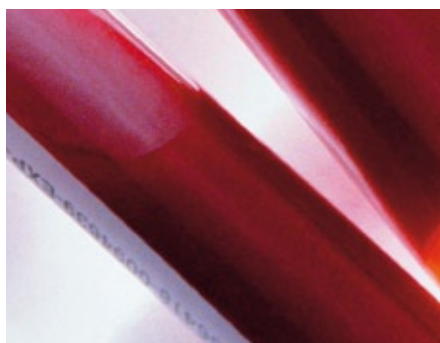
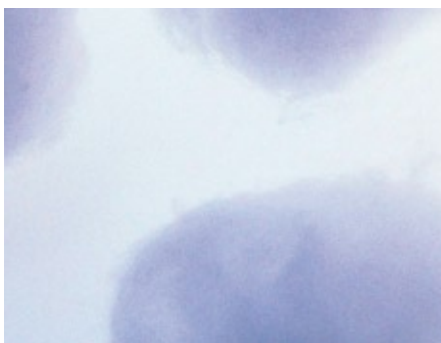


**AUTOMATED MATERIAL
TRANSPORT AND
AUTOMATED DRUG
MANAGEMENT**



HOSPITAL LOGISTICS



swisslog

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WORLD LEADING PROVIDER OF HOSPITAL LOGISTICS
 AUTOMATION: SWISSLOG HEALTHCARE SOLUTIONS



01 Swisslog headquarters 02 Sample transport

HEALTHCARE CHALLENGES

Healthcare services of many countries are faced with challenges due to tremendous changes within their environment. Changes like rapidly transforming demographic composition of the population, new medical procedures, and growing demands for healthcare services lead to steadily increasing costs.

National authorities constantly reduce their financial support by lowering the subsidies and in some countries by the implementation of lump sum compen-

sation systems. The cost pressure for healthcare service providers is rising enormously.

In order to ensure the provision of high-quality and cost-effective health services for all the population across income groups, the control of costs in hospitals is becoming crucial.

The reduction of operational costs by optimizing hospital logistics is still a novel method. A comprehensive view of supply chain and workflows is of highest importance for hospitals as well as for

their suppliers. Experience shows that the optimization of logistics processes can lead to substantial cost savings.

Swisslog offers a variety of automation solutions for hospital logistics, which help to improve the flow of material and therefore help to cut costs.

Swisslog has proven its competency and experience in hospital logistics solutions worldwide with more than 2000 installed systems.



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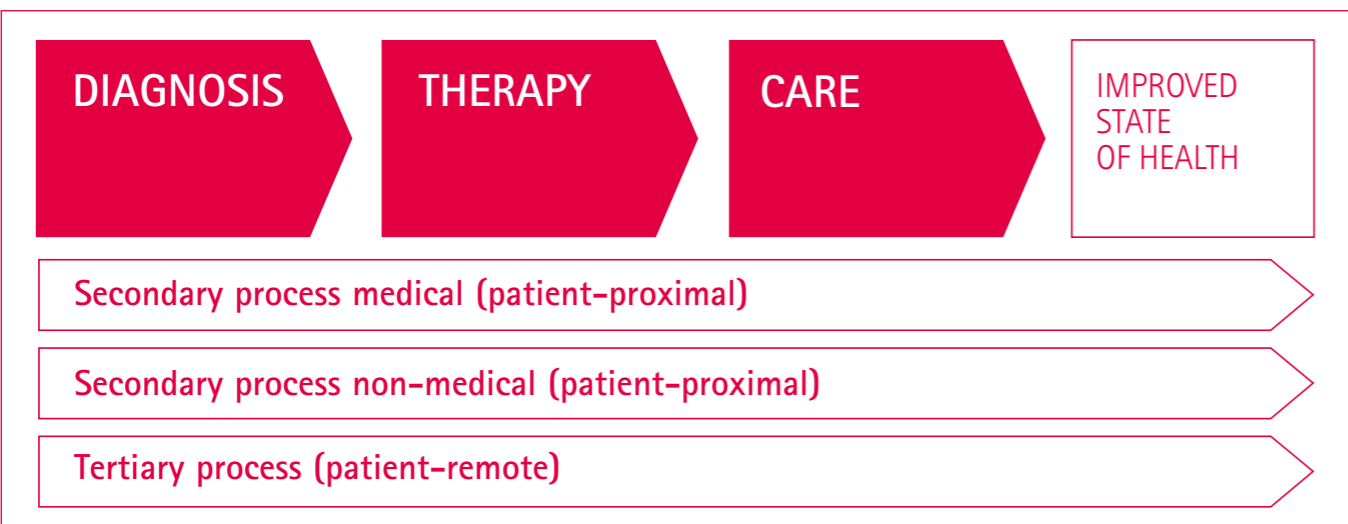
PROCESSES IN HOSPITALS

