

GETINGE

GETINGE SOLUTIONS

CENTRAL STERILE PROCESSING/CSSD &
POINT-OF-USE STERILE PROCESSING/TSSU





TURN TO THE WORLD LEADER IN DISINFECTION AND STERILIZATION

With equipment installed in more than 100 countries spanning six continents, Getinge is the world's largest exporter of washer-disinfectors and sterilizers for hospitals, the pharmaceutical industry and laboratories.

The Getinge Group of companies has manufacturing facilities in Sweden, Germany, France, the UK, the USA and Australia, making us well placed to support customers worldwide.

The global success of Getinge's soundly designed, high-quality systems may be attributed to our dedication to deliver equipment that is consistently superior to any other in terms of

- function
- reliable performance
- cost-effectiveness
- ergonomics
- environmental considerations
- customer satisfaction

Experience and innovation

Getinge's leadership in sterilization and disinfection stems from more than 60 years of accumulated experience, fused with skillful engineering, specialized technology and application know-how.

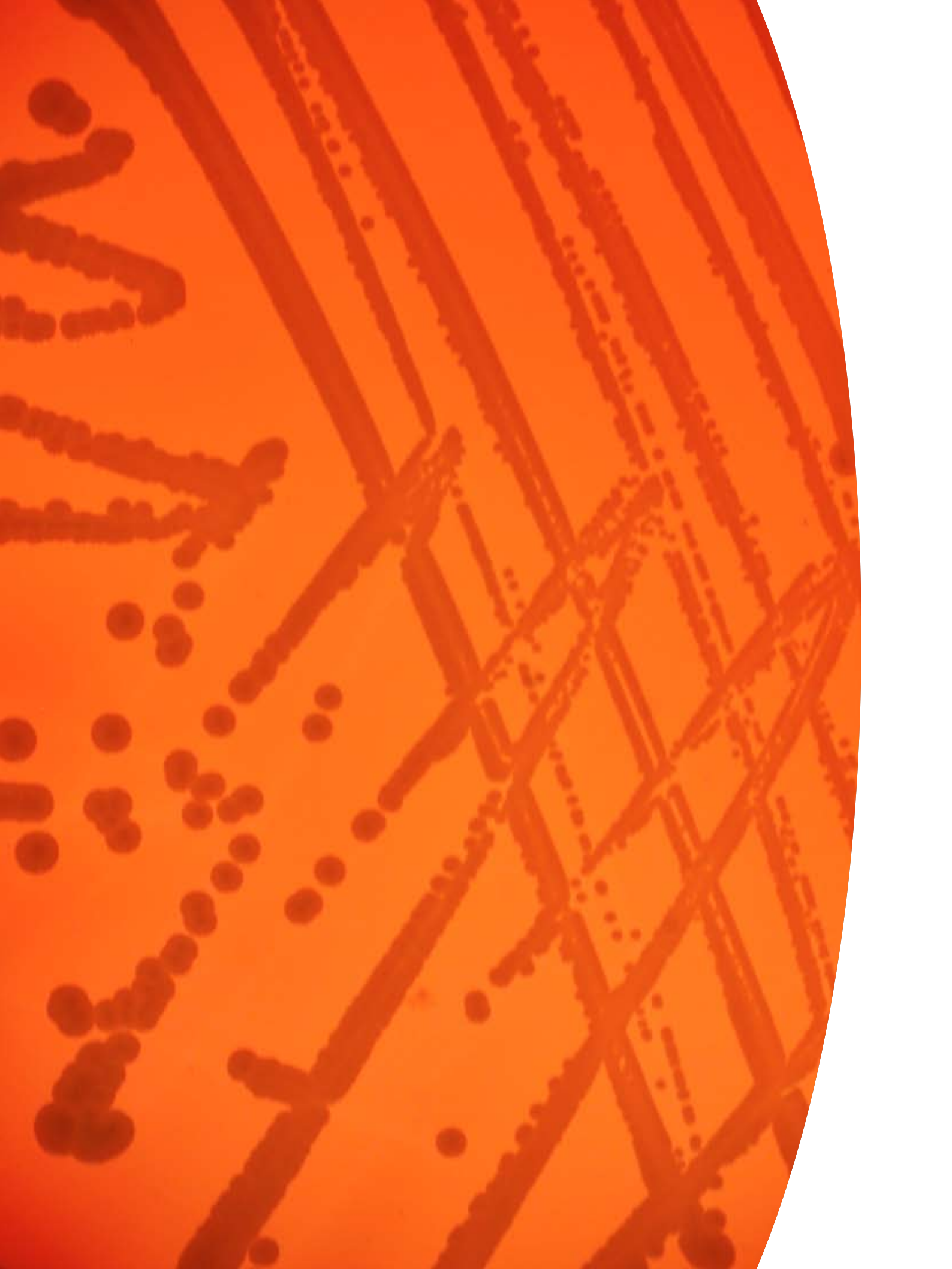
Add to this a long tradition of close cooperation with process engineers, microbiologists, quality control personnel and equipment operators, and you have the recipe for Getinge's unparalleled innovative ability.

The result is a continuing series of state-of-the-art features, high quality manufacturing, secure control systems and versatile software programs that put Getinge in a class by itself.

Strong local support

"Think globally, act locally" is a key concept in Getinge's business philosophy – and in our business practice. Because good customer support in individual countries is vital to Getinge's goal of improving infection control around the world, we have developed an extensive sales organization serving 100 countries (including a network of 65 distributors).





FIGHTING THE AGENTS OF MICROBIAL DISEASE

Hospital infection – a worldwide dilemma

Hospital infection is the spread of pathogenic microorganisms to patients as a result of the treatment or care given to them. These organisms can develop during the time the patient is in the hospital or afterwards. They may be transmitted during treatment or come from the patient himself.

This type of infection, also known as nosocomial infection, includes diseases that the hospital staff may acquire as a consequence of their work, and is not limited to hospitals. Medical and dental clinics are also potential reservoirs.

Why is it such a problem?

Hospital patients tend to be particularly vulnerable to infection, whether they are weakened by disease or injury, or have the lowered resistance of infants and the elderly. The increase in antibiotic-resistant bacteria, central food preparation, and the difficulty of cleaning complex modern equipment are other factors that may give rise to the development and spread of infection in hospitals.

