



## **Watertight Brewery**

*Drainage management for independent Brewers*



# DRAINAGE SYSTEMS FOR INDEPENDENT BREWERS

We, people at ACO, understand how challenging it is for you to manage **6 litres of wastewater for every litre of beer** produced. Only durable stainless steel drains will support you while dealing with hot and chemically contaminated wastewater. However, every room in your brewery requires different drainage solution. By taking a holistic approach to the drainage system, we help you:

- **protect** both the beer and employees,
- **reduce time** spent with cleaning,
- **ensure watertight drainage** system that lasts for decades.

If you want to be 100% sure that your drainage meets the specific needs of your brewery, try our on-site **drainage system assessment (DSA)**. We will help you identify potential areas for concern and propose solutions for your consideration.

Our technical design team provides specification advice to ensure your drainage system meets current and future requirements.

Investment in a new drainage system can be disruptive and costly. We're committed to ensuring your system is right for your business and you only have to make this investment once.

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# 3 KEY FOCUS AREAS

**To ensure your operation is as safe and hygienic as possible, it is important to consider three key areas when specifying drainage:**

## 1.

### **Effective layout and sufficient capacity**

The specification of inappropriate drainage which has low retention capacity and flow rates can easily result in flooding, endangering health and safety in the workplace, and raising the risk of cross contamination.

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## 2.

### **Reliable floor – drainage connection**

High dynamic and thermal loading can cause floor cracks, especially at the point where the drainage connects to the floor.

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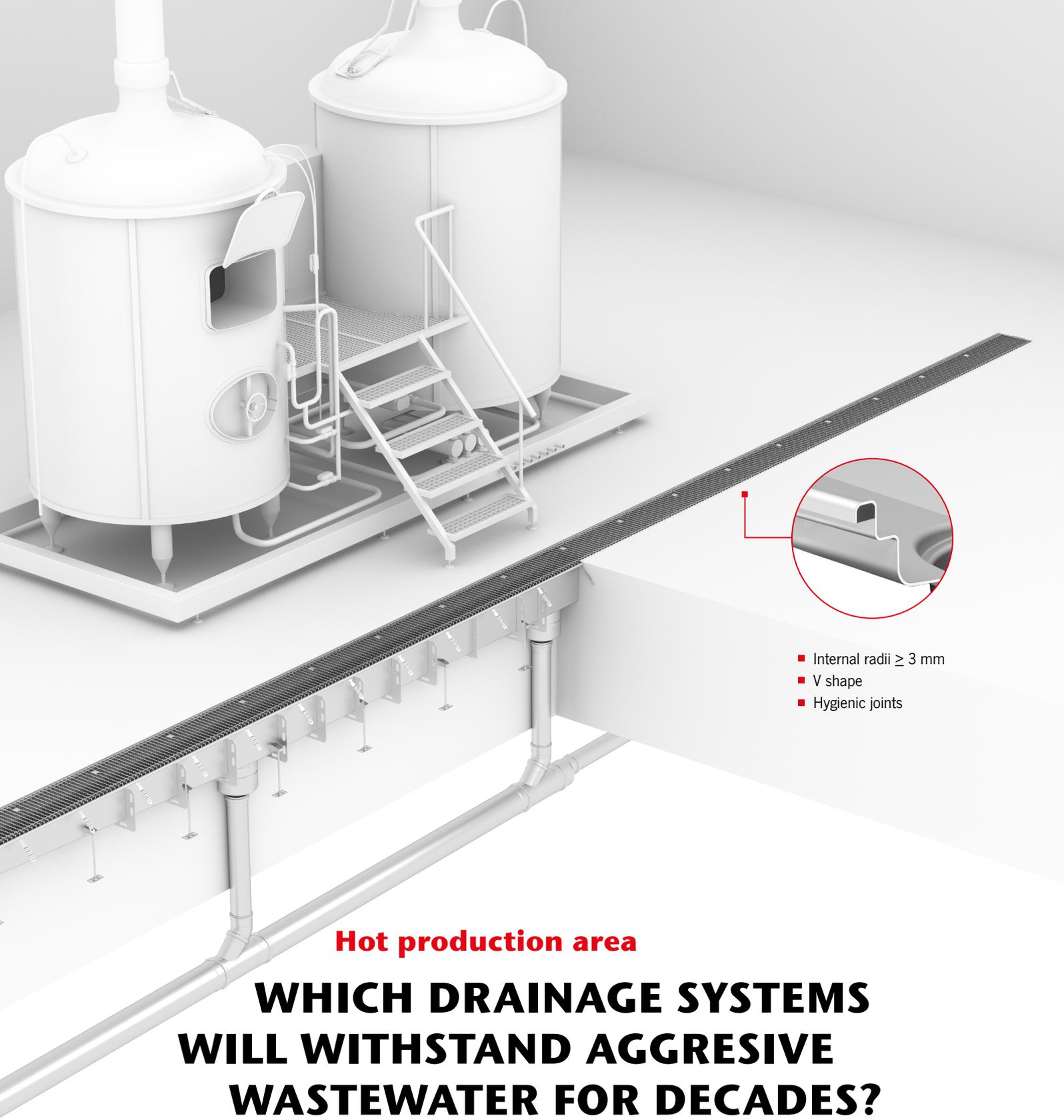
## 3.

