



# Sterility Security Efficiency

Optimizing operating theater design

Every hospital environment has to work for its patients and staff by offering the highest levels of sterility, security and efficiency. And nowhere is this more important than in sterile areas, clean rooms and operating theaters.

It has to be somewhere that empowers surgeons to perform at the highest levels and where patients know they will be treated with dignity and given the best chance of recovery. Good design has a critical role to play in making that possible – everywhere from lighting, heating and air conditioning to the way these healthcare spaces are zoned and accessed.

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A 2021 study published in the journal, The Lancet found that the global burden of HAIs is estimated to be 4.1m infections and 1.5m deaths annually\*.

# Day-one design considerations

Building in best practice means working with specialists right from the pre-planning and planning phases – experts who understand how to design an environment that not only works for a hospital's unique needs today but also allows for future scaling up or subsequent development phases. Key considerations at the beginning of every project include:

## **Layout and workflow**

Creating a safe and efficient environment that meets international healthcare guidelines and country-specific government codes set by the Ministry of Healthcare.

## **Equipment and technology**

Selecting the ideal equipment for the hospital's specialist needs and coordinating all pre-installation preparations.

## **Environmental controls**

Optimizing factors such as air quality, temperature and humidity.

## **Infection prevention**

Maintaining sterility and controlling the spread of germs.

# 36%

Rise in hospital acquired infections (HAIs) since 2002\*

\* <https://pubmed.ncbi.nlm.nih.gov/21677524/>

# Smart access solutions are critical

Access is pivotal in maintaining a secure and sterile environment that integrates seamlessly into the hospital's infrastructure and delivers 24/7 peace of mind for both surgical staff and patients.

dormakaba has a long track record of serving the healthcare sector and working with hospital teams to develop bespoke access solutions that draw on the latest technology and industry best practice.



# Controlling infection

## The challenges:

- Containing movement of germs
- Maintaining air filtration and circulation
- Reducing human contact with surfaces

## Solutions:

Effective control of both personnel and air movement plays a vital role in minimizing the spread of germs and reducing the risk of infection. Optimizing the layout of clean rooms areas such as operating theaters not only minimizes unnecessary movement but also promotes efficient teamwork while clearly distinguishing between sterile and non-sterile zones.

Touch-free access controls units and automatic doors are key in

achieving this, both reducing unnecessary movement and preventing unauthorized people from entering restricted areas. The contactless nature of these systems also reduces the contact with surfaces that is a major factor in the spread of germs. Hermetically sealed doors also play a critical role in containing the turbulent air generated by operating theater's HVAC systems, helping to prevent cross-contamination through air circulation.



# Improving security

## The challenges:

- Securing traffic flow
- Maintaining patient privacy
- Maintaining fire safety & escape routes

## Solutions:

It is vital to automatically restrict access to authorized personnel in order to preserve the integrity of sensitive areas and ensure patient privacy and security. This also serves to prevent the misuse of drugs and accurately document individuals' movement within restricted areas.

Against this backdrop, access control systems provide certainty and transparency. Typically operated by key card or fingerprint, they allow multiple users to access sensitive areas such as the pharmacy or

operating theater, with all traffic recorded and access managed centrally.

At the same time as achieving high security, hospitals also have to provide seamless access in emergencies such as code red (fire), code blue (patient), and code black (personnel and property). Solutions including automatic doors, fire-rated hardware, seals and escape route systems will improve safety in these situations and more.

# Integrating equipment

## The challenges:

- Managing multiple technology systems
- Gathering security and workflow data

## Solutions:

Integrating access solutions with Building Management Systems (BMS) and Hospital Information Systems (HIS) offers a myriad of advantages from enhanced safety to increased operational efficiency. This integration streamlines processes from data collection to access rights management.

One notable benefit is the ability to document movement within hospital facilities and analyse its efficiency. This data-driven approach can lead to improved revenue generation through optimized operating theater schedules and enhanced procedural protocols. Furthermore, it provides a valuable tool for risk mitigation,

offering a defence against potential false accusations by patients, as it can provide precise records of care timings.

