



AUTOMATING HOSPITAL LOGISTICS

WITH ROBOTICS AND AUTOMATION



GIBOTECH^{AS}
moving technology

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REFERENCES

THESE HOSPITALS ARE IN PROCESS OR HAVE ALREADY IMPLEMENTED OUR ROBOT TECHNOLOGY TO IMPROVE THEIR WORKFLOW AND LOGISTICS

Sterile Processing Department (SPD)

Rede Sarah (BR)	2027	
Helse Stavanger (NO)	In operation	
Malmö Sjukhusområdet (SE)		
Helse Bergen (NO)		
Nyt OUH (DK)		
Universitätsklinikum Schleswig-Holstein, Campus Kiel (DE)		
Herlev Hospital (DK)		
Universitätsklinikum Schleswig-Holstein, Campus Lübeck (DE)		
Rigshospitalet (DK)		
Gentofte Hospital (DK)		2012

Laboratory automation

Odense Universitetshospital (DK)	2019
Nordsjællands Hospital (DK)	2015

Hospital logistics

Hamburg Military Hospital	2027	
AWT Koblenz and Karlsruhe (DE)	In operation	
Region Hovedstaden (DK)		
Helse Møre og Romsdal (NO)		
Nyt Aalborg Universitetshospital (DK)		
Nyt OUH (DK)		
Sjællands Universitetshospital, Køge (DK)		
Regionshospitalet Gødstrup (DK)		
Rigshospitalet (DK)		
Herlev Hospital (DK)		2015

STERILE PROCESSING DEPARTMENT



INTRODUCING ROBOT TECHNOLOGY

IN THE STERILE SUPPLY WORKFLOW

Many hospitals have begun to automate their Sterile Processing Departments (SPDs), where operation instruments are cleaned, inspected and sterilized. Some hospitals have even established an SPD that can service more hospitals with clean instruments to utilize the resources in the best possible way.

For many years, Gibotech has automated more of these flows and repetitive tasks within the SPDs, generating great knowledge and experience in working within the hospital sector. Therefore, Gibotech is a valuable partner when automating an SPD whether the aim is to increase production, expand capacity, secure traceability, or improve instrument management or the working environment.

In the following, Gibotech has divided the different tasks within the complete flow of an SPD and turned each process into a single module, making it possible to customize the final solution to meet the demands of almost all hospital types and sizes.

First and foremost, automating the SPD leads to increased efficiency in the form of more completed operations, as the flow of instruments is consistent and 100 % reliable.

Robots can be placed in less desirable working environments than healthcare personnel and using inexpensive square meters like a basement etc. will lead to building optimization and a smaller footprint.

Employee satisfaction will be highly improved by less manual work, resulting in a better working environment and improved ergonomics. Healthcare personnel may spend more time on satisfying and value-adding work and will have fewer sick days.

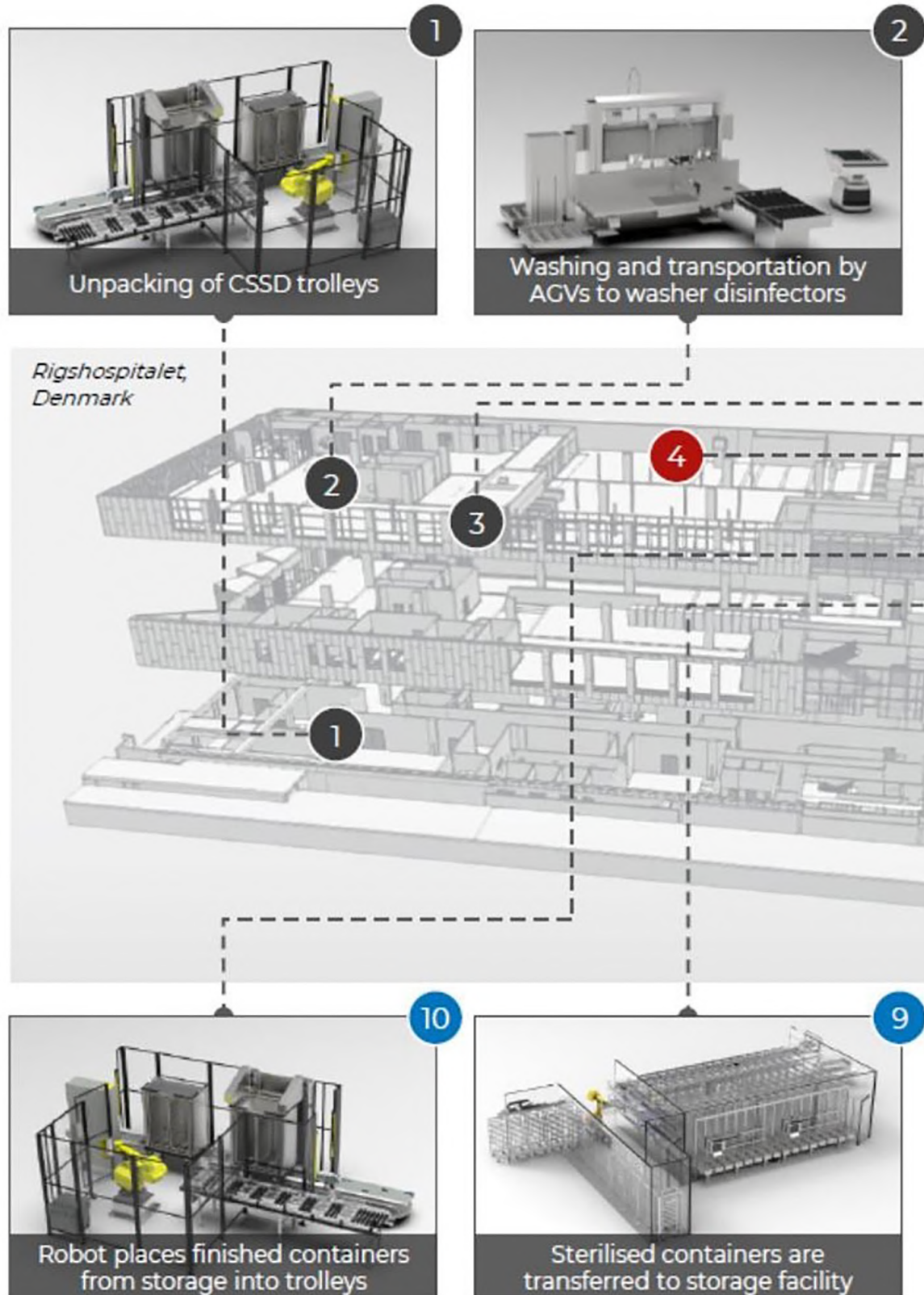
Various robot technologies can be applied in the sterile supply department depending on the area to be automated: free-arm robots, AGVs (Automated Guided Vehicles), vision and weight systems, automated stock systems and lifts and shuttles.