The target of each hospital is the improvement of the state of health of their patients. Processes for reaching this target are complex and extensive.

The core activities of the hospital in primary process are supported by secondary and tertiary processes. In these support processes many logistics processes can be found. Integrally seen, hospital logistics is a system of cross functions, coordinating and supporting the trans-sectoral flow of material, information, and patient provision.



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LOGISTICS IN HOSPITALS

Logistics processes in hospitals

Hospital logistics aim to support the primary process of the hospital in an optimal way. This enables hospitals to reduce their operational costs and meet the requirements for higher quality standards.

Many important logistics processes run within a hospital on a day-to-day basis. These processes can be assigned to the medical or non-medical secondary processes or to the tertiary processes.

Supporting logistics processes in medical secondary process

- > Patient logistics
- > Drug management
- > Logistics of laboratory goods
- > Logistics of medical goods
- > Logistics of sterile goods
- > Handling of data and documents
- > Disposal of hazardous waste

Supporting logistics processes in non-medical secondary process

- > Food management
- > Management of linen
- > Management of beds

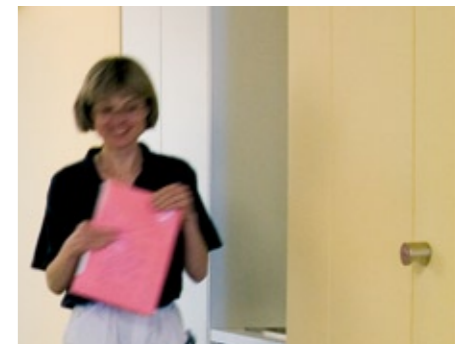
Supporting logistics processes in tertiary process

- > Management of administrative demands
- > Mail service
- > Disposal of non-hazardous waste

Core competences of Swisslog Healthcare Solutions

Swisslog Healthcare Solutions offers hospitals and other healthcare service providers automation solutions for their in-house logistics.

Swisslog is focusing on solutions for the automation of material transport and the automation of drug management.



03

01 Children's Hospital, University Hospital Duesseldorf 02 Process structure in hospitals 03 Manual transport of documents

AUTOMATED MATERIAL TRANSPORT

The transport of material is of highest importance in almost all logistics processes. Transport is executed either scheduled or on-demand.

Compared to industrial operations the quality of material transport in hospitals is essential. Wrong deliveries or inaccurate handling of items during the transport can have severe consequences for patients, employees, and hospital visitors.

ON-DEMAND MATERIAL TRANSPORT

Pneumatic Tube Systems

For non-planned, on-demand transport of items with limited weight and dimensions Swisslog's tube systems are the best choice.

with high precision. Fully automated sending and receiving stations securely hand over the carrier into the transport tube.

Special discharging modules ensure the safe handling of sensitive samples.