In certain scenarios, integration of automatic sealed doors and access control systems extends to medical equipment, such as radiology machines. This prevents access to rooms while the machinery is in operation through interlocking functions. These interlocking features are also useful in isolated operating rooms and areas designated for highly contagious patients, serving as air barriers to restrict movement between spaces.

# Increasing efficiency

## The challenges:

- Accessing secure areas
- Optimizing schedules
- Reducing noise

## Solutions:

Creating a more efficient and comfortable environment for surgical staff pays dividends in terms of staff wellbeing and patient safety. Technologies such as selective seamless entry systems enable a more efficient flow, giving staff hassle-free movement between secure spaces.

Administrators are also able to leverage the associated data to understand surgical workflow and optimize their theatre scheduling. High impact products like glass sound rated partitions, perimeter seals and dropdown seals that are typically used also minimize potentially distracting noise levels from connected spaces as well as preventing the movement of contamination through dust and air.

A 2019 study published in the journal of the American College of Surgeons found that hospitals that implemented a collaborative scheduling system for operating rooms were able to improve resource utilization by 10%\*.

\*The Benefits of Efficient Operating Room Scheduling (Healthcare Finance News, 2020)



# Simplifying Implementation

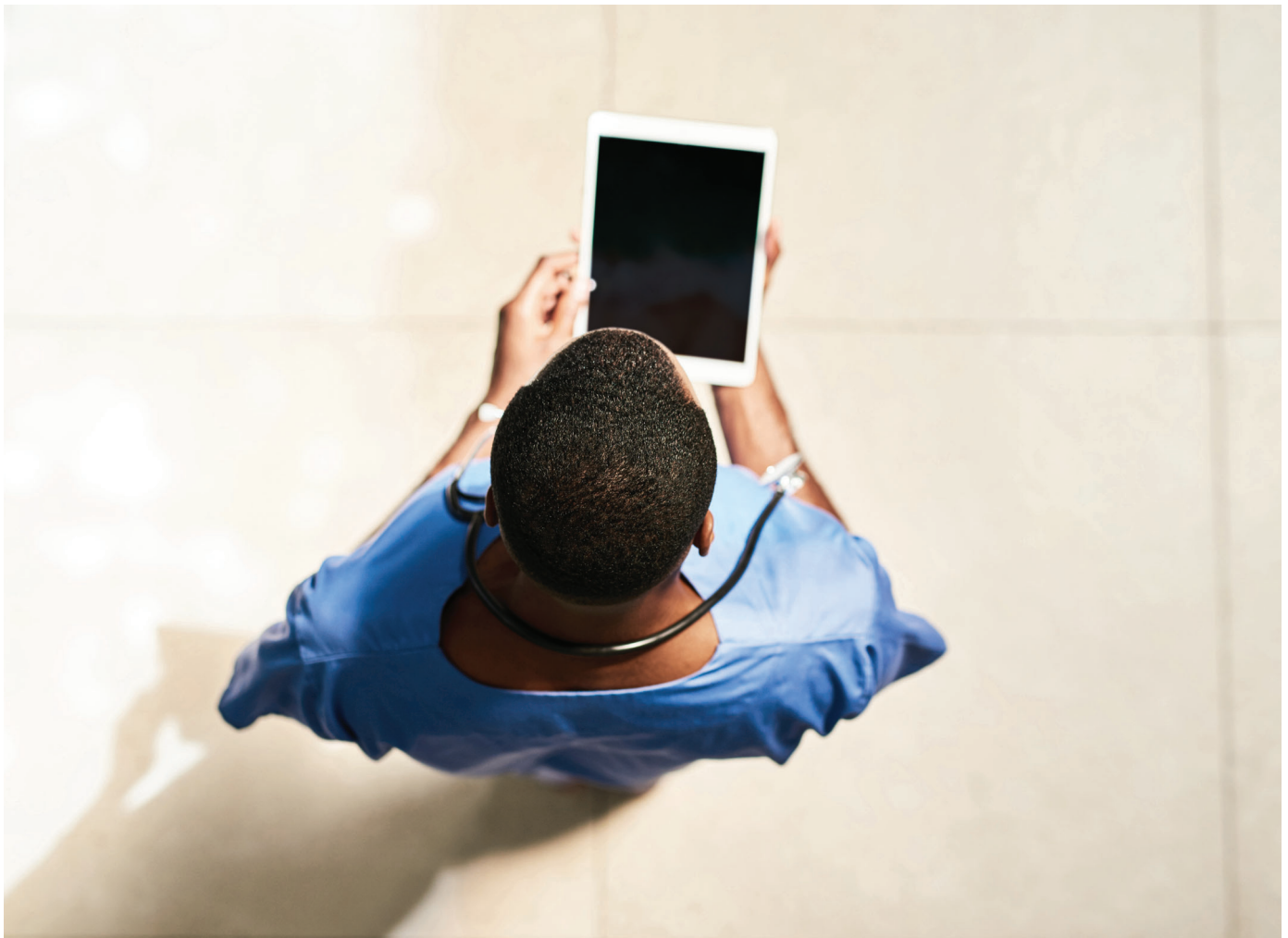
## The challenges:

