



# Drainage Management for Independent Brewers

A Watertight Brewery



# Drainage systems

## for Independent Brewers

We at ACO, understand how challenging it is for you to manage **6 gallons of wastewater for every gallon 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 can help you to:

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

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.

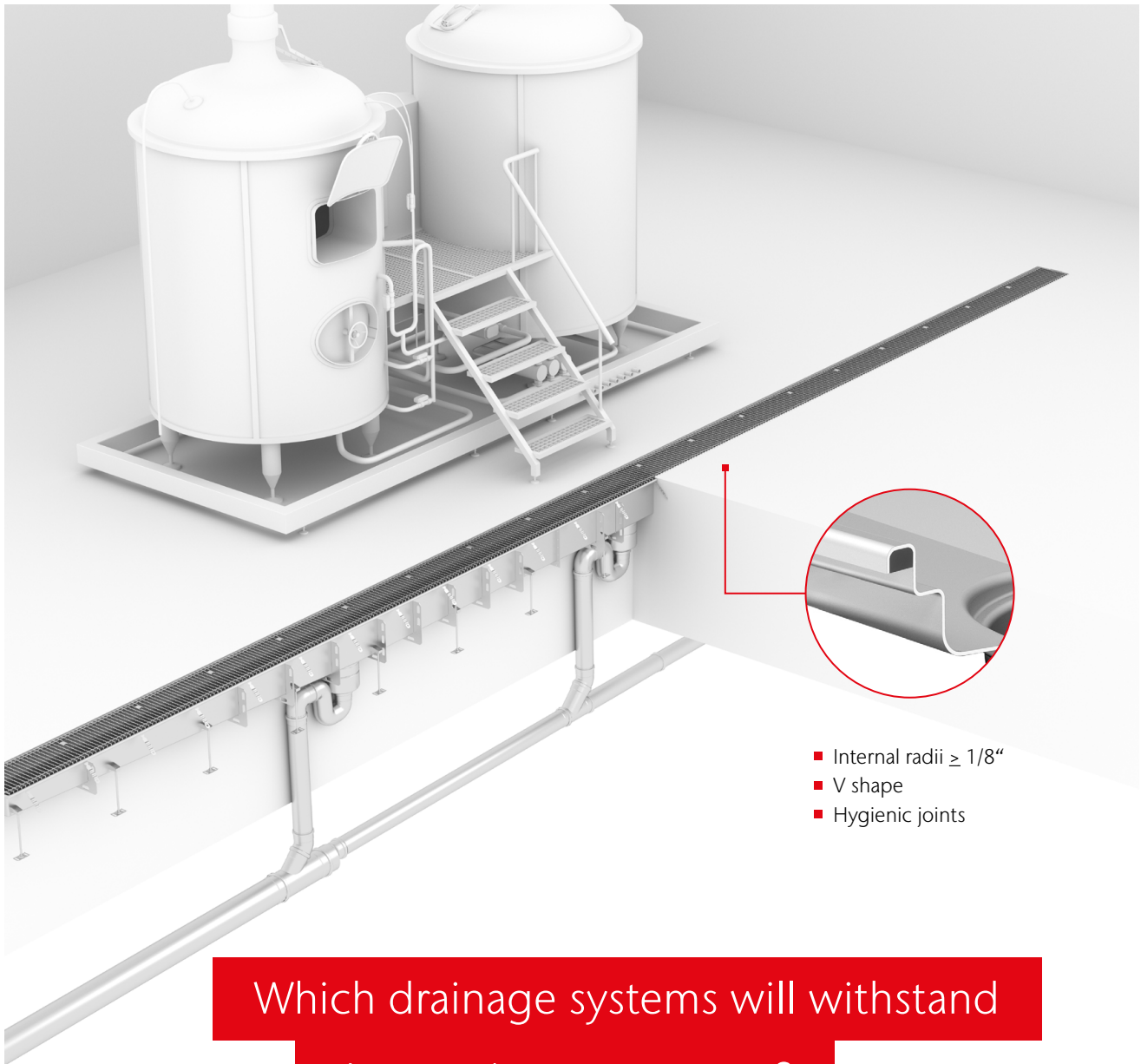
### 2 Reliable floor – drainage connection

