

# CASE STUDY

Reference Suning, China:  
Highly automated omni-channel distribution center  
for deliveries to shops and e-commerce customers

[ssi-schaefer.com](http://ssi-schaefer.com)

SUNING  
苏宁物流

**SSI SCHÄFER**

# A SUPERLATIVE OMNI-CHANNEL LOGISTICS CENTER

E-commerce has become highly important in recent years. The traditional differentiation between the sales channels retail business and mail-order business has often merged into one omni-channel model. Worldwide, customers are increasingly making use of the ability to buy from anywhere, at any time. This calls for fast, reliable, and accurate deliveries - in conjunction with a flexible distribution center.



Founded 25 years ago as electrical store, the Chinese retail giant Suning now offers a wide range of products in more than 4,000 stores and on its online platform, suning.com. These products include electronics, office supplies, books, toys, household goods, cosmetics, apparel, and groceries. The company opts for an Online-to-Offline (O2O) strategy

aiming at a one-stop shopping experience for its customers by entirely linking different sales channels. Therefore, Suning required a brand-new, highly modern distribution center that SSI SCHAEFER designed and successfully implemented in Nanjing (China). The logistics center supplies both, Suning stores as well as e-commerce customers.

The customized system solution consists of a miniload with 338,400 storage locations, an automated high-bay warehouse (HBW) with 10,608 pallet storage locations, and a static rack system with about 240,000 storage locations. In the miniload, Schäfer Miniload Cranes (SMC), highly dynamic storage and retrieval machines (SRM), ensure efficient storage and retrieval

movements. In the HBW, energy-efficient Exyz, modern pallet SRMs, make the best possible use of vertical warehouse space. The concept is complemented by the Schäfer Carousel System (SCS). Customer orders are compiled at high-performance Pick to Tote work stations, which are directly connected to the SCS.



**The new logistics center accommodates about 20 million items and up to 1.8 million picks are processed on a daily basis.**

Furthermore, the SSI SCHAEFER A-Frame ensures shortest cycle times of A-items and a full case picking system, according to the Pick to Belt principle, complements the highly efficient processes. The system is rounded off with a high-performance sorter to divert up to 18,000 packages per hour towards goods-out. There is also another sorter for express parcel

service, which can process up to 32,000 packages an hour and a returns center. The existing SAP system is used for warehouse management and administration, while the connected logistics software WAMAS® by SSI SCHAEFER works at a control level.

# ALL CHANNELS UNDER CONTROL

As the general contractor, SSI SCHAEFER created a holistic logistics concept for a highly automated omni-channel distribution center to supply both, Suning stores as well as e-commerce customers.



"The crucial factor for our decision in choosing SSI SCHAEFER was that the system provider is not only able to plan such an omni-channel logistics center, but also organize its implementation and equip it with its own products."

Meng Lei Ping  
Vice President of Suning Research Institute



## THE PROJECT GOALS

- Development of a system to efficiently handle an extremely wide product portfolio with shortest order process times and accurate deliveries
- Future-proof the investment by supplying both scalable and modular components
- Effortless work according to the ergonomics@work!® principle
- Intelligent control of all intralogistics processes using WAMAS® logistics software
- Support from local SSI SCHAEFER team members and specialized representatives from the European competence centers
- SSI Resident Maintenance® service team on site