In fact, it is estimated that 5% of all hospital patients develop an infection after being admitted. This makes the hospital a risky place – unless proper measures are taken to prevent the spread of infection.

Good hygiene cuts costs

Good infection control equipment costs money. The lack of good equipment usually costs much more. In addition to the unnecessary suffering, there are huge costs for extra hospitalization and lost working hours.

A well-functioning hygiene system is crucial to minimizing the enormous costs involved with treating these infections. So an investment in the right disinfection and sterilization equipment not only makes sense medically. It's sound fiscal policy as well.

Important definitions

Pathogenic infectious matter consists of various types of microorganisms such as bacteria, microscopic fungi and viruses. Disinfection and sterilization are the processes required for infection control.

DISINFECTION is generally a process that inactivates (kills) nearly all recognized pathogenic microorganisms but not all microbial forms (bacterial endospores) or inanimate objects. Steam and hot water are the most common and efficient agents used in the healthcare environment. A cleaning and disinfection unit, where thorough cleaning is performed by flushing with cold and warm water, followed by disinfection at a minimum temperature of 80°C (176°F) for ten minutes or at 90°C (194°F) for one minute ($A_0=600$), is a good solution.

STERILIZATION, on the other hand, kills all microorganisms, including the non-sporiferous varieties that are fairly insensitive to heat. The safest and most economical method is heat treatment, i.e. steam under pressure in a sterilizer, achieving sterilization within a minimum of 15 minutes at 121°C (250°F) or 3 minutes at 134°C (273°F). It should be noted that an item is either sterile or not sterile – it can never be “nearly sterile”. In the European Norms regarding sterilizers, the word “sterile” is defined as the condition of a medical device that is free from viable microorganisms (EN 556). The measure of the bioburden (microbiological status) of the medical device is also used as a definition: The item shall have a Sterility Assurance Level (SAL)= 10^{-6} , or among a million items there must not be more than one living microorganism.

GETINGE - THE SOLUTION PROVIDER

A chain is only as strong as its weakest link. Recognizing that an effective and efficient system for disinfection and sterilization takes more than equipment alone, Getinge applies its expertise in infection control to the planning and design of entire systems. The result is greatly reduced risks for the spread of infection and smoother, more economical procedures.

Below: **The schematic flow** of reusable goods for disinfection and sterilization within a hospital.



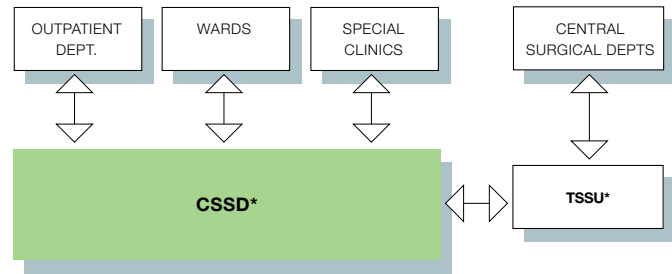
Central Sterile Processing/CSSD – Maximum reliability

Two main systems of sterilization are used in hospitals today. The system generally used in modern hospitals is a centralized department for disinfection and sterilization, called the Central Sterilization Supply Department (CSSD*).

This offers a number of advantages. Cleaning, disinfection, inspection, packing, sterilization, storing and distribution are carried out by specialized, experienced personnel. This ensures better control and more reliable results, i.e. a reduced risk of hospital-acquired infections.

It is also more economical. Pooled resources require less personnel and equipment, freeing the hospital staff to concentrate on the patients' well-being.

Combinations of TSSU* (Theater Sterile Supply Unit) and CSSD* techniques are also common.



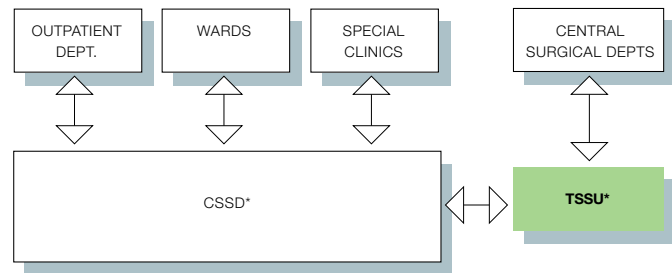
See page 10 for typical 3D design drawing of a CSSD.



Point-of-use Sterile Processing/TSSU – Close at hand

The other system is a decentralized system of sterilization. This could be a decentralized sterilization facility, or sub-sterile department, a relatively small unit usually located close to where the sterilized items are used.

At a central surgical department, this type of unit is known as the TSSU*. The main advantage is that the time of circulating the instruments is shorter and transport is more or less eliminated.



See page 22 for typical 3D design drawing of a TSSU.



Designing for circulation

Maximum safety and efficiency in the handling of goods within a hospital requires a well thought-out circulation system. This is not something that happens by itself – it has to be planned.

Getinge has its own team of design and planning experts for specifying complete sterilization centers incorporating true circulating systems. These systems, tested and proven worldwide for decades, assure greatest economical utilization of hospital resources and outstanding infection control.

Right from the start

The people in Getinge's Design and Planning Department have developed a special computerized guide for designing and calculating the capacity of a CSSD* or other smaller sterile units. The detailed calculation is based on the number of operations, outpatients, beds etc.

This makes it possible to tailor the size and number of sterilizers, washer-disinfectors and other equipment to the requirements of the particular hospital.

Floor plans are generated by a CAD system, from which 3D-visualizations can be made, simplifying the understanding of the design for the end-user.

SOULUTIONS FOR THE CENTRAL STERILE PROCESSING, CSSD

A CSSD* is like a manufacturing plant for sterile items. Soiled items from operating theaters, wards, outpatient and other special departments are collected in the CSSD* for processing, then returned to the end-user.

The production capacity of a CSSD* must be calculated on the basis of the number of operations, outpatient visits, beds, etc. Having too many washer-disinfectors and sterilizers, other types of equipment is unnecessarily costly. Having too few will create bottlenecks.

Moreover, a complete, efficient flow of activities must be organized to merge the dictates of efficiency and ergonomics with those of microbiology.