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

### 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.

Discover details at [www.acobuildingdrainage.us](http://www.acobuildingdrainage.us)



## Which drainage systems will withstand Aggressive wastewater?

Hot production area

Your brewery needs to be watertight and easy-to-clean. If you want to invest in a durable solution, you need to install stainless steel drainage systems. Plastic systems 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 a proven fact that ACO's hygienically designed drains are 100% cleanable and do not compromise hygiene.

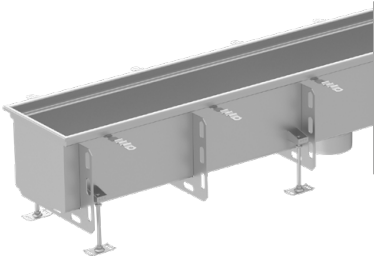
For durable, hygienic and easy-to-clean solutions, specify a hygienically designed stainless steel drainage system. Silt baskets will help you to collect hop debris to prevent blockages.

Aggressive and  
hot wastewater

Cross  
contamination

Hop debris

### ACO product solution:



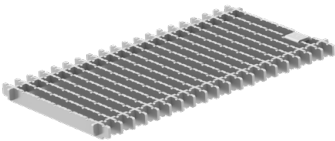
#### ACO Hygienic BoxDrain - extra deep, with flexible joint to the floor

Deep variations of ACO Hygienic BoxDrains provide increased flow rates and higher retention capacities without compromising hygiene. Extra deep hygienic trench drains are designed to handle waste water from such demanding technologies like CIP systems or fermentation tanks.



#### ACO Hygienic Floor Drain - high capacity, with flexible joint to the floor

Hygienic Floor Drain in its high capacity variation has a diameter 17" and is capable of handling flow rates of more than 300 GPM. That makes it suitable for the most demanding applications such as CIPs.



#### ACO Frameless Ladder Grate

ACO's frameless ladder grates 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 drain, optimizing cleanliness and hygiene.

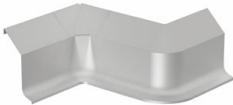


#### ACO Silt Baskets

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 0.08 gal to 2.5 gal.

#### Practical advice

Collect 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.



#### 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 with P trap

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 MD



## How to stay watertight in an environment subject to impact damage?

### Cold production area

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.

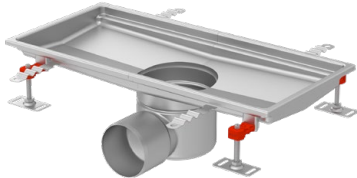
Wall protection and relevant load class are often overlooked. Don't make the same mistake. Do it once and do it right.

Small wheel  
impacts

Pallet truck  
impacts

Medium  
volumes of  
wastewater

### ACO product solution:



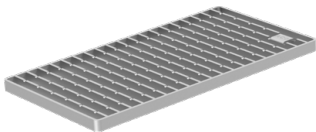
ACO Hygienic BoxDrain

ACO's hygienically designed trench drains 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.



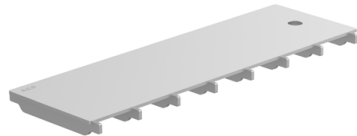
ACO Hygienic BoxDrain  
- narrow

ACO Hygienic BoxDrains are also available in 5.9" width. This space-saving solution has the same hygienic and cleanability features as other hygienic box channels in the ACO portfolio.



ACO Hygienic Ladder Grate

ACO's hygienically designed ladder grates 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.

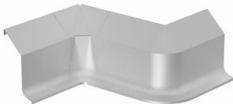


ACO Slot Cover Grate

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

**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.



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.