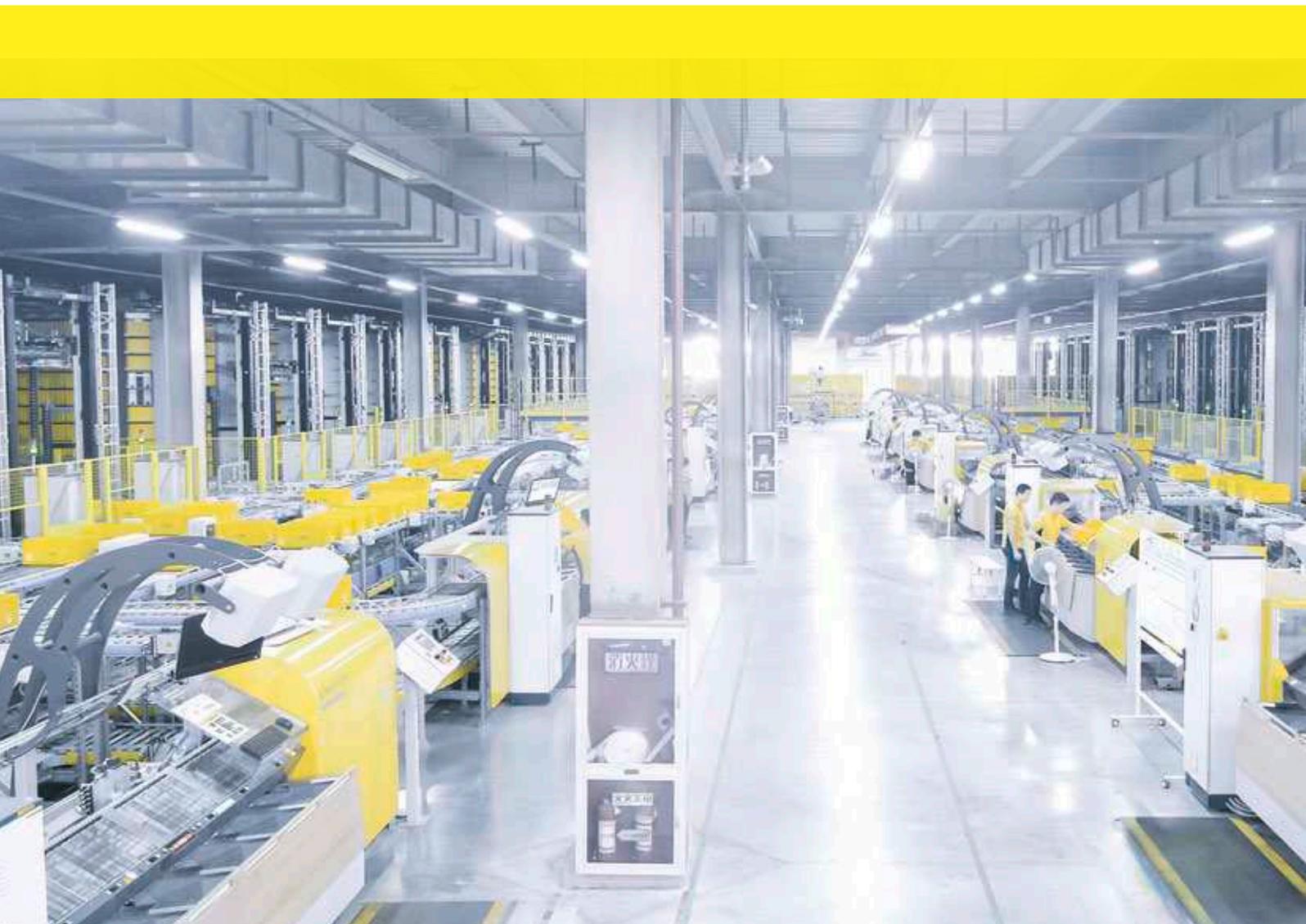


# EFFICIENCY AND HIGH-PERFORMANCE PROCESSES ARE PERFECTLY PAIRED

The tailor-made system ensures maximum availability, speed, safety, ergonomics, and profitability. It is Suning's reaction to the boom in

In the miniload, twelve SMC ensure efficient storage and retrieval movements. These SRMs, especially developed to handle bins and cartons, work according to a specific storage strategy so that a coherent, adequate performance is obtained. Fast cycles of positioning and load changes, together with

dynamic run values, ensure the performance requirements of the HBW. In the HBW, three energy-efficient Exyz, modern pallet SRMs, optimize the vertical warehouse space. Bearing in mind operating costs, it was crucial for Suning to use energy-efficient devices designed for high availability with



The Schäfer Carousel System facilitates gentle product handling together with zero-error picking

omni-channel business and meets the growing demand of express and added value services at the same time.

little wear and tear. A modular and scalable solution was also needed for picking. The SCS meets these requirements. The combined storage and picking solution consists of 62 rotating carousels; 20 of which serve as shipping buffers. Each carousel is equipped with a decoupled loading and unloading unit that

transfers bins to a conveying system. The system is characterized by gentle product handling. This is particularly important for handling electronics, fragile, or valuable goods. The comparably low noise emission is especially beneficial for the employees.