Getinge 46-series washer-disinfectors



Getinge HS66 hospital sterilizer

Getinge's dedicated design

To meet these demands, Getinge's CSSD* design is generally based on three zones – for soiled, clean and sterile goods respectively – with pass-through equipment serving as barriers between them.

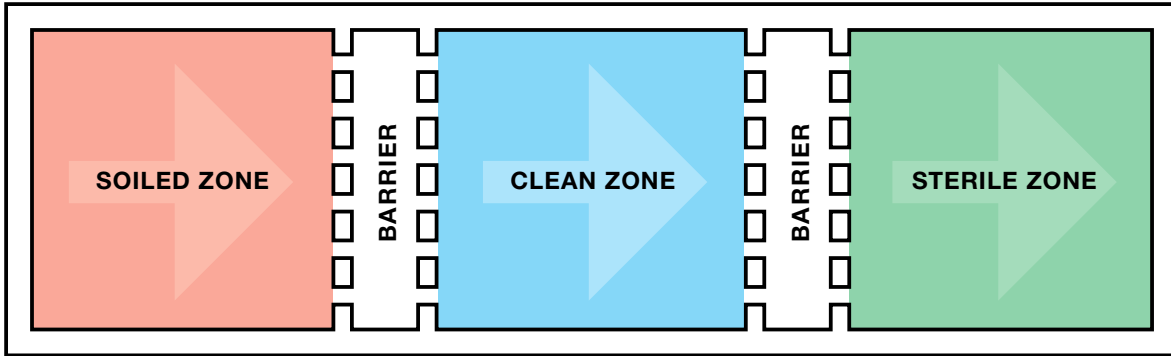
THE FIRST BARRIER in the fight against pathogenic microorganisms is between the reception area for soiled goods and the clean zone where inspection, sorting and packing take place. The barrier itself consists of high-capacity, pass-through washer-disinfectors. Since soiled and disinfected goods are handled in entirely separate rooms by different staffs, the risk of cross-infection is minimized.

THE SECOND BARRIER, between the clean zone and the sterile store, consists of pass-through sterilizers. Once again, the staffs are physically separated, one group working in the clean zone, the other working in the sterile store.

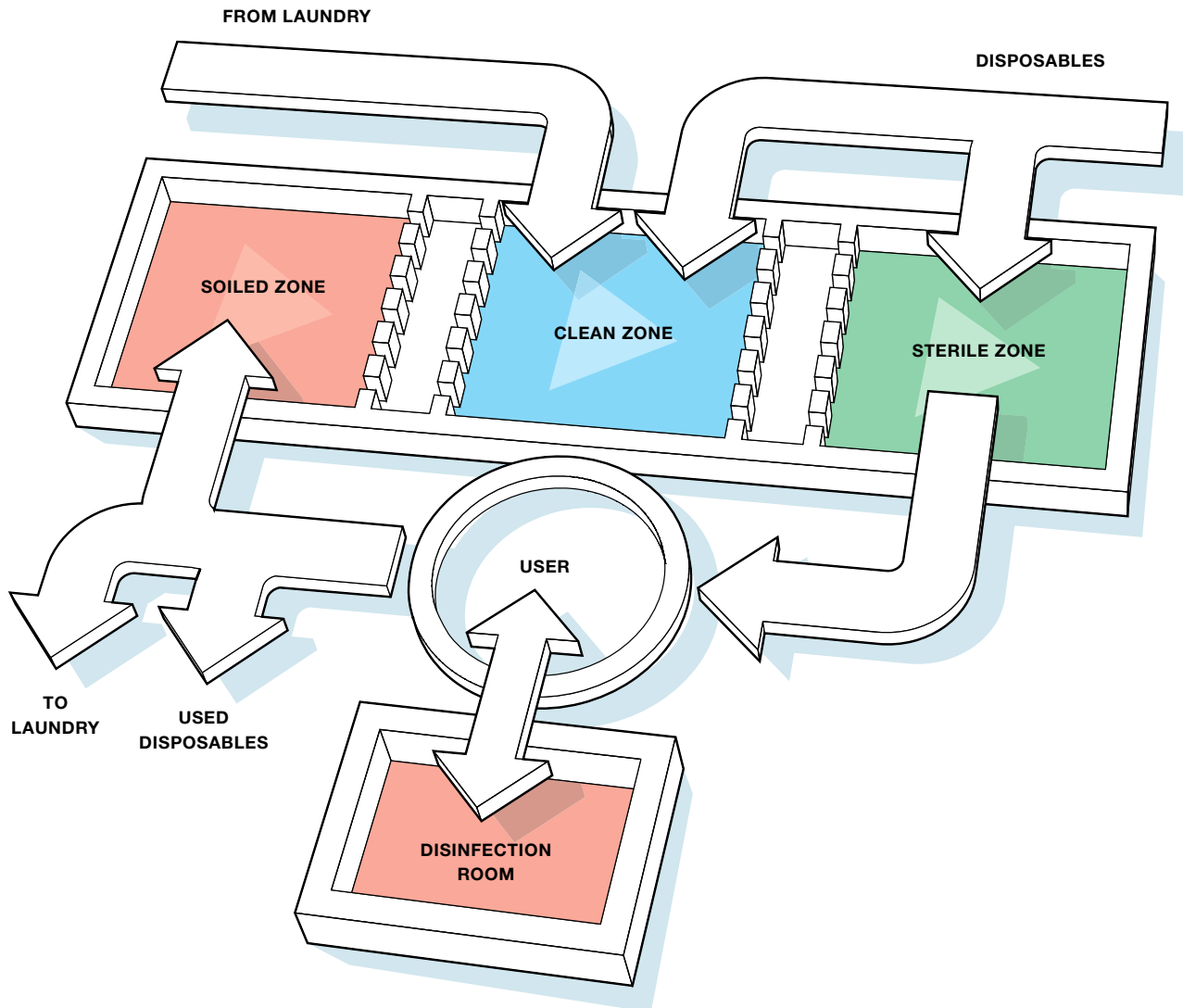
Better storage conditions are also created by using a ventilation system with over-pressure.

* CSSD = Central Sterile Processing

Getinge's three-zone design concept for soiled, clean and sterile goods.