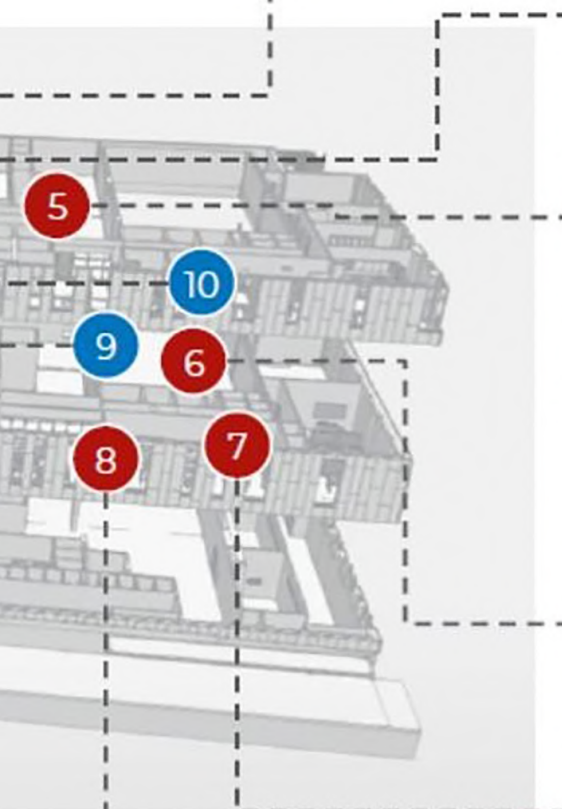
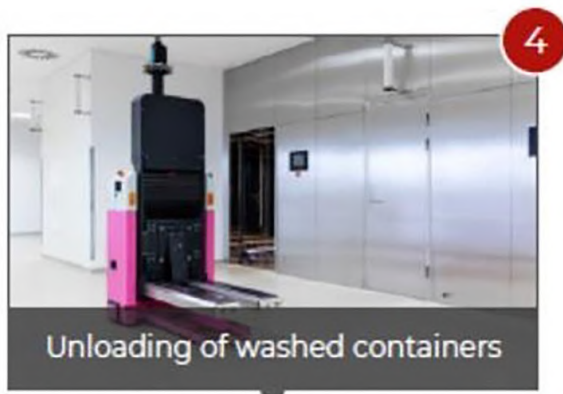
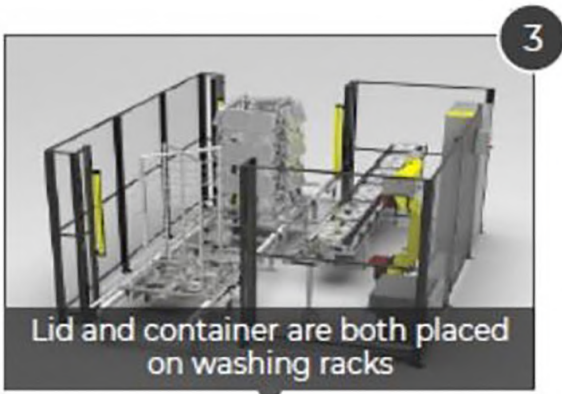
The Gibotech automation solution can be fully integrated with any reprocessing equipment and sterile supply management system.

The solution is based on a modular principle making it possible to customize to required demands and capacities.

DISCOVER THE SPD

AN ILLUSTRATIVE EXAMPLE OF AUTOMATED PROCESSES IN THE SPD





HERLEV HOSPITAL AND RIGSHOSPITALET

FULLY AUTOMATED STERILE PROCESSING DEPARTMENTS AT HERLEV HOSPITAL AND RIGSHOSPITALET



The potential for automation in the healthcare industry is huge because of the many standardized processes which are suitable for automation – Sterile Processing Departments are only one example.

With the new Sterile Processing Department, we are creating an overall solution where the different automation solutions are connected like beads on a string.

*Kevin Jungløv,
advisor, Niras*

In 2011, Gibotech installed the world's first fully automatic Sterile Processing Department (SPD) at Gentofte Hospital. The results from Gentofte subsequently served as the inspiration for two new SPDs at Rigshospitalet and Herlev Hospital which have centralized the SPD processes and storage for the entire Capital Region.

The purpose of centralizing the regional SPDs was to collect sterile goods from all hospitals in the region and process them in fully automated high-performing facilities. The benefits of centralizing the processes and storage of surgical instruments were to increase the availability of surgical instruments and increase the quality of SPD processes and documentation to a consistently high level with fewer manual interactions.

Logistics and transport of equipment – right from the arrival until the sterilized instruments are ready for use in surgeries – are now automated by using robots, conveyors, automatic storage and mobile robots. The automated handling improves hygiene and reduces the risk of infections ensuring the highest level of patient safety.

The automatic Sterile Processing Department in the Capital Region has a capacity equivalent to 100,000 surgeries per year.



UNIVERSITÄTSKLINIKUM SCHLESWIG-HOLSTEIN, CAMPUS LÜBECK

AUTOMATED STERILE STORAGE



The automated SPD and case cart storage from Gibotech has several advantages for us. The physical workload for our healthcare personnel is reduced because we have removed some of the heavy, physical tasks. The full traceability of the materials is ensured, and the storage is utilized even better when it is automated; even though it is a “chaos storage”.

Joss Giese

OP-manager, Universitätsklinikum Schleswig-Holstein

When the newly built Universitätsklinikum Schleswig-Holstein, Campus Lübeck (UKSH Lübeck) opened its doors in October 2021 it was with an automated Sterile Processing Department delivered and installed by Gibotech. A substantial part of the sterile department is the sterile storage where surgical equipment is stored until collected for surgery. The entire process in the sterile storage is untouched by human hands and fully automated.