The goods are transported in special carriers at high speed through an individually designed system of tubes, facilitated by forced air pressure. Both short and long distance transport can be realized horizontally and vertically

TranspoNet

System features

- > Fully automated, PC-controlled
- > Application-specific tube diameter and tube network
- > Transport of items up to 5 kg
- > Minimum acoustic noise
- > Minimum maintenance requirements
- > High system availability
- > Gentle and safe handling of sensitive medical items e.g. erythrocyte concentrate

Applications

- > Logistics of laboratory items, specimen, blood products
- > On-demand transport of pharmaceuticals
- > On-demand transport of medical items
- > Handling of documents

Benefits

- > Time saving due to direct connection of departments
- > 24h operating state
- > Faster availability of test results
- > Minimizing of manual transport
- > Reduction of transport errors



THE QUALITY OF MATERIAL TRANSPORT IS OF HIGHEST IMPORTANCE



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01 Gentle discharging 02 Pneumatic tube carriers

Track vehicle systems

Track vehicle systems are best for on-demand transport of middle-sized items weighing up to 10 kg / 50 kg.

Standardized or specially designed containers transport various kinds of goods along an individually designed network of tracks. Running overhead and behind walls, the system guarantees a fast and secure material transport to essential hospital departments at all times.

A fast and reliable transport of material is guaranteed at all times.

UniCar / MultiCar

System features

- > Fully automated system
- > Customer-specific network of tracks
- > Vehicle payload up to 10 kg / 50 kg
- > Fast transport up to 1 m/s
- > Minimum acoustic noise
- > Safe handling of sensitive medical items

Applications

- > Transport of sterilized items
- > On-demand transport of laboratory items, specimen, blood products
- > On-demand transport of pharmaceuticals (medium-sized)
- > On-demand transport of medical items with higher volume or weight
- > Handling of documents
- > Disposal of waste

Benefits

- > Time saving due to direct connection of departments
- > 24h operating state
- > Faster availability of test results
- > Minimizing of manual transport
- > Reduction of damaged goods
- > Reduction of transport errors
- > Enhanced workplace safety

SCHEDULED MATERIAL TRANSPORT

Automated Guided Vehicles

Hospitals typically use containers for scheduled transport.

Swisslog offers a specially designed Automated Guided Vehicle for hospitals. Containers weighing up to 450 kg can be transported by the vehicle along a predefined route throughout the corridors and elevators of a facility. A unique on-board laser-guiding-system ensures the vehicle navigates its way through the building as well as detecting any obstacles. On-demand transport is also possible.

The Swisslog TransCar family consists of several different models, to cover all kinds of hospital applications.

TransCar LTC 2

System Features

- > Fully automated; vehicle drives along a predefined route
- > Customer-specific driving route
- > Easy system adjustment and extensions
- > Vehicle carries containers up to 450 kg
- > Transport speed up to 2 m/s
- > High security standard due to on-board laser-guiding-system
- > Low maintenance

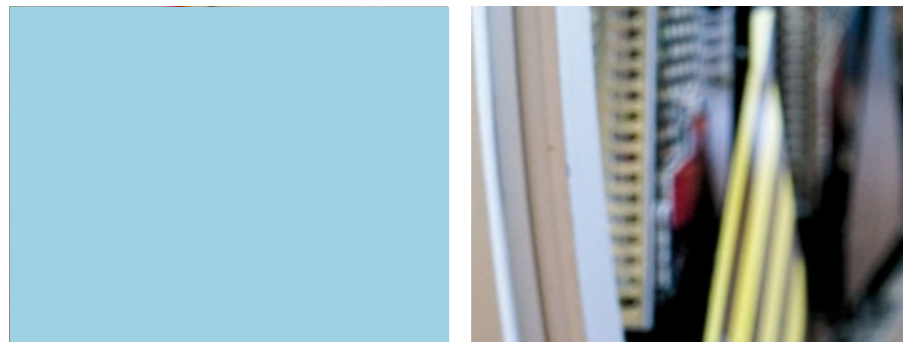
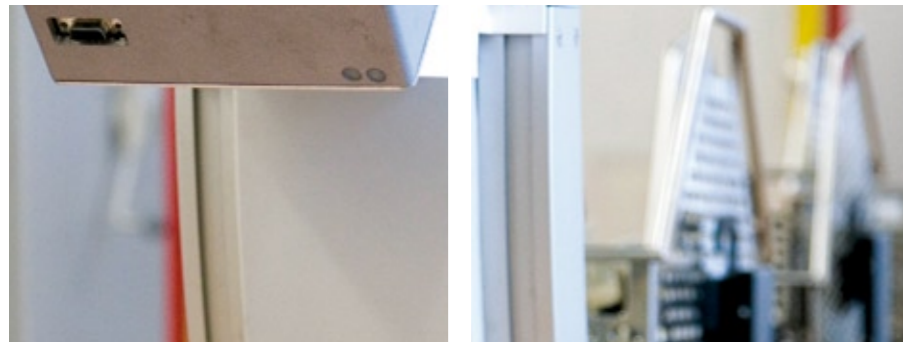
Applications