The schematic flow of reusable goods for disinfection and sterilization within a hospital.



EXAMPLES OF DESIGN APPLICATIONS

Safe, ergonomic components

Getinge's systems utilize standardized carriers (instrument trays, wire baskets and containers), designed to be highly functional and ergonomic, while taking into account the requirements of infection control.

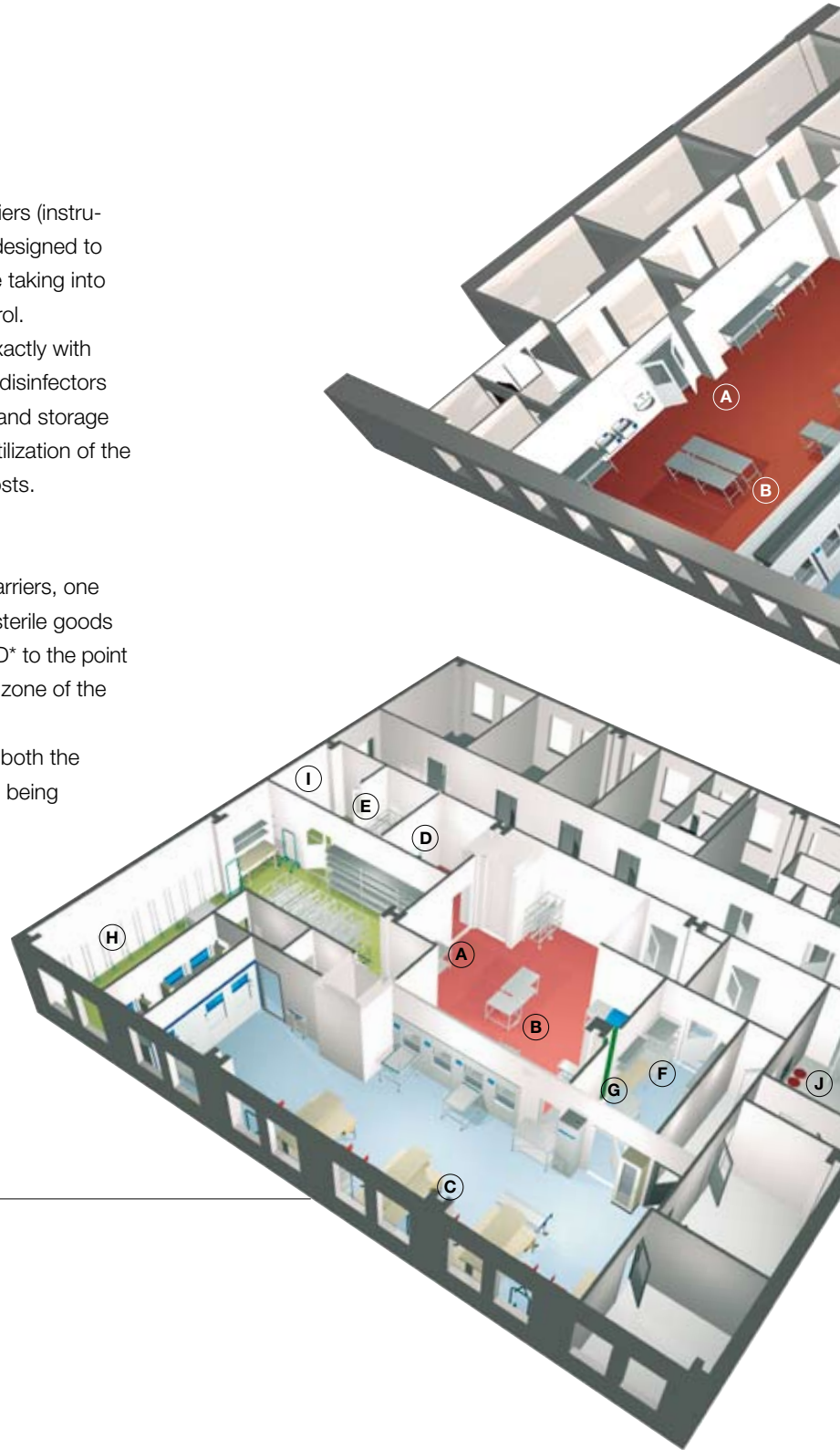
The carriers are modular, in sizes to fit exactly with the machinery used in the CSSD* (washer-disinfectors and sterilizers) and with loading, transport and storage equipment. This means optimal capacity utilization of the machinery, easier handling and reduced costs.