When the surgical equipment is cleaned and inspected, it is packed in wire baskets and registered. Hereafter, a robot stacks the wire baskets and sorts them by weight. The baskets go through the autoclave and end up in the sterile storage. The storage is a so-called “chaos storage” where conveyors and an automatic shuttle simply place the wire baskets on free shelves. The software makes sure to keep track of the location along with optimising the capacity of the storage. When equipment is needed for a scheduled surgery, the shuttle collects the wire basket containing the right equipment and a robot with a specially designed tool places the basket on a trolley. The trolley is then forwarded on a belt conveyor modified specifically to the trolleys at UKSH Lübeck.

UKSH Lübeck wanted to reduce the physical workload for the healthcare personnel by removing repetitive tasks and heavy lifting. They succeeded in this by e.g. using tables that can be adjusted ergonomically correctly for each employee. Another benefit is keeping track of the master data and ensuring full traceability throughout the entire process.



LOADING AND UNLOADING OF WASHING RACKS

AUTOMATIC LOADING OF CONTAINERS ON WASHING RACKS



Empty containers and washing racks are automatically transferred into the cell by a conveyor. The washing racks stop on a turntable conveyor that rotates for the robot to fill all four sides of the washing rack.

A robot lifts the container lid followed by the container and places both in the correct position on the washing rack.

After the filling process is completed, the washing rack is transported out of the cell by the conveyor.

Fully automated process

The cell is completely automated ensuring a continuous flow of transportation and filling of washing racks. The robot is equipped with a changeable tool head allowing it to automatically change tools for different types of containers. Transport to the washer-disinfectors can be handled manually, but using an AGV (Automated Guided Vehicle) will ensure a steady flow.



Application area:	Soiled area
Handles:	Containers
Task:	Separates lids and containers and loads them onto washing racks
Footprint:	~ 15 m ²

UNLOADING OF INSTRUMENT TRAYS

AUTOMATIC UNLOADING OF TRAYS FROM CONTAINERS



This cell handles both fully loaded and empty containers with unlocked lids. Containers are transported by an infeed roller conveyor and make a temporary stop at the tray extraction station.

The robot lifts the lid and picks up the tray from the container. The container is forwarded and the lid is replaced on the container.

Finally, the separated container and tray are transported on their respective conveyors and forwarded to the next task.

Improvement of ergonomics

The cell is a completely automated process ensuring a continuous flow and unloading of trays from containers. Integrating this cell in the sterile supply workflow decreases staff turnover and relieves the physical burden on staff by removing repetitive tasks such as the unloading of trays. Instead, staff can focus on delivering value-added work.



Application area:	Soiled area
Handles:	Containers and trays
Task:	Unloads trays from the containers
Footprint:	~ 12,5 m ²

AUTOMATIC TABLES AND TRANSPORT

HEIGHT-ADJUSTABLE TABLES AND AGV TRANSPORT



Containers are transported by AGVs (Automated Guided Vehicles) to the roller conveyor in the manual washing area.

The roller conveyor transports the containers to the workstations, where the equipment is either washed or packed. The tables are automatically height-adjustable to fit the individual employee. They are primed for the different processes and to consider the manual working procedures.

An AGV then transports the empty containers to the cabinet washer-disinfectors.

Along with the roller conveyors and AGVs making it unnecessary for the healthcare personnel to lift or transport any containers, ergonomics are highly improved for the staff, ensuring the best possible working environment.

Automatic integration with the supply management system

This workstation includes manual work and is supported by the conveyors and AGVs. Integration with the sterile supply management system ensures that all processes and handling encountered by the instruments at this workstation are recorded. When staff log in to the workstation on the touchpad, the height of the workstation and the light are automatically adjusted to the specific requests of that healthcare personnel.



- Application area:** Soiled and clean area
- Handles:** Containers and trays
- Task:** Automatic transport between workstations
- Table specifications:** Max load on table: 100 kg
Height adjustable: 630-1280 mm
- Footprint:** ~ 6,5 m2 per double sided table

LOADING AND UNLOADING OF STERILIZER RACKS

AUTOMATIC LOADING OF CONTAINERS ON STERILIZER RACKS



The sterilizer racks and containers are automatically transported by the conveyor into the cell.

The robot picks up the lid and places it on the container which is then transported to the container-locking device.

Each container is automatically locked and placed in the sterilizer rack by the robot.

When the rack is full, it is transported out of the cell by the conveyor.

The optimal placing of containers

The robot is designed to consider the weight of each container when placing them on the sterilizer racks. The automatic weight consideration ensures that the heaviest containers are always placed at the bottom of the sterilizer rack, providing better working conditions and ergonomics for the staff.



- Application area:** Clean and sterile area
- Handles:** Containers
- Task:** Loads containers on sterilizer racks

LOADING AND UNLOADING OF TRANSPORT TROLLEYS/CASE CARTS

AUTOMATIC LOADING OF CONTAINERS IN TRANSPORT TROLLEYS/CASE CARTS



Containers and open transport trolleys/case carts are transported into the cell by a conveyor. The containers are picked up by a robot and placed in an open transport trolley/case cart.

When the transport trolley/case cart is full, the doors are automatically closed and the trolley/cart is transported by a conveyor to the next task.

Tracking and sealing

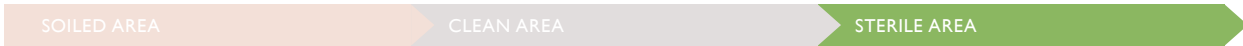
The containers are loaded in transport trolleys/case carts according to orders from the surgical scheduling system. Tracking information regarding the loaded containers is sent to the sterile supply management system, ensuring documentation and traceability of each instrument. When closed, the doors of the transport trolley/case cart are sealed and marked with a special tamper sticker, eliminating the risk of someone opening the trolley/cart inadvertently before it reaches the operating room.



Application area:	Soiled and sterile area
Handles:	Containers and transport trolleys/case carts
Task:	Loads containers into transport trolleys/case carts
Footprint:	14 ~ 16 m ²

STERILE STORAGE SYSTEM

AUTOMATIC STORAGE AND RETRIEVAL OF STERILE GOODS



Containers are transported by a conveyor to the automatic storage system. The storage shuttle handles one item per cycle and transfers items between one or more levels.