- > Transport of meals in special food containers
- > Transport of large quantities of pharmaceuticals
- > Scheduled transport of medical goods
- > Scheduled transport of sterile goods
- > Scheduled transport of linen and laundry
- > Disposal of waste
- > Management of documentation and administration items

Benefits

- > Reduction of staff dealing with manual transport
- > Minimizing of manual transport
- > 24h operating state
- > Reduction of transport errors
- > Reduction of transport damage to facility and carriers
- > Optimization of transport flows (reduction of bottle-necks)
- > Enhanced workplace safety

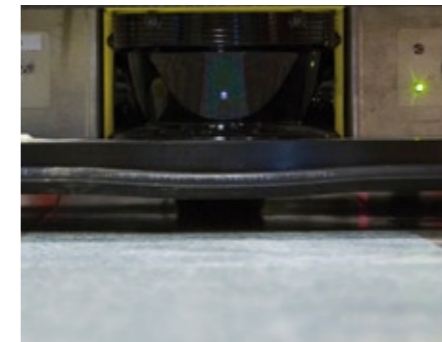
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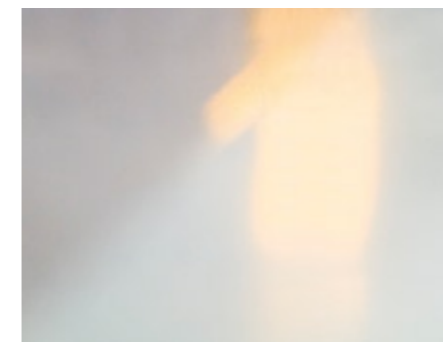
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01 User terminal UniCar system 02 Vertical track mounting UniCar system



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01 Swisslog TransCar LTC 2

AUTOMATED DRUG MANAGEMENT / PHARMACY AUTOMATION

Unit Dose – Automated Packaging

In drug management processes with unit doses the pharmaceuticals are no longer provided in the original packaging, instead of this, the medication is distributed in individual doses.

Blisters, oral solids, suppositories, phials, and syringes are all packaged into single bar-coded bags.

Optionally the unit doses are stored in a unique unit dose storage system. Based on an electronic prescription, which is sent to the Swisslog system, patient-related daily medication will be put together fully automated.

Bar codes ensure the verification of the patient and the drug therapy at all times. Not administered drugs can be sent back to the unit dose storage and be reused.

The system offers interfaces to any prescription software and enables comprehensive, automated drug management in the hospital.

PillPick

System features

Modular system configuration according to customer requirements:

- > PillPicker for automated packing of drugs
- > AutoBox / AutoPhial for the automated delivery of drug boxes into the PillPicker
- > PillPick Manager for PillPick system management and interface to clinical information system
- > BoxStation for managing and filling of drug boxes
- > DrugNest for central storage of the unit doses
- > PickRing for the automated manufacture of the patient-related drug therapy