### **Cleaning performance**

The ability to completely clean drainage systems in a way that is practical, efficient and affordable is a key issue affecting maintenance costs and hygienic standards in a beverage production environment.

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Discover details at [www.buildingdrainage.aco](http://www.buildingdrainage.aco)



- Internal radii  $\geq 3$  mm
- V shape
- Hygienic joints

### Hot production area

# WHICH DRAINAGE SYSTEMS WILL WITHSTAND AGGRESSIVE WASTEWATER FOR DECADES?

Your brewery needs to be watertight and easy-to-clean. If you want to invest in durable solution, you need to install stainless steel drainage system. Plastic system will not withstand the high temperatures since it starts deforming at 140°F. Cast iron on the other hand is not chemically resistant.

When you have chosen the right material, do not forget to consider the design. It is proven fact that only ACO's hygienically designed drains are 100% cleanable and hence do not compromise hygiene.

For a durable, hygienic and easy-to-clean solutions, specify a hygienically designed

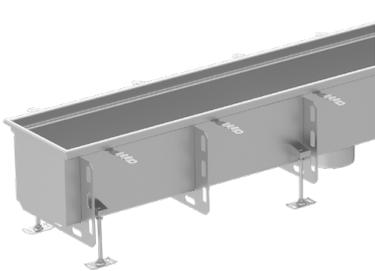
stainless steel drainage system. Silt baskets will help you to collect hop debris to prevent blockages.

**Aggressive and hot wastewater**

**Cross contamination**

**Hop debris**

**ACO product solution:**



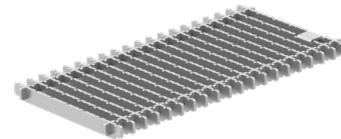
**ACO hygienic box channel - extra deep, with flexible joint to the floor**

Extra deep variations of ACO hygienic box channels provide extended flow rates and higher retention capacities without compromising hygiene. Extra deep hygienic box channels are designed to handle waste water from such a demanding technologies like CIP systems or fermentation tanks.



**ACO hygienic gully - high capacity, with flexible joint to the floor**

Hygienic gully in its high capacity variation has a diameter 440 mm and is capable of handling flow rates of more than 20l/s. That makes it suitable for the most demanding applications such as CIPs.



**ACO frameless ladder grating**

ACO's frameless ladder gratings provide fully hygienic solutions thanks to the use of robotic welding technology during the manufacturing process. The frameless design ensures that no debris is captured between the grating and drainage, optimising cleanliness and hygiene.



**ACO silt baskets**

For the collection of solid particles, ACO drainage systems can be supplied with an optional silt basket. ACO silt baskets are available in a wide variety of capacities ranging from 0.3 litre to 9.5 litres.



**ACO Kerb**

ACO kerb products provide reliable wall protection which prevents walls from impacts, water and chemical ingress, and damage associated with site traffic and the production process. ACO kerb products are suitable for use in any food processing area. They are available in polymer concrete or stainless-steel variations.



**ACO pipe**

ACO's push-fit pipe stainless steel pipe system is designed for grey and black water applications. ACO Pipe products offer a product life of more than 40 years thanks to the material properties of stainless steel. Easy on-site installation and handling is ensured by a push-fit assembly system and related cutting tools.



