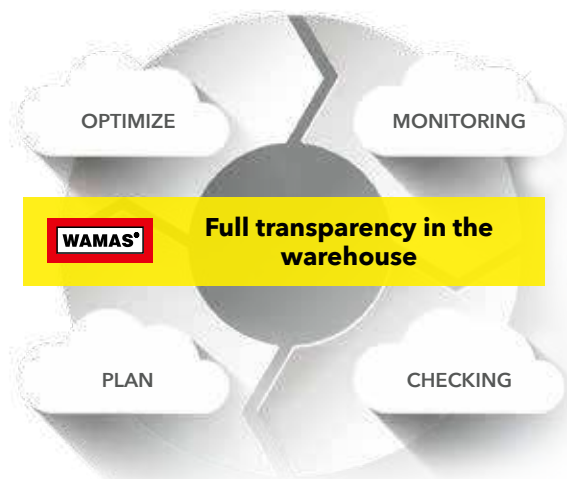
The logistics software WAMAS®, which is specifically tailored to HARIBO's individual processes, manages and controls all of the intralogistics processes. From efficient and flexible order processing, to goods movement and resource optimization, right through to availability and analysis of logistics performance indicators.

"Whatever the conceptions for further logistical locations either in the USA or the UK, SSI SCHAEFER is our preferred partner to establish similar logistics structures. A globally operating logistics partner like SSI SCHAEFER is the perfect choice."

Stefan Sorce,
Head of Global Logistics HARIBO

HARIBO

INTRALOGISTICS 4.0: USE IT SOLUTIONS FOR INTEGRATED PLANNING, MANAGEMENT, CONTROL AND COMMUNICATION



WAMAS® Logistics Software

Our internally developed WAMAS® logistics software enables us not only to meet these requirements, but to exceed them. WAMAS® is the link between goods-in, storage, picking and outbound delivery and all intermediate process steps. Efficient warehouse operation is ensured through clear visualizations and consistent management tools for processes, resources and stock. From initial consultation through to go-live, we provide you with comprehensive, global service expertise.

Certified SAP Competence

As a certified SAP Silver Partner, we support you in selecting, introducing and operating SAP solutions. Thanks to our comprehensive expertise in this area, we can implement SAP Extended Warehouse Management (EWM) for you according to your requirements. You can rely on our support as your experienced, SAP-approved implementation partner.

To create effective intralogistics, a strong connection between IT and intralogistics technologies is required today more than ever. Modular software systems need to have the capacity for development and customization in order to communicate with your own company's Enterprise Resource Planning system. At the same time, you have to be able to analyze the material flow in real time to be able to spot any problems early on.

Our standard WAMAS® software combines all intralogistics components in one intelligent system with batch tracing and BBD checking in all warehouse processes.

RETROFIT

OPTIMIZE PROCESSES AND SAVE COSTS: IMPROVED PERFORMANCE THROUGH MODERNIZATION

Modern warehousing technologies and software releases can significantly improve warehouse performance as turnover within the chilled foods market continues to increase thanks to new products.

Up-to-date logistics technology optimizes warehouse and picking processes and reduces costs. Earlier investments can also be updated and aligned with the latest market requirements.

This is all regardless of whether your system was provided by SSI SCHAEFER or another supplier.

AFTER PREPARING A RETURN ON INVESTMENT ANALYSIS, WE OFFER YOU THE FOLLOWING:

- Optimization of organizational and warehouse processes
- Implementation of new picking methods
- Expansion to new warehouse areas
- Expansion/modernization of mechanical, electrical and control engineering
- Software and hardware upgrade

CUSTOMER SERVICE & SUPPORT: INNOVATIVE SERVICE PORTFOLIO FOR MAXIMUM AVAILABILITY OF ALL SYSTEMS

Even after your installation has been commissioned and is operational, our experienced experts will be on hand to support you with a comprehensive service portfolio, offering a suitable solution for any requirement.

PREVENTIVE SERVICES

- Maintenance
- Inspection
- Safety Inspection
- Rack Inspection
- Training and Certification
- System Monitoring

REACTIVE SERVICES

- 24/7 Technical Support
- Technicians on Call
- SSI Augmented Support

LIFE CYCLE MANAGEMENT

- Retrofit
- SMP
- Global Spare Parts Service

SSI SCHAEFER Maintenance Philosophy (SMP)

With our improved SSI Resident Maintenance® solution, we offer our customers "more than just service".

The SSI SCHAEFER Maintenance Philosophy is based on three core elements:

- ✓ Expert employees (SSI Resident Maintenance® Team)
- ✓ Best-practice processes for technical maintenance and repair work
- ✓ Integrated service tools and systems





SIX REASONS FOR CHOOSING SSI SCHAEFER:

- **Stability:**

As a financially independent family business, SSI SCHAEFER is committed to long-term solutions. You can trust that our team of experts will be there for you today, tomorrow and in years to come.

- **Efficiency:**

SSI SCHAEFER solutions are scalable and able to grow with your business. You can always upgrade or retrofit.

- **Quality:**

As a systems specialist and original equipment manufacturer, SSI SCHAEFER provides tailor-made and high-quality solutions from a single source, specifically designed to meet your challenges.

- **Reliability:**

Thanks to our worldwide Customer Service & Support network, SSI SCHAEFER ensures smooth operation of your system, both during and after installation.

- **Know-how:**

SSI SCHAEFER solutions are always up-to-date with the latest technological standards and can be easily integrated into an existing (IT) landscape.

- **Internationality:**

As a global organization, SSI SCHAEFER has local offices worldwide. With over 70 operative subsidiaries, our team of experts speak your language.

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