Applications

- > Drug management with Unit Dose

Benefits

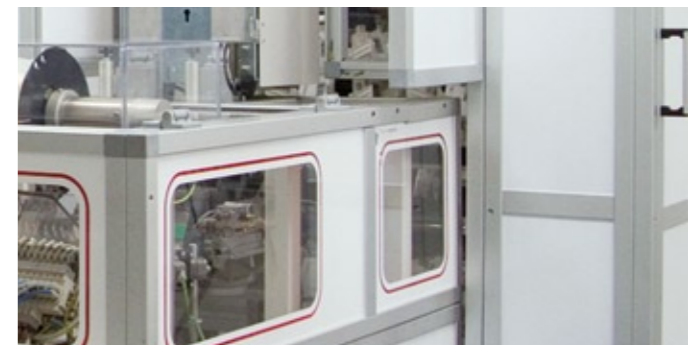
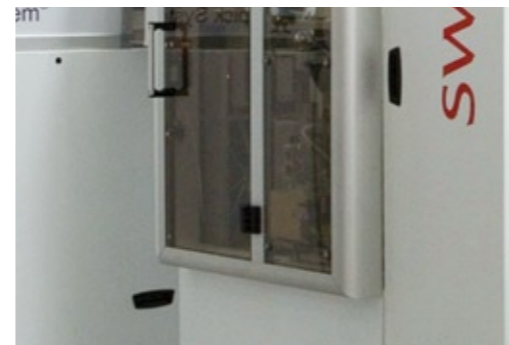
- > Lowering of peripheral drug storage
- > Reduction in use of pharmaceutical products and therefore reduction in cost for drugs of between 10 – 30 % (reduction of wastage, standardization, recycling of drugs that are not administered)
- > Massive increase in safety of the entire drug management process (bar codes)
- > Increase in transparency of drug management and drug consumption
- > Shift of drug picking from ward to the hospital pharmacy



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01 Filling of PillBox 02 PillPick system 03 Unit Dose storage



AUTOMATED DRUG MANAGEMENT INCREASES PATIENT SAFETY

01

AUTOMATED DRUG MANAGEMENT / PHARMACY AUTOMATION

Drug storage and retrieval

Central hospital pharmacies are faced with an enormous challenge due to the handling of hundreds of different drugs.

In order to utilize restricted space in an optimal way Swisslog developed an automated storage and retrieval system. A special module enables easy and safe picking of drugs and other medical items of different shape.

Equipped with "intelligent" drawers the BoxPicker system allows an easy and safe picking of goods.

BoxPicker

System features

- > Modular dimensions
- > High storage capacity
- > Simultaneous picking in several storage boxes
- > Easy handling and flexible picking stations
- > Stock control
- > Optional storage cooling

Applications

- > Drug and medical items storage
- > Picking of pharmaceuticals and medical goods

Benefits

- > Increased quality of picking
- > Decrease of required storage space
- > Optimized stock management



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SWISSLOG AS A PARTNER

SWISSLOG – YOUR PARTNER FOR HOSPITAL LOGISTICS

Consulting services

Swisslog has gained comprehensive knowledge through its long-standing experience in the design of logistics processes and the optimization of in-house logistics. If requested, we will support our customers already in the conceptual phase of a project, providing logistics planning and material flow analysis.

Project management

Swisslog's team of project engineers guarantee the hand-over of turn-key logistics automation solutions worldwide. We make sure that our solutions provide the optimum benefit and the highest possible profitability for customers.

Customer-specific solutions

Innovation is of highest importance to Swisslog. We are open to new and unconventional solutions for hospitals like new financing plans, business models, or customer-specific system design.

Customer support

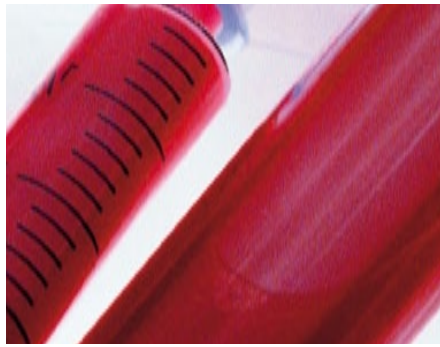
Swisslog targets a long-lasting partnership with its system users. We therefore provide you with:

- > System check-up
- > Preventive maintenance
- > Trouble-shooting
- > System upgrading
- > System extensions

Using Swisslog's customer service, the life cycle of the system will distinctly extend. The operational costs can be reduced. Swisslog offers a network of service technicians and system engineers in Europe, Asia and North America.



01 BoxPicker system 02 Picking procedure 03 PillPick maintenance



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