Incoming items are picked up and transported to the desired position in the racking system. The automatic storage contains shelves with double depth. If the item is positioned at the back of the shelf, the shuttle will automatically reshuffle the items.

The storage robot picks the items based on instructions from the supply management system and the system controls stock management, including management of expiry dates and first-in-first-out principles.

Completely or partly sterile storage

The automated storage system is fully integrated with other sterile supply management systems and may be installed in either a fully or partly sterile version. In the fully sterile storage system, the sterilized instruments are transported in nets in open containers to and from a sterile racking system. In the partly sterile storage system, the sterilized instruments are transported in sealed containers and placed in a non-sterile racking system.



- Application area:** Sterile area
- Handles:** Containers, load carriers, boxes, wire baskets
- Task:** Stores and transports containers in and out of stock

ADVANTAGES OF AUTOMATION

YOU WILL GET SOME SIGNIFICANT ADVANTAGES IF YOU CHOOSE TO AUTOMATE ONE OR MORE PROCESSES AT YOUR HOSPITAL

1

Increased safety

When using robots for previously manual tasks, the risk of injuries along with material damage is reduced considerably.

2

Minimizes risk of human errors

Automation is about standardizing and programming procedures. The robot will only know how to conduct the programmed procedures.

3

Better utilization of materials

The materials will be traceable. This provides a better overview of e.g. the capacity in the storage, and which goods have just been delivered.

4

Increased efficiency

Because the robots undertake repetitive tasks, this emancipates the healthcare personnel and gives them even more time for clinical, quality and patient-focused tasks.

5

Greater employee satisfaction

Along with the ergonomic advantages, your healthcare personnel will get proper training, so they are comfortable using the automation solution.

6

Better working environment

Your healthcare personnel will get a healthier working environment with no or fewer repetitive tasks to wear on their bodies.

7

Better utilization of facilities

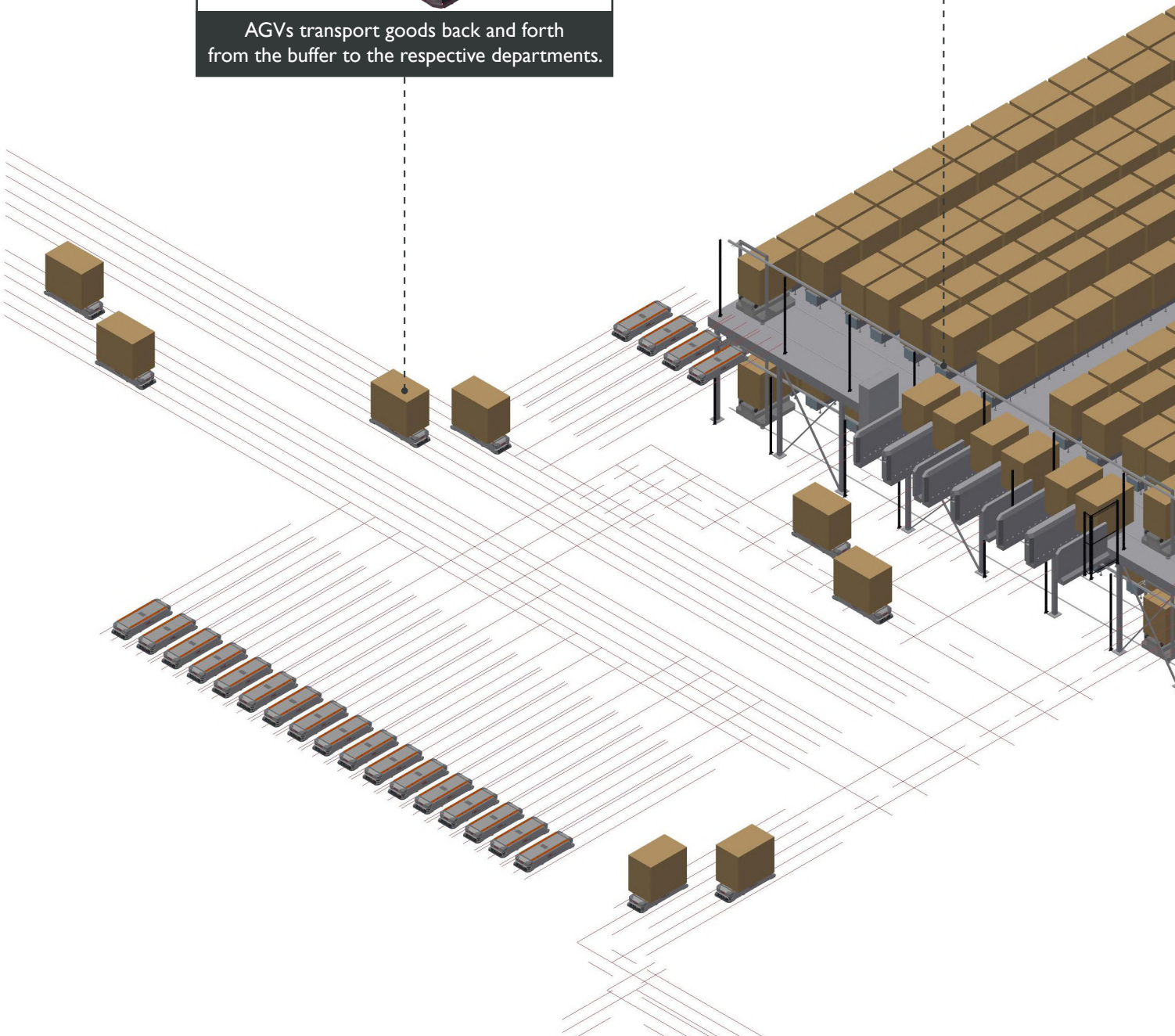
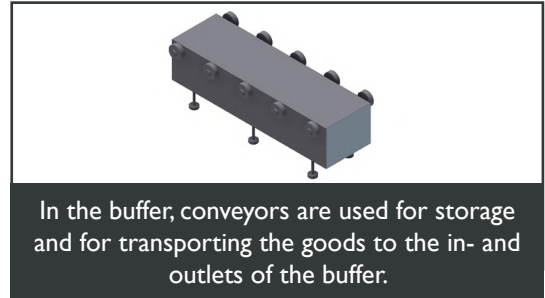
An automation solution from Gibotech is scalable. This means that the solution can fit into your layout to get the most out of the square meters.