**Load class R50**

**Practical advice**

Collect the small debris with a well designed silt basket to prevent blockages in the drainage system and ensure floor cleaning is a quick and easy process.





## **Cold production area**

# **HOW TO STAY WATERTIGHT IN AN ENVIRONMENT SUBJECT TO IMPACT DAMAGE?**

You may have specified the correct drainage channel or system but how do you protect it from ongoing damage caused by site traffic? To ensure your drainage system remains both watertight and traffic-friendly it's essential to consider the load class required for your brewing facility.

Small wheels are not the only challenge you may face. Often you may damage the wall with the pallet truck. Leakage in the wall causes even bigger problems than in the floor.

Wall protection and relevant load class are often overlooked. Don't do the same

mistake. Do it once and do it right.

**Small wheel impacts**

**Pallet truck impacts**

**Medium volumes  
of wastewater**

**ACO product solution:**



### **ACO hygienic box channel**

ACO's hygienically designed box channels provide easily cleanable and fully inspectable drainage solutions that meet stringent cleanability requirements and are capable of handling large volumes of fluid which contains solid particles.



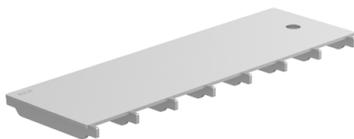
### **ACO hygienic box channel - narrow**

ACO hygienic box channels are also available in 150 mm width. This space-saving solution has the same hygienic and cleanability features as other hygienic box channels in the ACO portfolio.



### **ACO hygienic ladder grating**

ACO's hygienically designed ladder gratings provide an easy-to-clean solution for breweries. Ladder gratings are suitable for use in applications which are subject to high load classes and waste water which contains solid particles.



### **ACO slot cover grating**

ACO's fully hygienic slot covers fulfil the most stringent cleaning requirements and are the ideal solution for areas in which vehicles with small wheels are operated.



### **ACO Kerb**

ACO kerb products provide reliable wall protection which prevents walls from impacts, water and chemical ingress, and damage associated with site traffic and the production process. ACO kerb products are suitable for use in any food processing area. They are available in polymer concrete or stainless-steel variations.



### **ACO pipe**

ACO's push-fit pipe stainless steel pipe system is designed for grey and black water applications. ACO Pipe products offer a product life of more than 40 years thanks to the material properties of stainless steel. Easy on-site installation and handling is ensured by a push-fit assembly system and related cutting tools.