Prevents reinfection

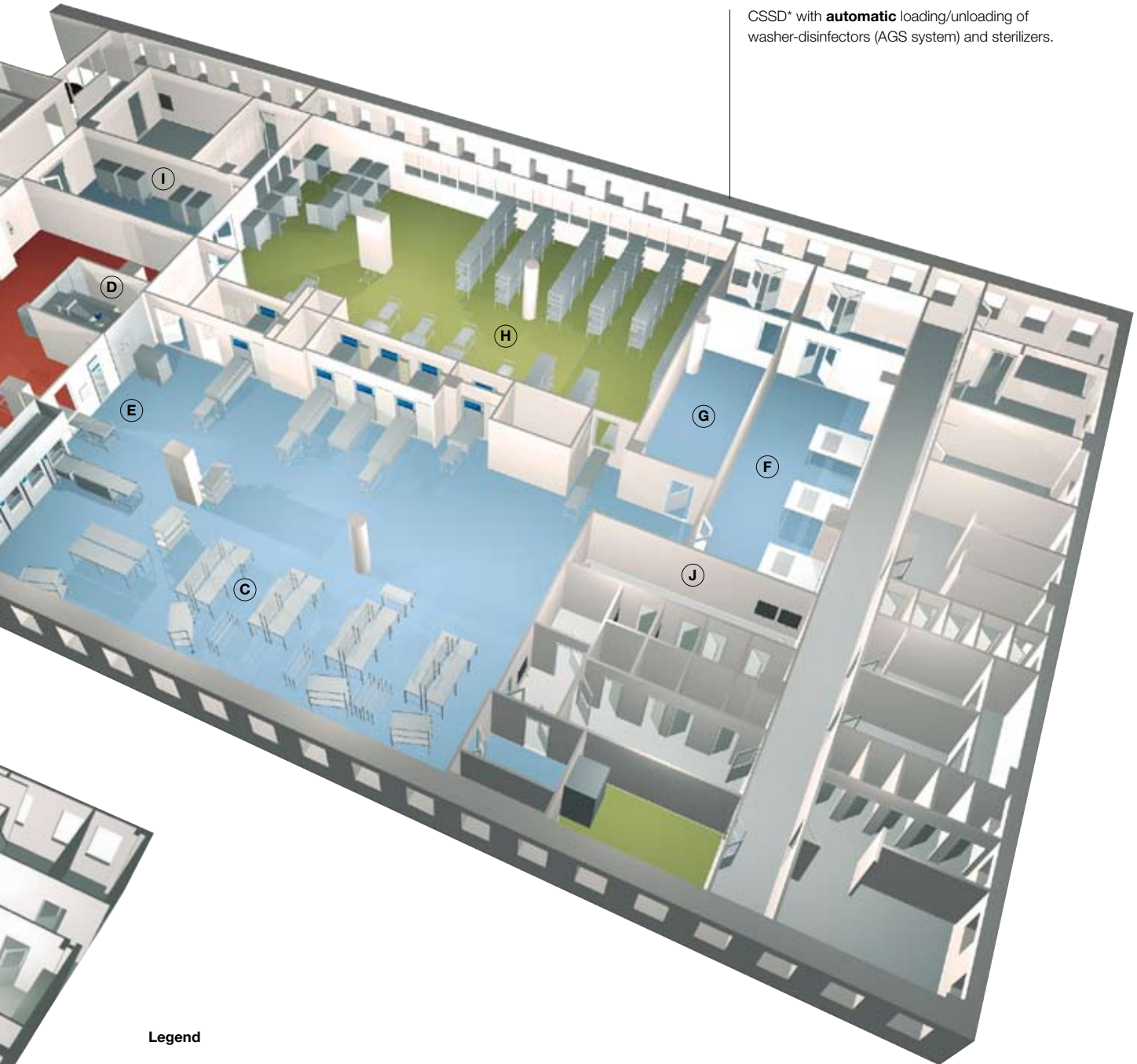
Thanks to the use of these standardized carriers, one and the same carrier can be used to take sterile goods all the way from the sterile zone of the CSSD* to the point of use, and soiled items back to the soiled zone of the CSSD* – with no unnecessary reloading!

This efficient circulation system protects both the surroundings and the sterilized goods from being reinfected.

CSSD* with **manual** loading/unloading of washer-disinfectors and sterilizers.



* CSSD = Central Sterile Processing



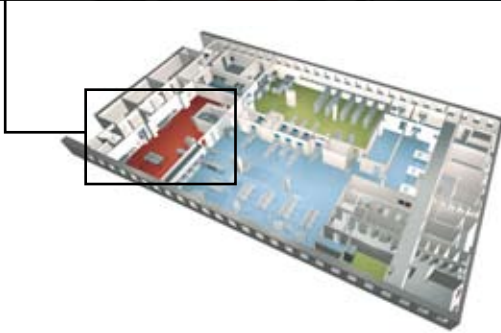
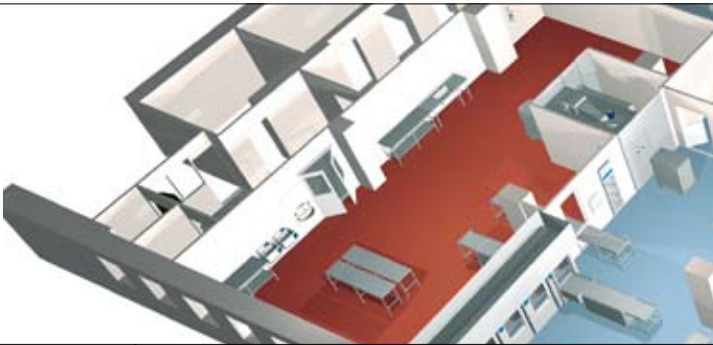
CSSD* with **automatic** loading/unloading of washer-disinfectors (AGS system) and sterilizers.

Legend

- | | | | |
|---|-------------------------------|---|--------------------------------|
| A | Reception area | F | Linen-folding and packing room |
| B | Washing and disinfection | G | Clean supply storage |
| C | Inspection and packing area | H | Sterile store |
| D | Cart washing and disinfection | I | Assembly and issue area |
| E | Clean cart holding area | J | Staff changing room |

ZONE 1

RECEPTION OF SOILED GOODS



Reception, sorting and disinfection

Unclean items from the operating theaters, wards, out-patient and other departments arrive at the reception area – for soiled goods by covered trolleys or by lift – in the same instrument trays, baskets and containers as they were delivered in.

After visual inspection, most items are put straight on a rack and loaded into the pass-through washer-disinfectors. Getinge has a wide range of washing accessories for delicate instruments and anesthetic equipment, so only very few instruments have to be cleaned manually by using an ultrasonic unit and/or spray gun rinse.

Manual cleaning and disinfection of trolleys also takes place next to the reception area. In hospitals with a large flow of goods, it is often more efficient to use Getinge's cart washer-disinfectors.



Standardized goods carriers

The handling and processing of wire baskets of different modular sizes (left) as well as solid containers (right) are covered by the Getinge range.

Standardized goods carriers

Regardless of the type of goods carrier you are using or plan to use, Getinge has an efficient handling system designed for the best capacity utilization, combined with good ergonomics for each work procedure required. Getinge also offers flexible solutions that combine the use of different goods carriers.

Barrier 1: Cleaning and disinfection

The first barrier against pathogenic microorganisms includes built-in pass-through washer-disinfectors, of which Getinge offers a comprehensive range. The volume of goods dictates the sizes and number of these machines.

Steam and hot water are the most common disinfection agents used in health care, since they are energy-efficient and require no harsh chemicals. Cleaning is performed by flushing first with cold water, then with warm water and detergent. This is followed by disinfection at a minimum temperature of 80°C (176°F) or at 90°C (194°F), following today's standards.

Depending on the location, there are different combinations of cleaning and disinfection equipment, for which Getinge has many types of accessories to cover nearly every need. Examples of these accessories are illustrated here.