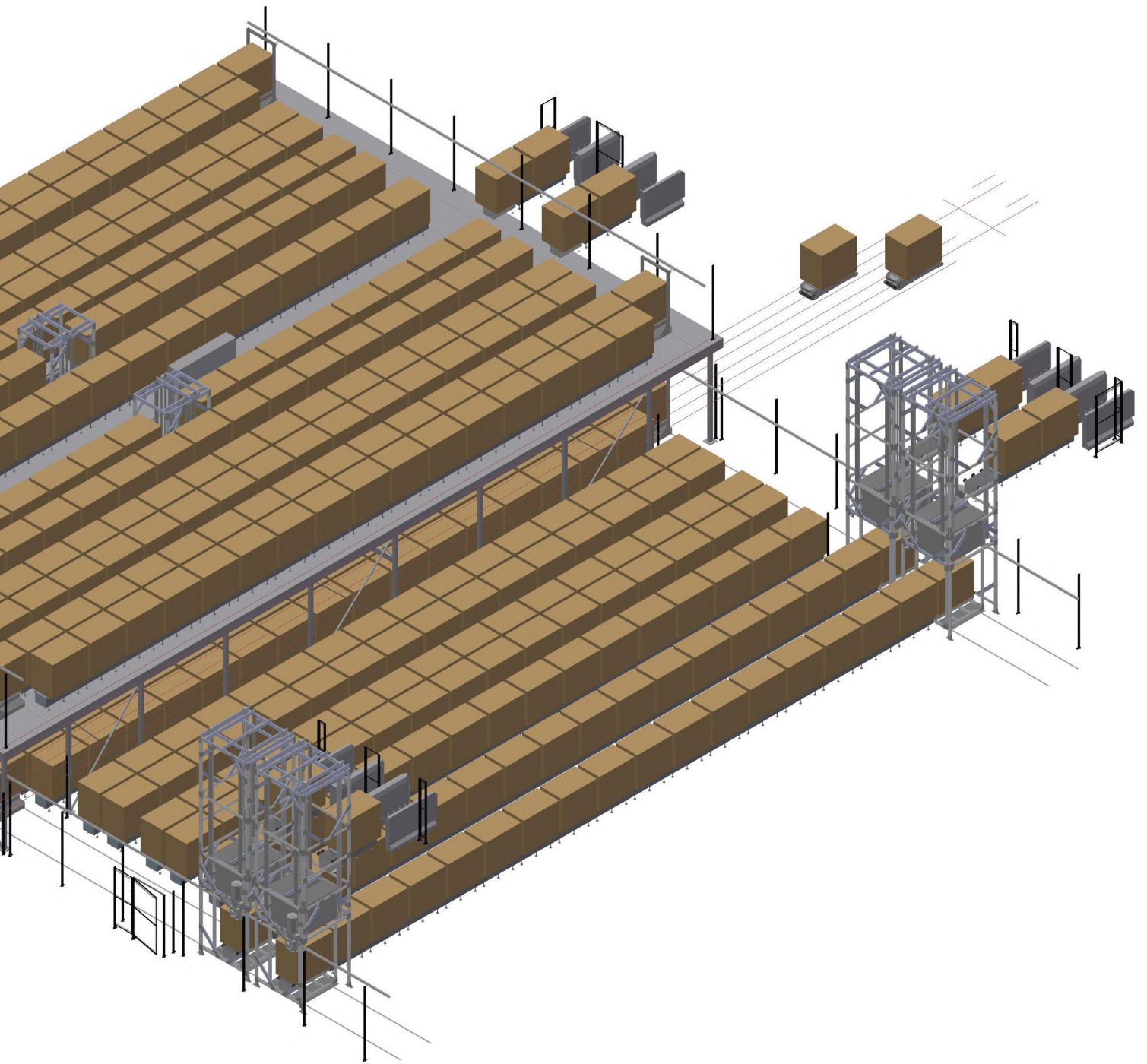
HOSPITAL LOGISTICS



DISCOVER THE HOSPITAL LOGISTICS

AN ILLUSTRATIVE EXAMPLE OF A BUFFER AND AGV SYSTEM





HERLEV HOSPITAL

LOGISTICS IN HOSPITALS



Our new emergency department will only store goods for 25 hours of use. We have to use our space much better and more useful for staff and patients and not for large storages for consumer goods. No other hospital has integrated so many functions and goods flow including waste management with IT.

I will call it the world's most automated system ever in a hospital.

*Arne Preben Rask,
project director*

Automating the internal distribution of goods in the hospital made the way for building optimization, freed up staff for more patient care, and resulted in a tidy-looking hospital.

The entire flow of consumer goods and waste products in and out of the hospital is managed by computers. Mobile trucks and AGVs transport the hospital's trolleys around the hospital. The AGVs were co-designed by Herlev Hospital to be forklifts using the forks to lift the trolleys enabling the hospital to keep its original trolleys instead of investing in new ones. As a result, the repetitive, time-consuming, and heavy work of moving goods around is limited.

Incoming goods in transport trolleys are placed on conveyor belts and taken to the basement by lifts or shuttles. Herlev Hospital has 40-45 belt conveyors and can receive goods during nighttime. The IT system ensures that trolleys are placed in the right order in relation to when they are to be used in the hospital. Upon request, an AGV will pick up the trolley and deliver it to the right department. The distribution centre may handle 1600-1700 trolleys a day.

IT management of the flow with more frequent deliveries reduces stock in the departments to only a few days' use. When stock is running out, mobile robots arrive with new supplies after the "just in time" principle.



REGIONSHOSPITALET GØDSTRUP

LOGISTICS IN HOSPITALS WITH MOBILE ROBOTS



It has been a clear objective at Regionshospitalet Gødstrup to automate the transportation of goods, clothing/linen and internal supplies. We chose an AGV system due to its flexibility as well as its ability to be adjusted to meet future needs.

*Ole Teglgaard,
chief consultant*

Regionshospitalet Gødstrup is a new build hospital situated in western Jutland. The hospital covers a total of 140,000 m².

The complete logistics solution consists of the delivery of 15 AGVs, incl. charging stations and 276 supply-station seats including design, delivery, assembly, commissioning, full deployment and installation, full interface integration, training, and service.