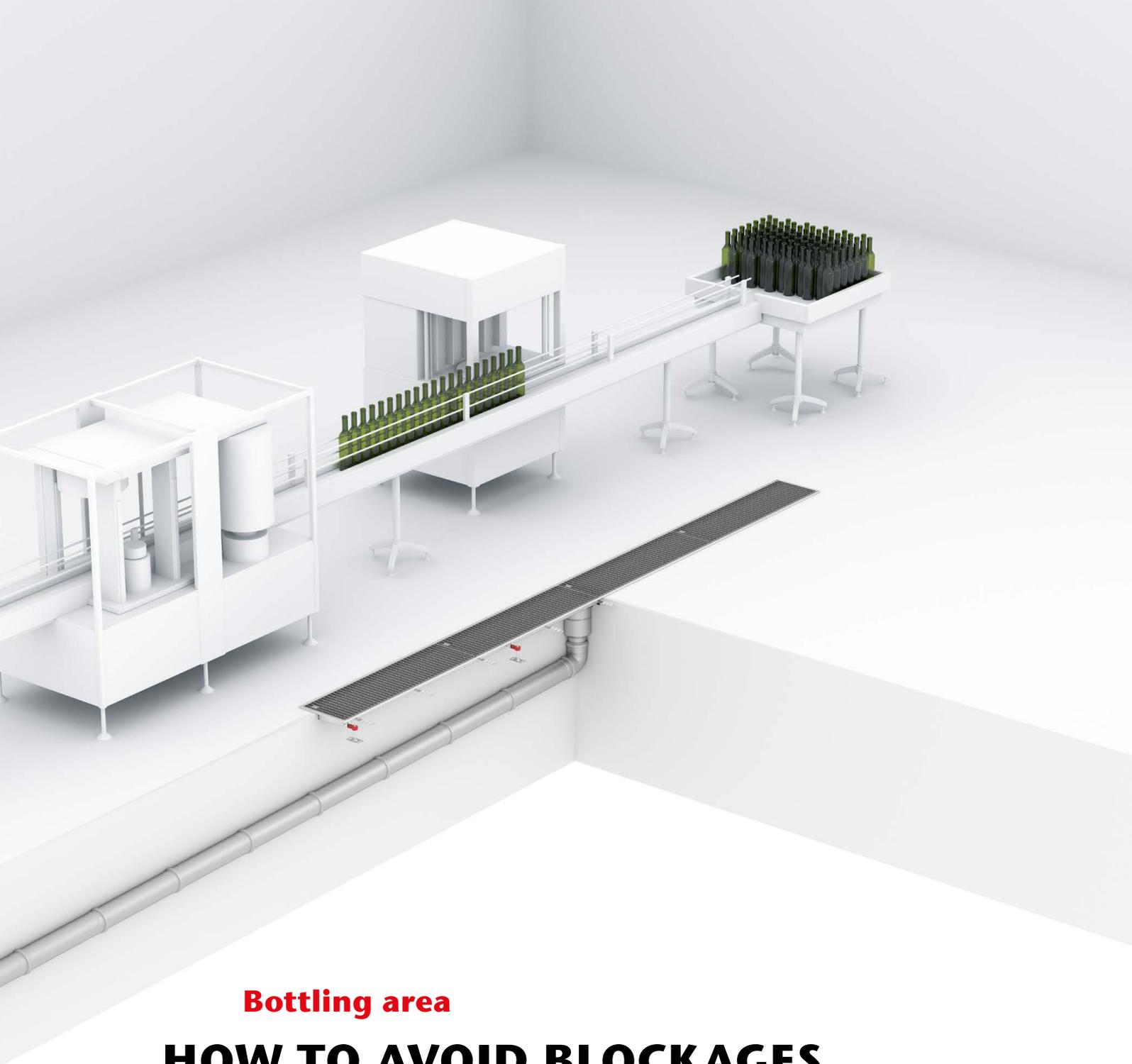


**Load class  
M125**

### **Practical advice**

Combine gratings. For example use ACO slot covers in areas where you expect regular traffic and ACO ladder gratings in areas where you operate production equipment.





## **Bottling area**

# **HOW TO AVOID BLOCKAGES AND PREVENT FLOODING OR INJURY?**

We understand how hard it can be to remove glass fragments from a floor. The easiest way to achieve this is to rinse the floor or sweep glass fragments into the drainage. So why not take this approach? Unfortunately, if the drainage is incorrectly specified, there's the risk that drains will become blocked.

To maintain the performance of your drainage systems and your production facility, it's important to consider at the specification stage, how you will use the drainage on a daily basis. On the right, we highlight an effective drainage solution which is designed specifically for bottling areas.

**Glass fragments**

**Slippery floors**

**Employees operating  
in the bottling area**

**ACO product solution:**



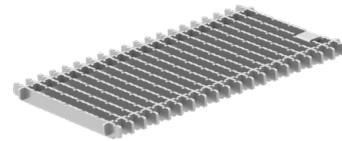
### **ACO hygienic box channel**

ACO's hygienically designed box channels provide easily cleanable and fully inspectable drainage solutions that are ideal for applications with stringent cleanability requirements and large volumes of fluid which contains solid particles.



### **ACO silt basket**

For the collection of solid particles, ACO drainage systems can be supplied with an optional silt basket. ACO silt baskets are available in a wide variety of capacities ranging from 0.3 litre to 9.5 litres.



### **ACO frameless ladder grating**

ACO's frameless ladder gratings provide fully hygienic solutions thanks to the use of robotic welding technology during the manufacturing process. The frameless design ensures that no debris is captured between the grating and drainage, optimising cleanliness and hygiene.



### **ACO Kerb**

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### **ACO pipe**

ACO's push-fit pipe stainless steel pipe system is designed for grey and black water applications. ACO Pipe products offer a product life of more than 40 years thanks to the material properties of stainless steel. Easy on-site installation and handling is ensured by a push-fit assembly system and related cutting tools.

