



**Drainage management  
for the healthcare sector**

Hygiene**First**



# ACO. The future of drainage.



## The ACO system chain provides drainage solutions which meet the future needs of the healthcare sector

Hospitals are the most complex of building types comprising of a wide range of services and functional units all interrelating. The diversity of function from diagnostic and treatment functions (such as A&E and surgical theatres) through to hospitality services (such as food service and housekeeping) requires specialised knowledge and expertise to ensure the best outcomes are achieved for both patients and staff. Within this complex environment waste fluid drainage systems play an important role in ensuring the removal of fluid whilst maintaining the hygienic requirements of the facility.

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### **collect:**

The surface water or the liquids being treated are collected from the surface as quickly and as completely as possible by the drainage system. This part of the ACO system chain guarantees protection, safety and comfort for the people, buildings and traffic routes in the immediate vicinity.



### **clean:**

The collected liquids are treated using integrated physical, chemical or biological processes that ensure they can be discharged into the public sewers – the minimum requirement. This part of the ACO system chain creates the conditions for recycling and sustainable use.



### **hold:**

Containers, barriers and valves ensure that the liquids stay within the drainage system where they can be properly controlled. This part of the ACO system chain enhances protection and safety of food, your building and environment.



### **release:**

Pumps, lifting plant and pipe systems transfer the collected, treated and controlled water into the downstream systems and processes. This part of the ACO system chain brings the collected, treated and controlled water to the interfaces for further treatment, re-use or release.

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## About ACO

### Who we are

ACO is the established leader in providing drainage systems for the healthcare sector. Each drainage system is designed to provide maximum reliability, longevity and durability while preventing hygienic issues that can put your facility at risk. More than 60 years of drainage experience makes ACO the world-class supplier of drainage systems.

### What we do

ACO drainage and grease separation systems are designed around the three most important issues for the healthcare industry: the facilitation of cleanliness and cleaning, the need to encourage desired behaviour and a requirement for easy cleaning. Our products are designed to drainage waste liquids hygienically and economically, and meet the requirements of the NHS Health Technical Memoranda (Policies and Principles of Healthcare Engineering).

### Where we are

With sales offices throughout the world and 29 modern production sites situated throughout all continents, we are fully conversant with international standards and also work extensively with key industry bodies to stay ahead of the head when it comes to creating the most modern systems available.

### Why choose us

- When using ACO drainage systems you can expect optimal performance, a design which has an emphasis on hygienic performance and the confidence which comes from using one of the best drainage systems on the market.





## ACO at a glance

- 1946, company founded by Josef-Severin Ahlmann
- 3.900 staff in more than 40 countries (Europe, North and South America)
- 29 production sites in 15 countries
- Sales 2014: 670 million €

Global development in sales in million Euro



## Hygiene**First**

As one of the world's leading drainage specialists, ACO Group understands the critical role that drainage plays in a successful healthcare establishment. We appreciate that patient and employee safety, hygiene, infection control and cost control are all vital factors yet we also understand that for many, drainage is out of sight and therefore out of mind.

As a result, many drainage systems are not designed well. At best this leads to costly on going cleaning and maintenance, and at worst it can result in cross contamination and temporary closure of a facility. As the company that's driving the future of drainage, we are determined to change this by raising the profile of hygienic drainage and improving standards across every part of the process.

Our HygieneFirst philosophy represents our commitment to delivering products that provide ultimate hygienic performance. We design intelligent drainage solutions that minimize operational costs without compromising patient and employee safety.







## **Drainage management for the healthcare sector**

Healthcare facilities are extremely sensitive environments. As a result, our commitment to hygiene encompasses every aspect of the drainage process from initial design and installation, through to cleaning and maintenance.

ACO is fully conversant with 'Health Technical Memorandum 00 Policies and Principles of Healthcare Engineering', the aim of which is to ensure that everyone concerned with the management, design, procurement and use of healthcare facility understands the requirements of the business critical building and engineering technology in order to ensure optimum safety for all who are present in the building. One of the key drivers identified for a successful outcome in infection prevention and control issues, ACO respects this requirement as a fundamental area of importance.