Getinge 8666 washer-disinfector for manual or automatic loading. The loading and unloading of this model and the larger Getinge 8668 unit can be fully automated with Getinge's Air Glide System (AGS). This system serves, as standard, up to 6 washer-disinfectors at a single load station. The AGS system can easily be adapted to support more units as required. Program selection is automated as well, using different rack sensors.

Washer-disinfectors

Getinge's range of washer-disinfectors includes volumes from 60 to 348 liters (2.1 to 12.3 cu. ft). Single- as well as double-door pass-through models are available. The most common models when designing a CSSD* are those with a volume of 200 liters and above. The number required depends on the type and size of the hospital. The Getinge design team can provide expert advice.



Ultrasonic cleaning unit.



Separate area for special instrument preparation.

Getinge washer-disinfector	46-5	8666	8668	CM 320
Chamber volume (L)	225	314	348	
Capacity per load (SPRI Trays*)	10	20	20	20
Capacity per load (DIN Trays**)	10	12	15	15

* Tray size (SPRI/ISO): 340x250x70 mm (LxWxH)

** Tray size (DIN): 480x254x50 mm (LxWxH)

Cart washer-disinfector

The soiled return trolley, empty tote boxes, containers, wire baskets and utensils can all be washed and disinfected in a cart washer-disinfector. These large cabinets are mainly designed as pass-through units.



Wall-mounted, pass-through unit with sliding door.

* CSSD = Central Sterile Processing



Cart washer-disinfectors of different sizes and degrees of automation are available within the Getinge range. Carts, trolleys, goods carriers and utensils can be processed using different accessories.



Transport and loading trolley for washer-disinfector.



Getinge 46-series washer-disinfectors are manually loaded using various racks specially designed for good utilization of the wash chamber.



OP container rack, 46-series. OP basket rack, 46-series.



Getinge CM 320, a multi-chamber washer-disinfector, where the different phases of the process take place in different modules. Capacity can be adapted to changed requirements by adding modules. The wash racks are also adaptable with Getinge 8668 washer-disinfectors, so the different models can be combined.



MIS Wash Cart, 46-series. AN rack, 8666.



OP basket rack, 8666. OP container rack, 8666.



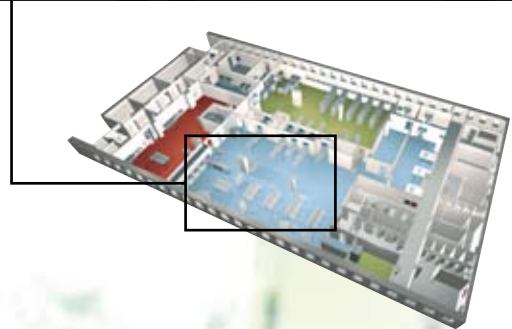
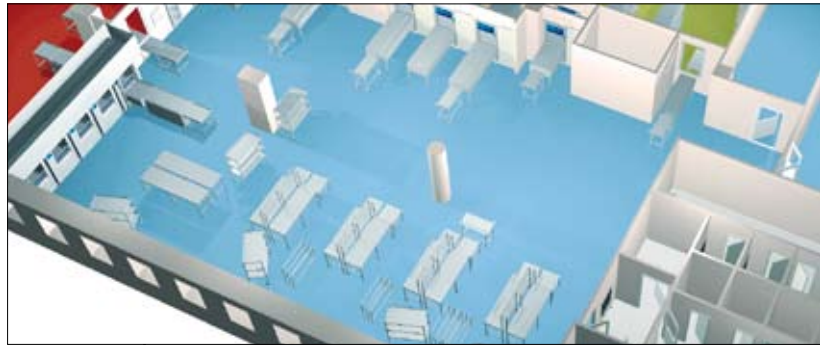
ZONE 2

SORTING, INSPECTION & PACKING

On leaving the washer-disinfector, the clean (but not sterile) goods enter the area for sorting, inspection and packing. For these tasks, Getinge has a full range of practical and easy-to-use equipment that can be adapted to suit different requirements and capacities.

Note that in the entire circulating system, the only time the instruments leave the trays are at the point of use and the point of inspection at the packing tables.

After packing, the instrument trays are placed in the pass-through sterilizers. Fabrics are sorted, inspected, packed and labeled in a separate area before moving along for sterilization.



ACCESSORIES

Full range of accessories

Getinge offers a comprehensive range of accessories to assure optimal function of the inspection and packing area.

This range covers accessories for all work procedures, from unloading of washer-disinfectors to drying, transport, inspection, assembly, packing, welding, labeling, storage and loading equipment.

Only a few of these accessories can be illustrated here. For more details, ask for Getinge's comprehensive accessories catalogue.



Automated lateral moving loading and unloading system for sterilizers.



Free-standing modular storage shelf.

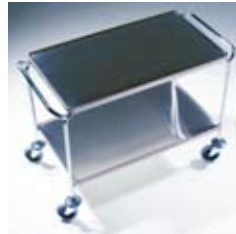


Table trolley for transport and general storage use.



Inspect and packing table.



Linen inspection, folding and packing table.



Height-adjustable inspect and packing table.



Paper-dispensing trolley.



Automatic sealing machine.



Manual loading trolley for medium-range sterilizers.



Automatic loading / unloading units.



Height-adjustable loading trolley, Flexi.



STERILIZATION

Barrier 2: Sterilization

The second barrier incorporates built-in pass-through sterilizers, of which Getinge has a complete selection in suitable sizes and models, depending on the volume and type of goods.

In fact, there is a Getinge sterilizer for every application within the hospital, including sterilizers with steam, low temperature processes and cycles for fluid production.

Moreover, Getinge's ergonomic handling system of modular wire baskets allows the sterilizer chamber to be utilized to its maximum volume. This, together with Getinge's smartly engineered loading and unloading equipment (both automatic and manual) means the easiest possible handling of sterile goods – and no heavy racks to be shuttled between the sterile store and the packing area.

