

## CASE STUDY

## ST. OLAVS HOSPITAL TRONDHEIM, NORWAY



### Smart process for leading hospital: The realization of a premier case of integrated logistics solutions in the hospital sector

"This type of PillPick system requires that the hospital has a certain size, but we estimate a payback time of less than 10 years for the drugstore. For the hospital, this is profitable from day one."

Gunn Fredriksen  
Managing Director  
Mid Norway Hospital Chemist's

#### The Customer and the Requirements

St. Olavs Hospital is a health enterprise and university hospital in the Mid-Norway region; an area which consists of the counties of Møre and Romsdal, Sør-Trøndelag and Nord-Trøndelag, and has a total of 630 000 inhabitants.

The hospital covers nearly 200 000 m<sup>2</sup>, built on a central structure with nine different units connected together with supply tunnels. The hospital project consists of new buildings and a new organization. The project commenced in 2000 with the central structure and the first clinical centres were completed in 2006. The entire project will be finished

in 2013. By then, approximately 80% of the existing buildings will have been replaced by new ones, the rest is rebuilt.

The University Hospital in Trondheim is the first university in Norway which completely integrates patient treatment, research and teaching, with the objective to set new standards in the Nordic healthcare sector.

During the planning phase, the hospital recognized the importance of efficient logistics systems and understood them as preconditions to meet the future demands and challenges of the healthcare sector.

swisslog



## The integrated solution with Swisslog systems: PillPick, TranspoNet and TransCar.

Since 2001, Swisslog has been equipping St. Olavs Hospital with automated in-house logistics systems. The implementation of the TranspoNet Pneumatic Tube System was followed by the installation of the TransCar Automated Guided Vehicle System and the ordering of the PillPick Automated Drug Management System.

**The TranspoNet Pneumatic Tube System** with a diameter of 160 mm comprises about 170 sending and/or receiving stations and over 10 000 m of tube, and connects all the hospital facilities together. Every spontaneous transport requirement between care units, wards, laboratory, pharmacy and operation theatres is now possible by using carriers. With a payload up to 5 kg, carriers transport blood products, cytostatic drugs, instantaneous sections, samples and medication through the hospital, relieving staff from time consuming portering activities and freeing up valuable time for patient care.

**The TransCar Automated Guided Vehicle System** implemented for the containerized transport of food and consumer goods takes also a significant role in the planned logistics of a run-

ning hospital. Most consumer goods, linen and clothes at St. Olavs come from external warehouses and arrive at the loading dock in trolleys, ready for transport with the automated guided vehicles. TransCar transports containers with an overall weight up to 500 kg completely automatically along pre-programmed routes and to a pre-determined schedule. The Swisslog guided vehicles summon elevators and open and close doors as required, by communicating over the wireless IP network. Lights turn off when no motion is detected and a unique laser navigation system enables the vehicles to identify obstacles and to scan the contours of the building for reference. The potential benefits of storing products only at the point-of-use improve control and lower stock levels.

**The PillPick Automated Drug Management System** is a further step in logistics excellence. At the beginning of 2009, it was decided to install two PillPick Systems at the Hospital Pharmacy Trondheim to supply St. Olavs University Hospital. The Swisslog pharmacy robot automates the packaging, storage and dispensing of tablets, capsules, ampoules, vials, cups and syringes in unit doses. Together, the two systems will supply more than 13 000 unit doses on daily basis. Over 10 000 of these unit doses will be tablets. Each PillPick System is similar to the one already delivered and functional at the new

Ahus hospital outside Oslo, Norway, but the duplication gives significantly higher capacity and reliability, suitable for the larger number of patients. The PillPick Systems will be operational in fall 2010 and include a newly developed transfer unit. In a fully automated process, this unit places the rings that carry the patient-specific, 24-hour medication orders into pneumatic tube carriers. These bar-coded therapy rings are transported by the Pneumatic Tube System directly to the relevant ward, ensuring a fast and safe delivery of the medicine to the patient. In case of emergency the delivery is planned within 15 minutes from the order entry.