ACO products are designed to:

### **Facilitate cleanliness and cleaning**

Designed not to harbour bacteria and to minimise the build-up of harmful pathogens and biofilms, ACO drainage systems' key design features include a sleek slope function, rounded corners with a minimum radius of 3mm and hygienically designed foul air traps (FATs) which mean that end users benefit from a fully drainable system that has no stagnant odours caused by waste fluid. Our products are also designed to connect hygienically with surrounding floors to minimise the risk of bacterial growth throughout the drainage system.

### **Encourage Desired Behaviours**

ACO drainage systems are easy to clean and disassemble, making cleaning a relatively quick and easy process and minimising the risk that operatives will make shortcuts in the cleaning process or even skip cleaning altogether.

### **Designed for easy cleaning**

Functional design and cleaning requirements which have been developed in partnership with premium cleaning agent suppliers, mean ACO drainage systems are easy to clean and maintain, minimising associated costs. ACO's advanced manufacturing technologies combined with specialist surface treatment, also ensure optimum durability and support corrosion resistance.





## **Drainage Management**

Hygienic standards in the healthcare sector are critical. To protect patients and employees, ACO meets this challenge by incorporating hygienic design principles into its drainage systems and supporting the development of best practice by sharing knowledge from other hygiene-critical sectors.

It is essential that appropriate drainage is designed and installed for all categories of risk within a healthcare facility.

Every product and system needs to fulfil its function efficiently throughout its entire lifespan. ACO drainage systems are specifically designed to reduce the build-up of liquid by disposing of waste fluid effectively and immediately.

### **Operational costs**

Operational costs are a major factor in business today. Every product and system needs to fulfil its function efficiently throughout its entire lifespan. ACO provides the expertise and quality necessary to provide the perfect balance between high levels of infection control and operational cost.

### **Health & Safety benefits**

ACO drainage systems deliver a number of important health and safety benefits. Our gratings are slip resistant improving safety in high risk areas such as dialysis and transplant units which have heavy water usage. Each component of our drainage systems is easy to remove and clean, and to optimise employee safety there are no sharp edges. We also offer a fire resistant solution which is certified according to EN 1366.

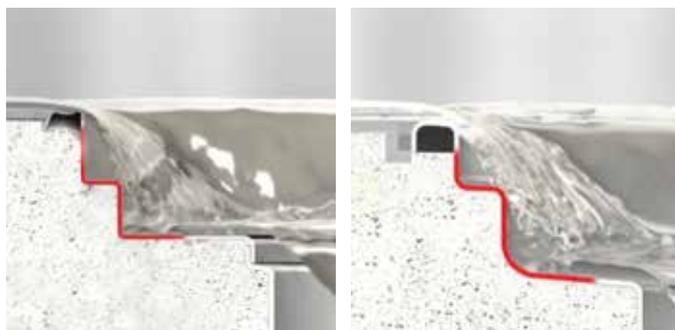
Our products are also designed in accordance with the hygienic engineering design principles recommended by EHEDG (a European organisation closely linked with the food industry\*) and are the first to apply the European standards of EN 1672 and EN ISO 14159 amongst others. While these standards were originally developed for the food processing industry, their high standards apply equally to the healthcare sector.

\*EHEDG – the European Hygienic Engineering & Design Group

## Hygienic design

### Internal radii

All internal radii equal or larger than 3mm which greatly increases cleaning effectiveness.



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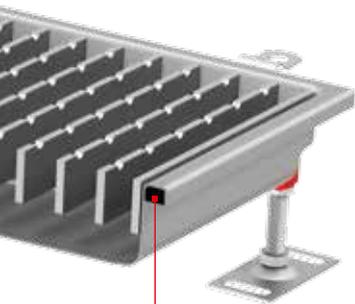
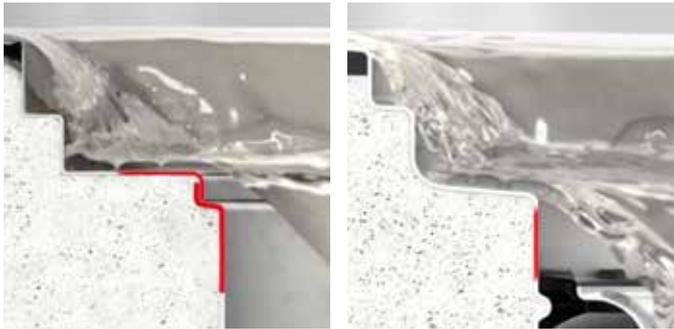
### Dry sump

Design, completely drainable – eliminating stagnant water, smells, microbial growth and potential chemical hazards.