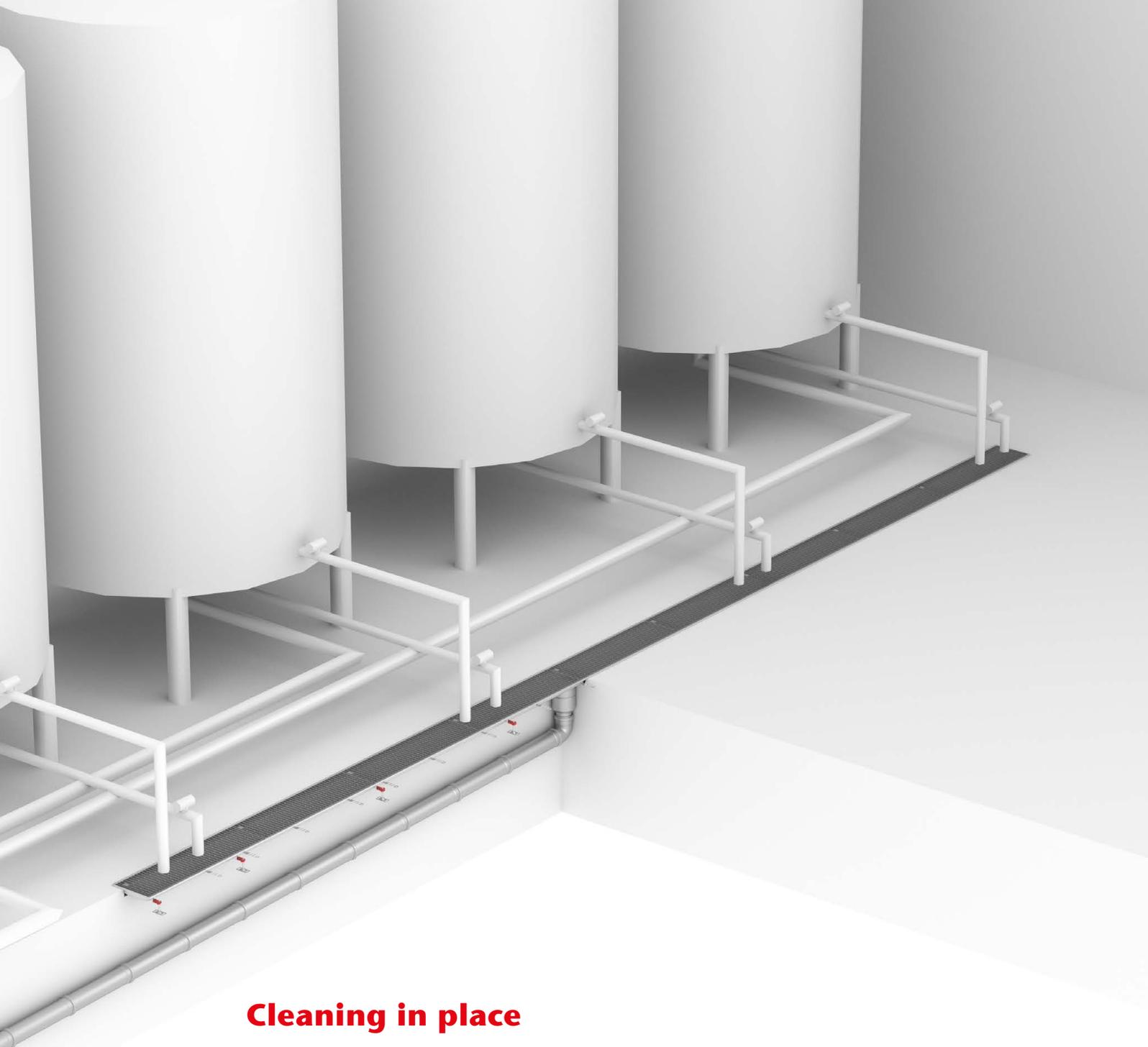


**Load class  
R50**

### **Practical advice**

Collect glass fragments with a well designed silt basket to prevent blockages in the drainage system and eliminate the risk of injury for your employees.