The PillPick System will reduce potential medication errors and cut down on waste caused by out-of-date medicines. Moreover, it will reduce the work needed for handling medicines on the wards, thus allowing more time to concentrate on patient care. St. Olavs will benefit not only in terms of quality, but also economically.

From a logistics perspective, the innovations at St. Olavs Hospital represent a state-of-the-art technology; every logistics process has been optimized for quality and efficiency on behalf of the patient.

## LOGISTICS DATA

### PillPick Drug Management System

Start up:	2010
Potential storage capacity:	110 000 unit doses
Unit doses dispensing:	520 per hour
Inpatients served:	1 000

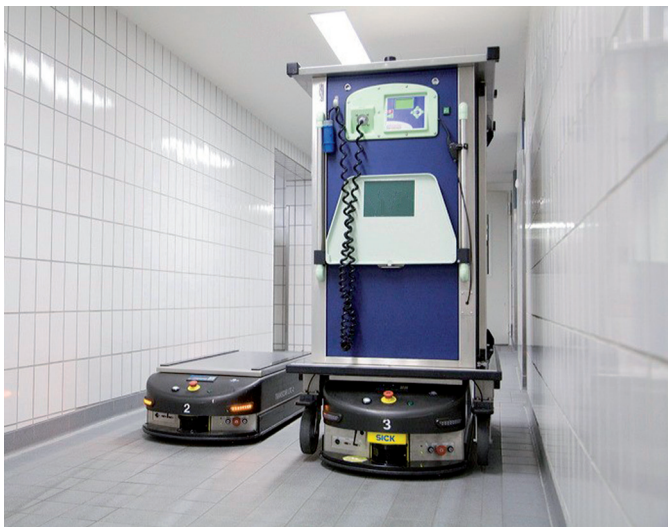
### TranspoNet Pneumatic Tube System

Start up:	2003
Tube length:	10 500 m
Linear transfer units:	7
No. of diverters:	90
No. of stations:	170
Tube diameter:	160 mm

### TransCar Automated Guided Vehicles System

Start up:	2005
Track length:	4500 m
No. of sending stations:	49
No. of receiving stations:	46
No. of combi-stations:	114
No. of vehicles:	21
Control:	PC (TCMS)





## Benefits of the Solution

- > Optimization of logistics processes in a digital hospital
- > More employee and patient satisfaction due to reliable service and fast product handling
- > Cost and time savings due to automation of the logistic processes
- > Staff relieved from portering activities have more time for patient care
- > Reduction of potential medication errors and waste caused by out-of-date medicines

## Scope of Services

- > Two PillPick Automated Drug Management Systems
- > Pneumatic Tube Systems TranspoNet with 170 sending and receiving stations
- > Automated Guided Vehicle System TransCar with 21 vehicles and 209 stations

## CUSTOMISATION

St. Olavs Hospital is a 1 000 bed University Hospital located in Trondheim, a medium sized town on the West Coast of Norway, and is one of the leading healthcare institutes in Europe.

Swisslog, as a leading provider of integrated logistics solutions, is committed to delivering first-class solutions and

innovations that maximise benefits and efficiencies for the customer. For example, rather than just use a standardized solution, at St. Olavs Swisslog programmed the TransCar vehicles to talk into the regional dialect.

A further, and fairly amusing, part of integration processes instigated by the

University Hospital was the contest held on the national radio station to name each TransCar vehicle with the name of a famous Viking. For obvious equality reason, about 10 male and 10 female names were chosen.

## SWISSLOG - PARTNER FOR LOGISTIC SOLUTIONS

### AUTOMATED MATERIALS TRANSPORT AND AUTOMATED DRUG MANAGEMENT

- > PC-controlled Pneumatic Tube Systems
- > Automated Guided Vehicle Systems
- > Electric Track Vehicle Systems
- > Automated Drug Management Systems



**swisslog**

Swisslog AS  
Smøråsveien 22  
5238 Rådal  
Norway

Phone +4795065506  
[healthcare.nordic@swisslog.com](mailto:healthcare.nordic@swisslog.com)

[WWW.SWISSLOG.COM](http://WWW.SWISSLOG.COM)