Gibotech has been responsible for the design, complete delivery, installation, and start-up of the logistics system in connection with the construction and automation of the hospital and the service building.

To meet the requirements, Gibotech installed an AGV system to distribute the following groups of goods placed in carts around the hospital: food, consumables, clothing/linen, garbage, operating carts, and fluids. Consumables and clothing/linen packed on carts come from external suppliers and are received in the service building in goods delivery. Here, the carts are placed in guiding rails and transport orders are made in the AGV system.

The service building is located at terrain level. From here the AGV system drives down to the basement via a ramp where the AGVs drive to a number of AGV lifts located around the hospital.



NYT AALBORG UNIVERSITETSHOSPITAL

AGV AND AUTOMATIC BUFFER SYSTEM



Right from the idea phase of the project, Region Nordjylland and Aalborg Universitetshospital wanted to automate the transportation jobs at the new hospital in Aalborg. Therefore, AGV transports have been included in all stages of the project. This is, among other things, shown by the separate elevators for technical transportation. The reason for this wish is both an economic efficiency improvement of the field, and a wish to support the “just in time” principle to an even greater extent.

*Niels Corneliussen,
project manager for the AGV system at Nyt Aalborg Universitetshospital*

At Nyt Aalborg Universitetshospital Gibotech is delivering and installing a widescale fully automated AGV and buffer system. The system will serve the entire hospital with the Service City as its base. In the Service City, the main buffer is located. Here, pre-packed case carts with sterile goods, linen, store items, medicine and fluids are stored until needed at the hospital. The AGVs return to the main buffer with empty case carts for washing and refilling.

The production kitchen in the Service City has its own smaller buffer. Here, the soiled case carts are first led to the kitchen’s dishwashing, where they are emptied for service and leftover food. The carts are cleaned and stored in the kitchen’s buffer until they are manually refilled with food in the kitchen’s packing area. The AGVs then transport the filled case carts directly into the hospital.

The AGV transport goes through a service tunnel which connects the ground floor of the Service City to the basement floor of the hospital. When the AGVs arrive at the correct clinique/department elevator, the AGV system has already reserved the elevator to take care of the vertical transport. From here, the AGV drives directly into the clinique’s or the department’s supply room and delivers the case cart by an AGV station, where the healthcare personnel can pick it up. The AGV is now ready to accept another task or go to the charging station if there, at the moment, are no transportation tasks.



NYT OUH

AUTOMATED KITCHEN WITH EMPTYING ROBOT, WASHING AND COLD ROOM

“

At Nyt OUH automation has been a great focal point when developing the logistics area. We wish to create both more efficient and gentle work procedures for healthcare personnel. In the kitchen, for instance, we have removed a large part of the manual transport of the food trolleys, so the healthcare personnel no longer have to pull the trolleys through the hot washing area and directly into the cooled areas. As well as the automatic robot unloading the food trolleys. This both provides a better working environment, reduces energy consumption and frees hands for other tasks.

Poul Køstner,

project consultant for the project organization at Nyt OUH

The kitchen at Nyt OUH is located in the Service City. Here, they have automated as many processes as possible to make the workflow more efficient and to remove most of the hard, physical work from the healthcare personnel.

When the food trolleys with the used service from the hospital arrive at the kitchen, the trolleys are placed in an automated intake, moved forward and into the kitchen department itself. From the intake, they are led to a robot using suction cups to take the trays out of the carts and automatically place the trays on a conveyor into the washing machine. A mechanism with sensors on the robot and carving of metal on the fixtures on the trolleys tell the robot which type of food trolley it is about to empty.

Once the food trolleys are emptied, they will be moved to the washing area. The trolleys are washed, so they are clean and ready to be refilled. From the washing machine, the trolleys are moved to a cold room to be cooled to a temperature of 4-5 degrees - the same temperature as the food. The cold room is divided into two with a gate. The front part of the cold room can only contain four food trolleys at a time. When one or more trolleys are removed from the front part, new trolleys are automatically moved forward from the back part of the cold room. The gate between the two parts prevents too much of a cool outlet when the front gate is opened and carts are taken. From the cold room, the trolleys are manually filled with food and taken directly to the respective departments in the hospital.



AUTOMATIC HANDLING OF INCOMING AND OUTGOING GOODS

LOGISTICS

The Distribution Center handles incoming and outgoing goods in and out of the hospital, e.g. instruments, linen and medicine. The goods are transported in trolleys which may be transferred between levels by lifts or shuttles connected to the in- and outfeed ramps by reversible buffer lanes.

Reception of priority goods can be manually transferred from the delivery ramps to a manual infeed station by the lifts or shuttles. Full trolleys with sterile goods are transferred from the Sterile Processing Department to the Distribution Center by a gate. Trolleys to external hospitals are delivered to the ramps on a dedicated buffer lane and trolleys to internal departments are transferred to other levels by AGV or manual handling for further distribution.

Modular design

The conveyors are modular to make the construction universal and scalable. The modules also make it possible to have different conveyor lengths. Footplates are installed between the conveyor to enable the manual transfer of priority trolleys between conveyors. The operator handles any rearrangements and ensures the correct position of the trolley on the conveyor. Infeed guiding is placed at the end of the conveyors providing correct positioning. A belt conveyor at the end of the conveyor against the hoist ensures a secure two-way transition between the conveyors.



Handles:

Transport trolleys
Other trolleys, e.g. linen trolleys

Task:

Reception, transportation and distribution of incoming goods

AUTOMATED GUIDED VEHICLE (AGV)

AUTOMATIC TRANSPORTATION WITH MOBILE ROBOTS

Automated Guided Vehicle (AGV) systems are in-house, floor-bound conveyor systems, consisting of AGVs, which transport the goods efficiently.

The AGVs navigate by scanning the contours of the surroundings with an integrated laser scanner, drawing up a map with easily recognizable features. Any changes in the room - caused by people or vehicles moving around or stored goods - are masked out by the AGV based on the recorded room characteristics.

Safety installations prevent collisions via the application of laser scanners, additional 3D sensors and signalling devices.