## Cleaning in place

# HOW TO HANDLE LARGE VOLUMES OF WASTEWATER?

Discharge the wastewater directly to the drain without any spillage. When handling large volumes of high temperature waste waste containing aggressive chemicals, this can be particularly challenging. We recommend you to position your stainless steel drains right under the outlets of CIP stations.

But do not forget to consider the capacity, ensure air gap and keep the drain inspectable.

It is essential that the layout of the drainage system and production equipment is considered at specification stage and that a hygienically designed,

high capacity drainage system is specified if large volumes of waste water are to be handled effectively.

**Large volumes of wastewater and high flow rates**

**Hot wastewater**

**Agressive chemicals**

**ACO product solution:**



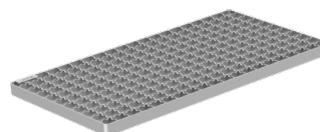
### **ACO hygienic box channels with a flexible floor joint**

ACO's hygienically designed box channels are available in a range of sizes to cater for the high volume and flow rates required in breweries. ACO also recommends that a flexible joint is specified to create a durable, long lasting floor-drainage connection in areas that are subject to thermal shock.



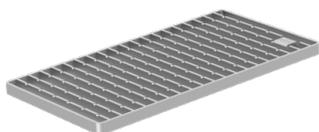
### **ACO hygienic gully with flexible joint to the floor**

ACO's hygienically designed gullies are available a range of sizes to cater for flow rates and construction requirements specific to breweries. Our gullies are suitable for use in shallow construction depths and applications where preventative fire measures are required. ACO hygienic gullies are certified according to EN 1253.



### **ACO mesh grating**

ACO mesh grating is a lightweight economical solution for areas with low hygienic risk and load class resistance demands.



### **ACO hygienic ladder grating**

The ACO hygienic ladder grating portfolio provides an easily cleanable solution. Ladder gratings are suitable for applications with high load classes in combination with solid particles contained in the waste water.



### **ACO tundish**

The ACO tundish is used to streamline discharged water directly into a gully.



### **ACO pipe**

ACO's push-fit pipe stainless steel pipe system is designed for grey and black water applications. ACO Pipe products offer a product life of more than 40 years thanks to the material properties of stainless steel. Easy on-site installation and handling is ensured by a push-fit assembly system and related cutting tools.



**Load class  
M125**

### **Practical advice**

Ensure the wastewater is not splashing around. Use ACO tundish to ensure air gap while protecting the surrounding.





## **Tasteroom**

# **HOW TO KEEP YOUR GUEST SAFE AND SATISFIED?**

Whether visitors are taking a tour of your brewing facility or an adjacent visitor centre, it's important to ensure the experience is a pleasant one. Bad odours, caused by issues with your drainage, can ruin the visitor experience and create a poor impression of your facility.

To help prevent such odours from occurring, it's essential to collect any glass fragments which could be washed into your drainage and cause blockages. Heel safe gratings can also be specified to prevent shoes from becoming trapped in drainage gratings.

**Accidental spillages**

**Visitor safety**

**Aesthetic challenge**

**ACO product solution:**



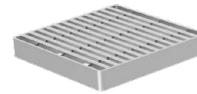
### **ACO hygienic gully 142**

ACOs hygienically designed gullies are available in various sizes to cater for flow rates and construction requirements specific to breweries. Our gullies are suitable for use in shallow construction depths and applications where preventative fire measures are required. ACO hygienic gullies are certified according to EN 1253.



### **ACO odour proof covers**

ACO's odour proof cover hermetically separates the floor surface above the gully from the space within it. It has been designed specifically for use in dry processing areas where controlled wet cleaning take place, and in areas where foul air traps can become dry and so a new form of odour protection is required. Tested and certified according to EN 1253.



### **ACO heelsafe grating**

A RedDot awarded grating protects heels of your visitors from getting stuck. The continuous profile of the filling bars is U-shaped and, together with the accurate slot sizes, provides a balanced visual effect which emphasises the durability of the stainless steel material used. Slots with an integrated heelguard feature are just 8mm wide so even shoes with narrow heels cannot get stuck.