What makes Getinge sterilizers the best choice for your hospital:

- Minimum space requirements, yet maximum capacity, thanks to the compact design.
- Low weight, for easier installation and minimized energy consumption.
- Unique sliding door construction for complete safety.
- PACS microprocessor control unit, specially designed for Getinge sterilizers, with superior capacity and flexibility.
- Automatic diagnosis of faults for faster service and lower cost.
- Few components, increasing operating reliability and giving low downtime.
- Efficient vacuum system, guaranteeing superior air removal from the chamber.
- Recording instrument independent from the control unit.
- All components of high quality, from well-known suppliers.
- Sterilizers manufactured and approved in accordance with your local regulations.
- Each delivery includes detailed, user-friendly operating and maintenance manuals.



PACS 3500. Getinge's new generation PACS 3500 is an advanced yet easy-to-use monitoring and controlling system for our sterilizers.



Chambers with horizontal sliding doors and side-mounted operator panel.



Getinge's medium-range sterilizers can also be designed with a side-mounted operator control panel.



Floor-loaded sterilizers used with cart loading.



T-DOC

GETINGE'S MANAGEMENT, TRACEABILITY AND QUALITY ASSURANCE SYSTEM

The T-DOC system is a modularized suite of applications designed to meet a modern hospital's needs for planning, control and documentation of all aspects regarding sterilized goods.

The applications are developed with the purpose of planning, documenting and increasing the effectiveness of the processes and production at a modern CSSD*.

Furthermore, the T-DOC system provides the Central Sterile Processing, CSSD with efficient inventory control and an exact means of determining which services the individual customers receive from the CSSD*.

The T-DOC system connects directly to the control system on almost all Getinge washer-disinfectors and sterilizers. Information from the machines is collected and stored for later documentation and easy access.

In scenarios where a direct connection to a sterilizer or washer-disinfector is not available, T-DOC provides an easy-to-use manual interface, which retains all other functions. Thanks to its modularized applications, the T-DOC system can easily be scaled to fit any size of hospital.



Soiled reception of goods. Scanning of returned labels with immediate update of the instrument database.



Printing labels and tray lists at the packing area. Tray lists are always up-to-date, based on the latest information from the database.



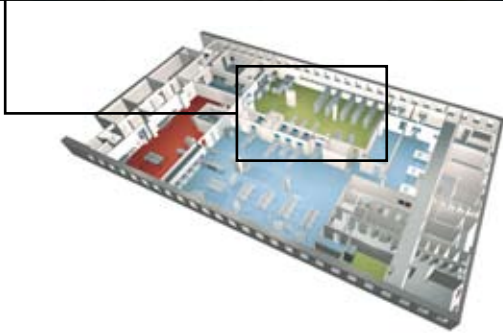
Scanning of goods at the sterilizer makes it possible to store process documentation together with the goods processed.



Labels and tray lists are a vital part of the T-DOC system, enabling full recording, tracing and quality assurance of the produced goods.

* CSSD = Central Sterile Processing

ZONE 3 STERILE STORAGE



On completion of the sterilization process, the sterilizers are unloaded with Getinge's ergonomical, user-friendly equipment of the type used for loading.

Over-pressure is maintained in the sterile storage to keep the goods free from dust. The room must also be dry, to prevent moisture from penetrating the packages, which might lead to recolonization of microorganisms.

The wire baskets, in combination with the open design of the Getinge basket storage racks or the mobile Base Unit Supplier (BUS), allow air to circulate and at the same time provide full inspection of the contents of each basket. Basket racks are available in single as well as double free-standing models.

When using containers only or using a mixture of wire baskets and containers, the BUS is extended with shelves to hold these goods carriers. Storage units are designed with shelves.



Standardized goods carriers

The handling and processing of wire baskets of different modular sizes (left) as well as solid containers (right) are covered by the Getinge range.



Single or double basket racks used for Getinge's SPRI modular wire baskets in the sterile storage and/or as prestorage of clean packed goods in the packing area.



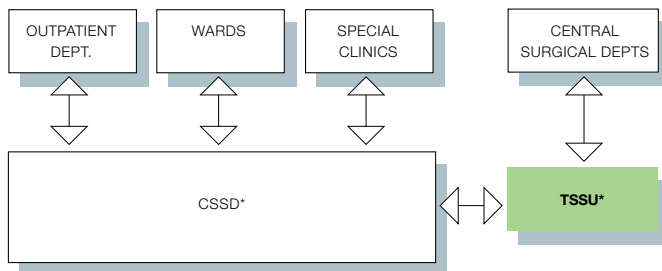
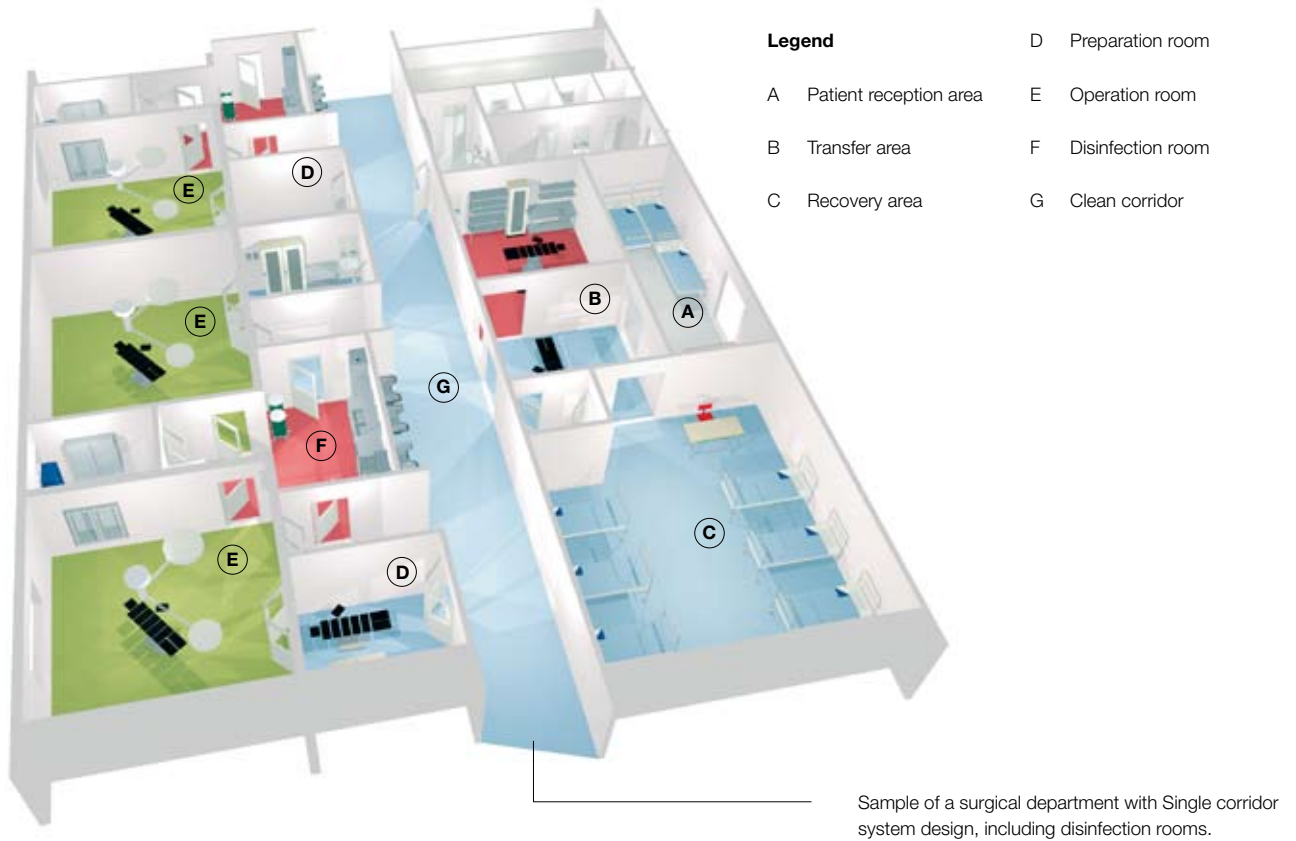
BUS, Base Unit Supplier (above and left), a mobile storage unit for modular wire baskets, for use within the sterile store of the CSSD* or TSSU*, and as the main unit for distributing the baskets to the wards, outpatient departments and operating rooms (OR).