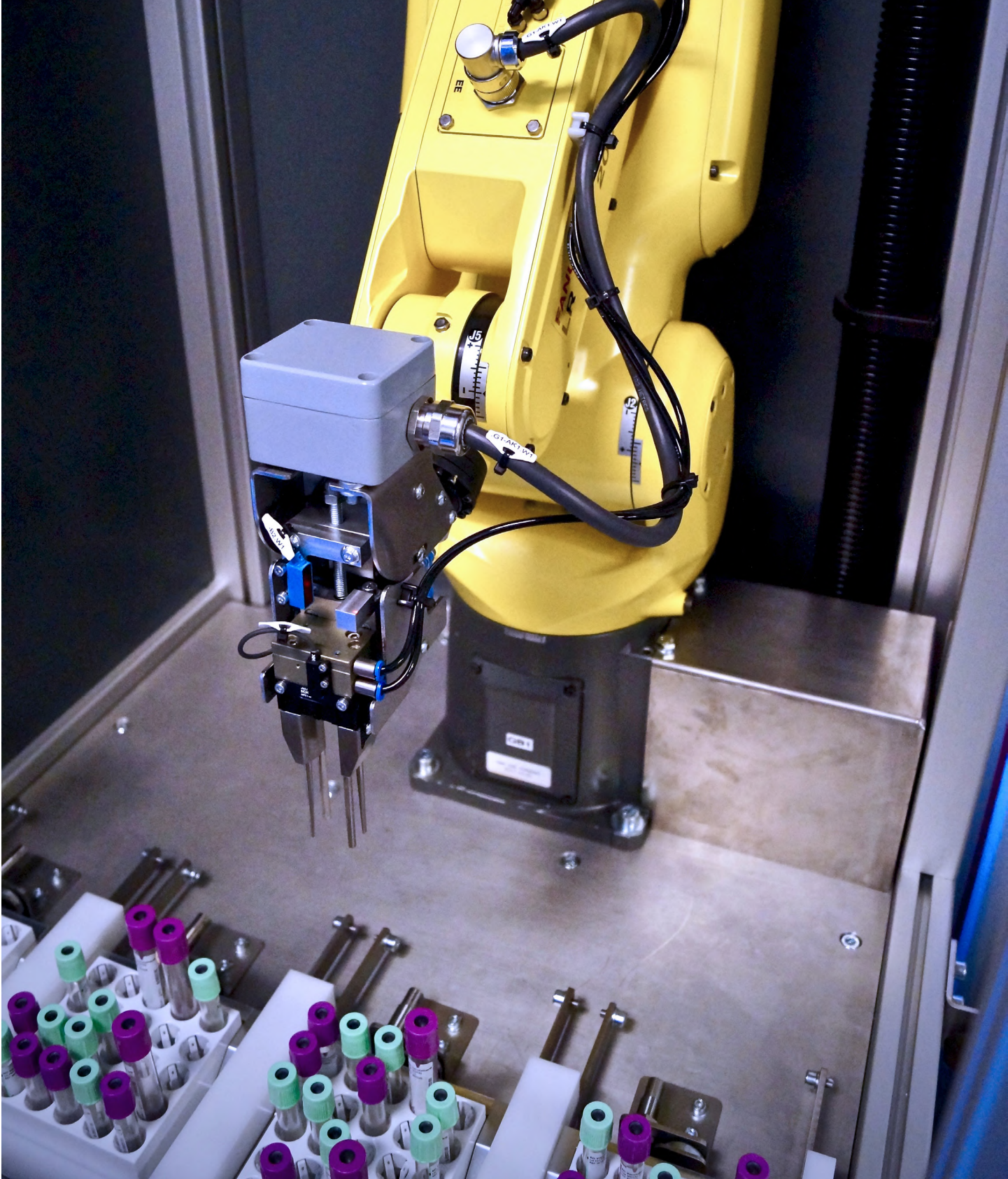
Automatic control system

Modern and user-friendly command and control technology enable the most optimal flow of goods and materials. Some key features in the AGV control system include the possibility to assign transport tasks and choose the best route between pick-up and drop-off locations. The control system also guarantees the traceability of goods. Due to simulative mapping during the project design phase, implementation is quick and easy.



Application payload:	100 kg
Velocity:	1,6 m/s
Charging:	Inductive or charging contacts
Safety installations:	Laser scanner, 3D sensors and signalling devices

LABORATORY AUTOMATION



NORDSJÆLLANDS HOSPITAL

FULLY AUTOMATED LABORATORY



We are very interested in innovative and secure solutions that free up resources from administrative labour, which can instead be used on patient-related tasks. The safety of our patients is increasing as we are automating the previously manual workflow. It creates more time for our medical laboratory technicians for value-adding tasks instead of sorting blood samples manually.

Evy Ottesen,

Head Laboratory Technologist from the Department of Clinical Biochemistry at Nordsjællands Hospital

Innovative robot technology enables Nordsjællands Hospital to improve workflow and logistics in the Department of Clinical Biochemistry. Gibotech has implemented a solution with a robot, GiboSort, which automates the process of sorting the samples before the analysis.

Nordsjællands Hospital handles a lot of blood samples from general practitioners. They order the analysis electronically and download a requisition with a barcode. The samples are packed in specially designed boxes and then transported to the hospital.

Before the implementation of the robot, a medical laboratory technician was responsible for manually unpacking the boxes and preparing the tubes for the automatic analysis system. Today, this process is handled automatically by the robot. The robot scans the barcodes and sends the samples with a pneumatic tube to the laboratory. The automatic process reduces the turnaround time for test results to approximately one hour. Faster turnaround time for lab results and faster responses to general practitioners speed up patient diagnostics, treatment and patient satisfaction.



GIBOSORT

INTELLIGENT HANDLING AND SORTING OF MICROBIOLOGICAL AND BIOCHEMICAL SAMPLES AS WELL AS BLOOD SAMPLES

GiboSort automates the task of handling blood samples to minimize the risk of errors occurring in manual sorting and shorten the lead time to significantly improve efficiency.