### **ACO silt baskets**

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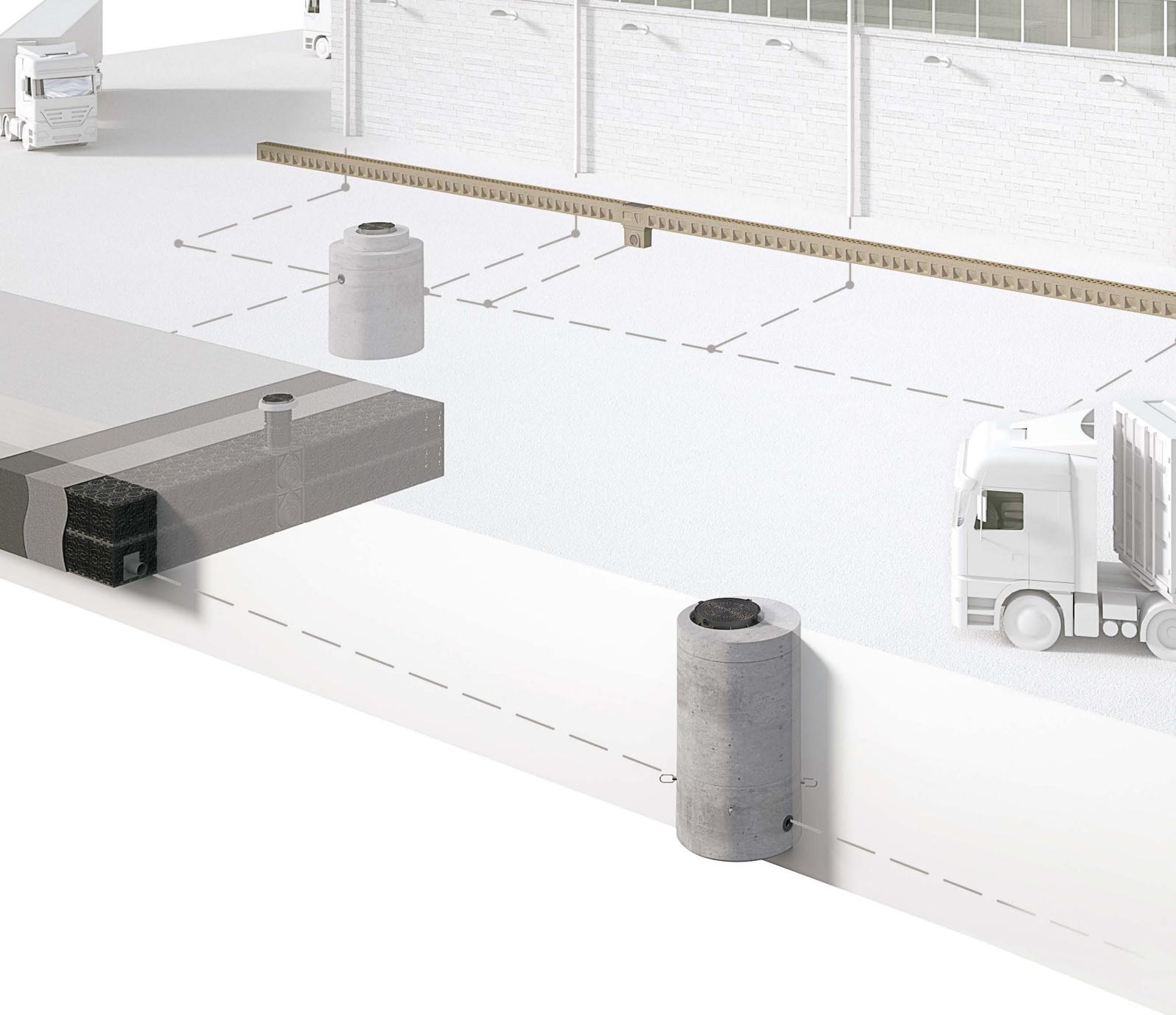


**Load class  
R50**

#### **Practical advice**

Make visiting and working in your brewery a pleasant experience. When your drain is not used frequently, the siphon can get dry and a bad smell develop. Odour proof covers help you to address this issue while heelsafe gratings prevent visitors' shoes from getting stuck in gratings which are used in areas, such as tasterooms.