Jubilee BUS, designed for a mix of containers and baskets or for containers only.

* CSSD = Central Sterile Processing * TSSU = Point-of-use Sterile Processing

THE POINT-OF-USE STERILE PROCESSING/TSSU



Designing the Point-of-use Sterile Processing/TSSU

The work done in this unit will partly depend on the use and design of disinfection rooms in the operating suites.

The equipment used in the TSSU* area is generally for

processing surgical instruments and utensils, together with anesthetic goods. The required linens, e.g. drapes, gowns etc, are sent by the CSSD* directly to the sterile store.

* CSSD = Central Sterile Processing * TSSU = Point-of-use Sterile Processing



IDEAL WASHER-DISINFECTORS FOR THE POINT-OF-USE STERILE PROCESSING/TSSU



Getinge 46-4 Washer-disinfector with visual monitoring. The washing chamber can be equipped with a window and lighting.

Washer-disinfectors

Depending on size and capacity requirements, the TSSU* may be equipped with one or more washer-disinfectors, with or without an integrated drying process.

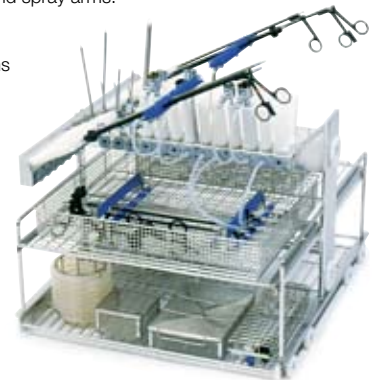
Getinge's interior design generally follows the same guidelines as the CSSD*, including pass-through washer-disinfectors in a first barrier.

Single-door units are, however, also available if required by the area design.



OP instrument wash cart (above) with 4 levels. All wash carts have removable shelves and spray arms.

MIS Wash Cart. 80 connections for tubular instruments.



Dedicated accessories

The goods processed not only include the instruments and utensils, but also goods that are frequently used specially at this department.

Examples of such goods are anesthetic hoses, masks, handles for surgical lights and shoes.

Getinge has a wide range of accessories, specially designed for each model in our washer-disinfector range, to utilize the washer-disinfector in the best way in accordance with good working procedures.



The cassette is easy slid into the guides of the drying cabinet. The whole workflow is simplified and work by staff is minimized. Also long hoses (>1500 mm) are dried in this cabinet.



Separate drying designed for easier handling

Getinge drying cabinets used for drying of stainless instruments, glassware and utensils, also handle anesthetic equipment like hoses, masks and bladders. The handling by staff of these latter items is simplified by an easy-to-use cassette system. Once the equipment is fixed onto the cassette, it stays in place through washing and disinfection, drying in the drying cabinet and pre-storage, until it is ready for reuse. A full range of cassettes are available as accessories, for adaptation to

existing equipment. The cassettes can be used on the various Getinge washer-disinfector models.

- 1 **AN-cassette** for 6 hoses, for ISO-hoses with 22 mm bore.
- 2 **AN-cassette** for 4 COAX-hoses.
- 4 **AN-cassette** for 3 hoses with 25–26 mm bore.

IDEAL STERILIZERS FOR THE POINT-OF-USE STERILE PROCESSING/TSSU



Getinge not only offers a comprehensive range of disinfection and sterilization equipment. We provide complete systems for infection control to meet a wide variety of needs, including the following:

- 1 **Getinge HS 66-series sterilizers** are perfect for the TSSU*.
- 2-3 **Getinge HS 44 and Getinge HS 33** both give you stand-by coverage, and are suitable as sterilizers for times when the CSSD* may be closed, e.g. weekends, holidays etc.
- 4 **The Getinge K-Series tabletop sterilizers** are suitable as emergency or flash sterilizers.



3



4





Getinge provides complete solutions for effective and efficient cleaning, disinfection and sterilization in the healthcare and life science sectors. Our know-how comprises everything from architectural planning, production and handling equipment, to systems for full traceability of sterile goods. Our commitment covers expert advice, training and long-term technical support.

GETINGE

Getinge Infection Control
PO Box 69, SE-310 44 Getinge, Sweden
Phone: +46 35 15 55 00
Fax: +46 35 18 14 50
info@getinge.com www.getinge.com

GETINGE

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