### Hygienic joints

Deep-drawn body ensures smooth contours eliminating crevices that can nest dangerous bacteria.



### Edge in-fill

Design ensuring stable and durable transmission between the drainage and surrounding floor and helps to minimize the risk of floor cracks that spur bacteria growth.



### Drainage is a critical component affecting the hygienic performance of healthcare facilities.

Effective drainage helps mitigate hazards from the external environment and is central to a safe and hygienic operation internally. Within the healthcare facility, surface liquids create a potential hazard of microbiological contamination. Liquids may be part of the cleaning process, or may originate from specific equipment discharge points, or be simply the result of accidental spillage.

Proper cleaning of drainage in healthcare facilities reduces the risk of infection. ACO drainage systems are designed with all of these requirements in mind. Our fully hygienic products fulfil and surpass all of the hygienic recommendations listed in the NHS' 'Technical Memorandum 00 Policies and Principles of Healthcare Engineering'.

Our channels and gullies not only support maximum efforts for hygienic environments but also help reduce costs thanks to savings on employees, detergents and downtime caused by cleaning or repairs.

Our hygienic drainage is also safe to clean, protecting your employees from possible injuries during the cleaning process.



## Infection control risk groups

Just as any effective facility needs excellent workers, effective tools and reliable equipment, a high quality hygienic drainage system is vital for safe and efficient healthcare. Unlike most building types, healthcare environments face a complex and diverse range of issues.

Wastewater is generated from a huge number of tasks carried out in healthcare buildings, which range from cleaning, hand washing, specialist laundries, surgical operations and areas such as renal dialysis units. Most of this wastewater contains pathogenic microorganisms and must be disposed of via a safely contained internal drainage system into the external wastewater sewerage system.

Hospital environments in particular are subject to spillage of a wide range of potentially dangerous substances in areas of general use such as circulation areas and wards – a key issue which can compromise infection control.

The control and prevention of healthcare-associated infection (HCAI) is clearly a priority and it is important that the design of the drainage facilitates good infection prevention and control practices.

### Group 1 (low risk)



- Office areas
- Corridors
- Plant rooms
- Primary care
- Community treatment rooms
- Hospital kitchens
- Food preparation areas
- Cafés and restaurants
- Canteens

- Hygienic design is recommended for easy cleaning and maintenance, combination of products could be considered for easy layout design
- High retention / High flow rate
- Slip resistance high requirement

**Wet production process /  
Wet cleaning process**

## Group 2 (medium risk)



- A&E clinical rooms
- Radiology / MRI
- General surgery recovery rooms
- Wards
- Nuclear medicine
- Admissions/ discharge rooms
- Laboratories
- Endoscopy clinics
- Examination rooms
- Pharmacies
- Shower rooms

- Hygienic design – connections and mesh gratings could be considered if cleaning and sanitation procedures allows

- High retention / High flow rate

- Slip resistance high requirement

## Group 3 (high risk)



- Day surgery rooms
- Intensive care units
- Operating suites
- High dependency units
- Dialysis and transplant units
- Oncology
- Cardiology
- Vertical preparation areas
- Post operation recovery rooms

- Full hygienic design – one piece solution without connections, ladder or cast gratings

- High retention / High flow rate

- Slip resistance high requirement



## Product overview

**ACO offers sustainable, integrated drainage systems designed to protect your business and the environment.**

Our aim is to constantly improve every aspect of safety, hygiene and functional performance. We believe our systems and services are truly unique, delivering unparalleled benefits to everyone involved in project delivery or subsequent operation.



### ACO hygienic gully

The ACO hygienic gully range incorporates hygienic design principles to ensure the optimum hygienic performance. ACO hygienic gullies are available in three body sizes to cater for different flow rates and construction requirements including shallow construction depths and applications where preventative fire measures are required. ACO hygienic gullies are certified according to EN 1253.



### ACO pipe

A stainless steel push-fit pipe system designed for grey or black water. ACO pipe offers 40+ years product life thanks to the use of stainless steel. Easy installation and handling on site is ensured by push-fit assembly. ACO pipe is more hygienic, robust and durable when compared to plastic pipes systems for gravity and vacuum drainage.