- Integrating smart access with the wider development scheme
- Adapting for future uses

## Solutions:

Seamless BIM integration ensures that access solutions harmonize with the broader hospital infrastructure across both technological requirements and design considerations. Project planners can also anticipate future construction phases and adapt to evolving service needs.

This level of integration is especially advantageous in high-revenue healthcare settings, where there is a need to address complex legal requirements and intricate scheduling demands. Furthermore, when combined with Building Management Systems (BMS) integration, it empowers hospitals to maintain efficiency and compliance with evolving industry standards.



# Creating a safe, seamless experience

Intelligent access design plays a pivotal role in infection control within clean areas and operating theater departments—from advanced control systems to hardware components such as touch-free automatic doors, self-closing door hardware, glass sound rated partitions, antibacterial hardware, hermetic doors, and interlocking doors. Deploying these solutions effectively restricts access to highly complex areas, ensuring the safety, security, and privacy of patients while preventing infections, misuse of regulated drugs and unauthorized entry.

Moreover, when these elements are seamlessly integrated into well-designed clean room departments and operating theaters and their outputs are linked to Building Management Systems (BMS) and Hospital Information Systems (HIS), they deliver substantial value by enhancing revenue, reducing infection risk, improving operational efficiency, and bolstering the safety and security of patients, staff, and materials.



## Our Sustainability Commitment

We are committed to foster a sustainable development along our entire value chain in line with our economic, environmental and social responsibilities toward current and future generations. Sustainability at product level is an important, future-oriented approach in the field of construction. In order to give quantified disclosures of a product's environmental impact through its entire life cycle, dormakaba provides Environmental Product Declarations (EPD), based on holistic life cycle assessments.

[www.dormakaba.com/sustainability](https://www.dormakaba.com/sustainability)



## Our offering

### Access Automation Solutions

Entrance Automation  
Entrance Security



### Access Control Solutions

Electronic Access & Data  
Escape and Rescue Systems  
Lodging Systems



### Access Hardware Solutions

Door Closers  
Architectural Hardware  
Mechanical Key Systems



### Services

Technical Support  
Installation and commissioning  
Maintenance and Repair



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Subject to technical modifications.



[dormakaba.com](https://www.dormakaba.com)

**dormakaba International  
Holding AG**

Hofwisenstrasse 24  
CH-8153 Rümlang  
T +41 44 818 90 11  
[info@dormakaba.com](mailto:info@dormakaba.com)  
[www.dormakaba.com](https://www.dormakaba.com)