In the high-bay warehouse energy-efficient Exyz, modern pallet storage and retrieval machines, optimize the vertical warehouse space

# ADVANCED SYSTEM TECHNOLOGY AND MAXIMUM ERGONOMICS MAKE A WINNING COMBINATION FOR SOLUTION COMPONENTS

Customer orders are compiled at semi-automated Pick to Tote work stations, which are directly connected to the SCS. The goods-to-person work station system, developed by SSI SCHAEFER, quickly processes high quantities per order line. Furthermore, the SSI SCHAEFER A-Frame ensures shortest cycle times of A-items. The employees at Suning also benefit from an ergonomic point of view. As part of the

ergonomics@work!® program, SSI SCHAEFER developed special picking stations and work stations that boost productivity and do not harm the body. All movements, particularly lifting and carrying, have been entirely replaced with ergonomic pushing and pulling. The operator is intuitively guided by intelligent communication and display systems, resulting in a significant increase in quality and falling error rates.



The "ergonomics@work!®" concept reduces bodily stress by moving loads only horizontally or by gravity

A full case picking system, according to the Pick to Belt principle, complements the highly efficient processes in the new Suning logistics center. Employees transfer cartons from pallets or flow racks to a conveying system, on which the cartons are transported to the shipping area. There is also a dedicated area for handling special items. Picked orders are either transported directly from the shipping area

to goods-out or buffered temporarily in an SCS area with 20 carousels until the planned shipping time is reached. A high-performance sorter diverts the orders to pre-defined shipping routes for trucking. The returns center, located in a different section of the building, is also connected to the warehouse by a conveying system.



The A-Frame by SSI SCHAEFER ensures the shortest cycle times of A-items



Customer orders are compiled at the Pick to Tote work stations



“SSI SCHAEFER completely satisfied our expectations by designing and implementing a solid and scalable solution. We had a partner who supported our project from beginning to end with their own team in Nanjing and experts in Europe.”

Meng Lei Ping  
Vice President of  
Suning Research Institute



# FACTS AND FIGURES

## System key figures

Warehouse area	750 x 450 m
Number of items on stock	Approx. 20 million
Number of picks per day	Up to 1.8 million
Picking peaks	Promotion days
Working hours per day	24/7 on promotion days

## Scope of supply and services by SSI SCHAEFER

<b>High-bay warehouse (HBW)</b>	
Storage locations	10,608
Number of storage and retrieval machines (SRM)	3 single mast storage and retrieval machines Exyz
Type of storage	Double-deep
<b>Miniload</b>	
Storage locations	338,400
Number of storage and retrieval machines (SRM)	12 Schäfer Miniload Cranes (SMC)
Type of storage	Double-deep
<b>Static rack system</b>	
Storage locations	240,000
<b>Picking systems</b>	
Schäfer Carousel System (SCS)	42 carousels
Pick to Tote	14 work stations following the ergonomics@work!® principle
A-Frame	22 modules
Pick to Belt	Picking system for full cases
<b>Conveying systems</b>	
Pallet conveying system	200 m
Bin and carton conveying system	22 km
Spiral conveyor	22
Vertical conveyor	5
Sorter	2
<b>Handling systems</b>	
<b>System components</b>	
Bin stacker and destacker	Bins
Dynamic scales	Platforms
Label printers	20 SCS as shipping buffers
	Returns center
<b>Software</b>	
Logistics software	WAMAS®







## 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.

[ssi-schaefer.com](https://www.ssi-schaefer.com)

102018 © SSI SCHAEFER  
Printed in Austria.  
No liability for misprints.

**SSI SCHAEFER**