### ACO hygienic box channel

The ACO hygienic box channel range incorporates hygienic principles to ensure the optimum hygienic performance. The hygienic box channel range is ideal for applications where high standards of hygiene are required as they are capable of handling large volumes of fluid. ACO hygienic box channels are certified according to EN 1253.



### ACO grease separators

A comprehensive range addresses all size requirements within the EN 1825 specification, with performance at or beyond the Standard's requirement. Certified to EN 1825, CE marked. Separators are tested and certified according to EN 1825 and are CE marked.



### ACO modular box and slot channel

Our modular range with standardised 20, 125 and 200 mm widths provides a most versatile system with off-the-shelf availability. Accessories such as corner units and a choice of grating make this system perfect for a wide range of applications. Certified to EN 1433, CE marked.



### ACO lifting station

Lifting plants are used when the grease separator is installed below the backflow level. EN 1825 requires a twin pump system to improve overall system reliability.



## Healthcare facility

Modern healthcare facilities are designed in a way which minimises the risk of control and prevention of healthcare-associated infection (HCAI). Serious problems can arise from the potential ingress of surface water into the healthcare facility and/or the back up of water in the sewage system.

### The ACO solution

ACO offers the complete portfolio of external polymer concrete drainage, grease separation and backflow devices as well as a range of attenuation systems and other external stormwater management products.

### Additional site products



#### ACO StormBrixx

is a unique and patented plastic geocellular storm water management system. Designed for surface water infiltration and storage, its versatility allows it to be used in applications across all construction environments as a standalone solution or as part of an integrated sustainable drainage (SUDS) scheme.



#### ACO Qmax

has been developed to satisfy the demand for a versatile, high capacity slot drainage system for a wide range of applications involving small to large catchment areas to any load class. The system is specifically designed to form an integral part of any modern, sustainable surface water management solution requiring effective storage and attenuation while eliminating carry over in storm water conditions.



#### ACO Monoblock PD/RD

The innovative drainage system which unique monocast construction guarantees extremely high levels of safety and stability in all transport surface drainage applications. Monoblock is poured in polymer concrete as a single piece: no lines of weakness along adhesive joints, producing a much tougher and safer product.

Monoblock RD is specially developed for road construction, like highways and motorways up to load class F 900. Monoblock PD is suitable for use in car parks, traffic and hard landscaped areas from load class A 15 to D 400.



#### ACO Access covers

Access Covers provide quick and easy access to underground services and enable any floor finishes to be maintained with minimal interference. Access Covers are easy to integrate in the overall design for supply and drainage installations to close off the end of the structure. Access Covers are available in different loadclasses. They are watertight and odour tight. ACO Access covers are certified according to European standard EN 1253-4 and EN 124.



#### ACO Heavy metal filter

ACO systems for rainwater treatment, including the metal roof filter, protects infiltration systems from pollution and congestion by deductible solids during the ingress of rainwater from, for example uncoated roof coverings from copper, zinc and lead.

Water discharge requirements are very strict, because the water is classified as a heavily burdened.

The metal roof runoff is purified by ion exchangers. The quality of water after filtration is so high that it can be introduced directly into the infiltration system (drainage trench or soak away), outfall, or into a rainwater using plant. It is also possible to use underground in seepage boxes or a soak away.

## ACO service chain

As the leading manufacturer of drainage solutions, we pride ourselves in particular on being experts in all aspects concerning drainage. We are always happy to put our comprehensive expertise at the service of our partners on the selling side, as well as architects, planners and the trades. This not only helps us simplify your working day, but also enables us to safeguard the quality and the market leadership of ACO solutions.



### **train:**

#### **Information and further education**

We share the expertise resource of the global ACO Group with dealers, planners, architects and installers, who place a big priority on quality. We invite you to profit from our expertise and attend on member of CDP trainings organized by us.



### **design:**

#### **Planning and optimisation**

The tendering and planning of drainage solutions is associated with many alternatives. But which concept produces the most economical, hygienical and safest technical solution? We'll help you find the right answer.



### **support:**

#### **Construction advice and assistance**

We provide you with project-related advice and support on your construction site to ensure that no unpleasant surprises occur between the planning and realisation of a drainage solution.



### **care:**

#### **Inspection and servicing**

ACO products are designed and built for long service lives. Our customer care services ensure that ACO continues to satisfy your high quality requirements year after year.