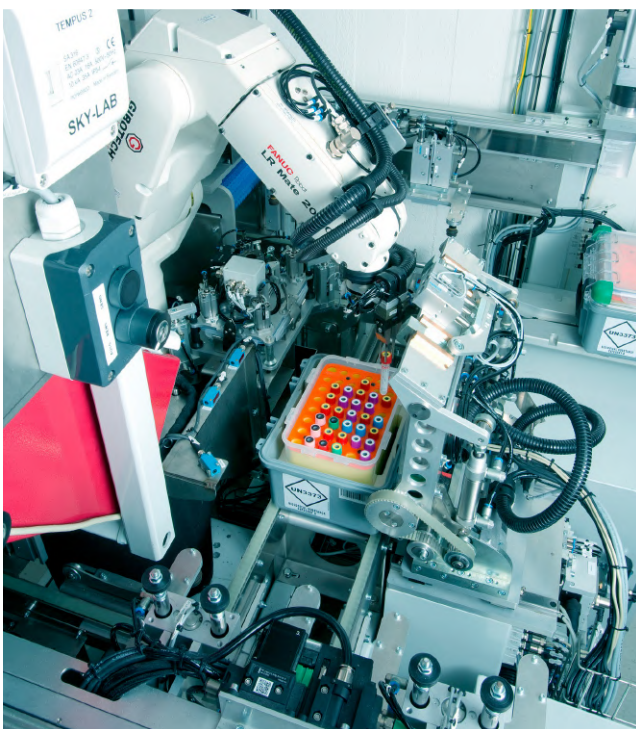
Samples are transported from local doctors in specially designed transport boxes, delivered at the hospital and to GiboSort's internal delivery system. Transport boxes are placed in special lifts or shuttles and transported to the sorting robot that empties the boxes and sorts the samples for analysis in the laboratories.

Empty boxes are sent back through a lift or shuttle system, so the service staff receives the same number of boxes as were delivered, and transport staff always has empty boxes in the car for the next pick-up.

Intelligent robot

GiboSort is designed with an intelligent sorting robot based on concepts and products from industrial solutions. The robot recognizes the content of the boxes using a vision camera and empties the boxes one sample at a time. The vision system also determines if the sample are centrifuged or not, and boxes containing emergency samples are prioritized.

Unrecognizable samples are delivered to a special problem case for manual handling.



Handles:	Boxes of microbiological and biochemical samples as well as blood samples
Task:	Empty boxes and sort and distribute samples
Vision system:	Scans samples and determines the correct location
Capacity:	Lift or shuttle system: 24 boxes Storage shelf: 220 boxes

BLOOD SAMPLE HANDLING

ROBOT CELL FOR AUTOMATIC HANDLING OF BLOOD SAMPLES

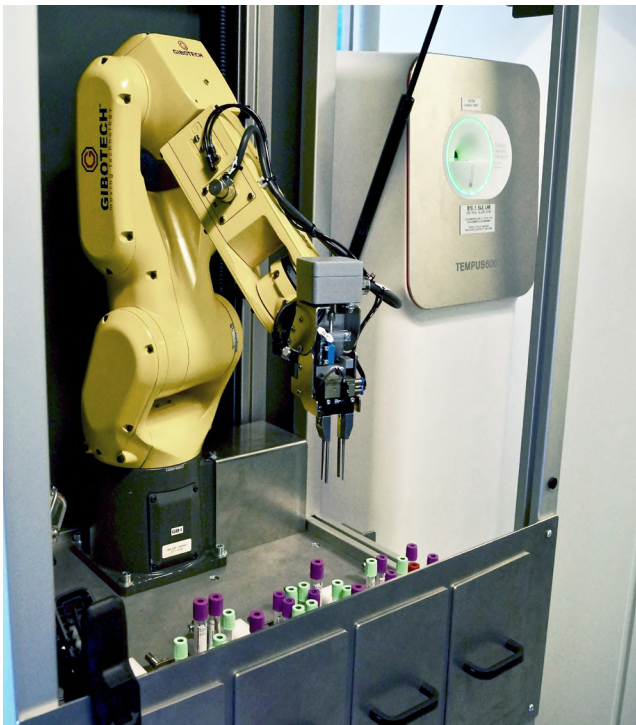
This cell is designed to automate the distribution of blood samples to a specific location.

The cell consists of 4 drawers, a robot, a vision system and a delivery position for a receiving unit.

The robot automatically picks up one test tube at a time from racks with up to 25 glasses. The position is determined by a vision system which is connected to the robot and a sensor determines if there is a test tube in the receiving unit. If the unit is empty, it is ready to receive a test tube and the robot will get a signal to continue. The robot will continue until all test tubes have been transferred and stops automatically if the receiving unit is full.

Integration with hospital logistics systems

The blood sample handling cell may be fully integrated with hospital logistics systems and is designed with an intelligent robot based on concepts from industrial solutions. Once the test tubes are placed in the receiving unit, they are automatically transferred to the correct laboratory by the internal pneumatic tube system, thereby limiting the number of potential errors occurring in manual handling.



Handles:	Racks with blood samples
Task:	Pick up blood samples from the rack and place samples in the receiver
Vision system:	A camera registers samples in the rack
Rack size:	25 samples
Drawers:	4

SERVICES

WHEN YOU CHOOSE A HOSPITAL AUTOMATION SOLUTION FROM GIBOTECH, THESE SERVICES ARE ALSO PROVIDED



Training

Your healthcare personnel are properly trained in operating the automation system. This ensures that the healthcare personnel are familiar with the robots before they start operating and is a way to remove most of the beginner's errors and insecurities. The training also contributes to making everybody feel comfortable in their new position.



Service agreement

If you want to make sure that your solution is not at a standstill for longer than necessary, we can offer you a service agreement. With the agreement, you are guaranteed authorized robot service. Both for ongoing maintenance and sudden situations. Our service technicians are on call to help you and ensure that your solution is always 100% functional.



Spare part package

We can offer you a spare part package of the most often-used spare parts for your solution. This way, your own technicians will be able to fix the most common causes of breakdowns. Combined with the service agreement, Gibotech's service technicians will provide guidance or undertake the repair.



INTERFACES

GIBOTECH AUTOMATION CELLS INTERFACES WITH A WIDE RANGE OF PROCESSING EQUIPMENT AND SOFTWARE SUPPLIERS

GETINGE 




HYGIENE SYSTEMS






MMM Group



GIBOTECH^{AS}

moving technology

Gibotech designs and provides innovative robotics and automation solutions for the industry and healthcare sector. Our solutions help create a safer, integrated and better-utilized facility that supports efficiency and consistency, enabling healthcare professionals to focus on delivering the best possible care for patients.

The Gibotech automation solution can be fully integrated with any reprocessing equipment and sterile supply management system. The system is based on a modular principle making it possible to customize it to required demands and capacity.

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