## Brewery loading area

# HOW CAN LARGE EXTERNAL AREAS WHICH ARE SUBJECT TO HEAVY LOADS BE EFFECTIVELY DRAINED?

In external areas of a brewery, the challenge is to ensure that drainage systems can withstand the toughest load classes and quickly drain large quantities of rain water containing solid particles. Your drainage systems needs to be capable of dealing with the high volumes of heavy rainfall, sand and dirt which can easily overload public sewers.

This requirement can be easily met if attention is paid to key areas with the aim of protecting water from people and people from water. On the right hand page, you can discover solutions that are designed to perform in brewing logistics and delivery areas.

**Heavy traffic**

**Sand and dirt**

**Heavy rainfall**

**ACO product solution:**



#### **ACO DRAIN® Monoblock**

ACO DRAIN® Monoblock is a drainage system with monolithic design: The channel and cover are produced from polymer concrete in one casting. The result is an extremely stable unit without loose parts. There is also no need for bonded joints. The unique monocast design guarantees maximum safety and stability, even under the extreme loads of large area drainage.



#### **ACO Stormbrixx**

ACO Stormbrixx HD infiltration system is not only suitable for block infiltration but also for the block storage and retention of surface water. The surface water is stored temporarily in the numerous voids in the infiltration system and can then be discharged in a controlled way. In this way, overloading of the sewer network is avoided in case of heavy rainfall.



#### **ACO Sedismart-C**

ACO Sedismart-C is used to separate sediments from surface water and to thus protect the downstream block storage from becoming blocked with sand. The internal body around and through which the surface water to be treated must flow, causes the water in the sludge trap to flow in a rotational pattern. The flowing time is extended and the sedimentation of solids is optimised.

#### **ACO flow restriction systems**



The discharged quantities from the ACO Stormbrixx block storage are adjusted and controlled via the ACO flow restriction manhole, a manhole structure made of reinforced concrete with integrated flow restriction valve for individual reduction of the discharge pipe crosssection. In this way, collected surface water is discharged into the sewer in a controlled way, without overloading it.



**Load class  
D400**

#### **Practical advice**

We can help you with a lot more. Contact our regional office to get the relevant solution for the roof drainage, grease separation and a lot more.





## A comprehensive and detailed approach to all projects.

**ACO provides its customers with a range of design and installation services to help beverage manufacturers benefit from effective and durable drainage systems.**

We evaluate current drainage performance as well as helping you with the specification of drainage and accessories in new facilities. We ensure drainage systems comply with current or planned equipment and traffic within the operation, and assess any other possible risks. In a single report we can supply risk assessments, corrective measures and an action plan for your consideration.



### Specification

At ACO we design high performance drainage systems that meet the specific needs of beverage production facilities. We will make sure that every aspect of your drainage project meets the highest standards including the provision of BIM files for specification.



### Installation

ACO products are designed to minimise assembly time and related costs as well as ease commissioning post installation.

The ACO team can be on-hand throughout the installation of your drainage system to provide guidance and best practice advice.

A new and revised connection method enables installers to hygienically weld together long sections of drainage channel on site and is perfect for use in hygienically sensitive environments.



care

### **Maintenance support**

The ACO team will evaluate the effectiveness of your existing cleaning programme and provide maintenance recommendations through our partners regarding cleaning procedures and chemicals which should be used to keep your drainage system clean.



train

### **Train**

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

## About ACO

The family-owned company headquartered in Rendsburg/Büdelndorf, Germany, was founded in 1946 on the site of the Carlshütte foundry – Schleswig-Holstein's first industrial company. It still has very strong roots in the region. The major innovation strength of the ACO Group is built on intense research and development, and its technical expertise in processing polymer concrete, plastic, cast iron, stainless steel and reinforced concrete.





 Stainless Steel production  
 ACO organisation

## ACO Group at a glance

- 1946, company founded by Josef-Severin Ahlmann
- 4,800 employees in more than 40 countries (Europe, America, Asia, Australia, Africa)
- 30 production sites in 15 countries
- Sales 2018: Euro 850 million

**ACO. creating  
the future of drainage**

**[www.buildingdrainage.aco](http://www.buildingdrainage.aco)**



Find out more at **[www.hygienefirst.com](http://www.hygienefirst.com)**