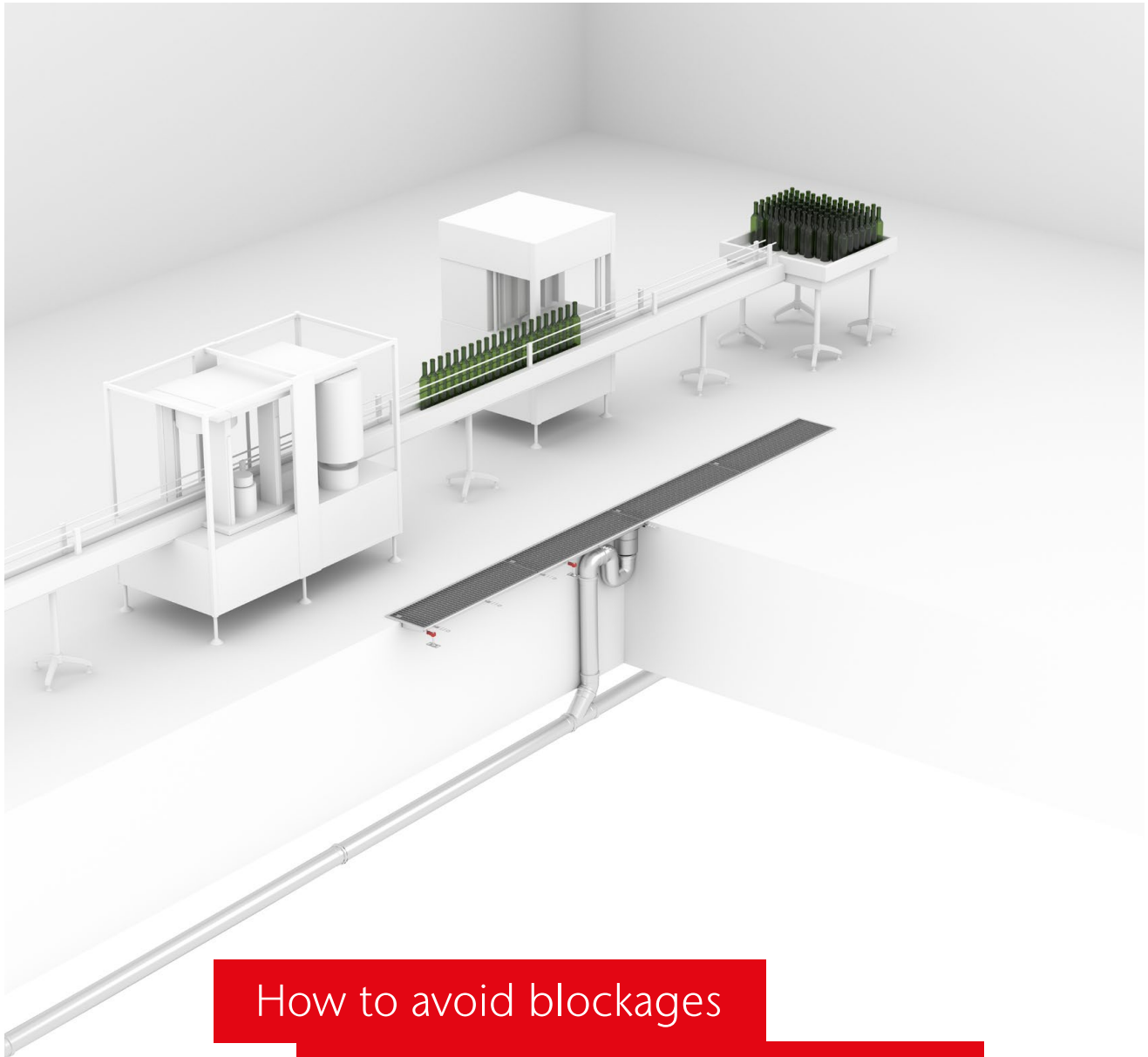


ACO Pipe with P trap

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 MD**



## How to avoid blockages and prevent flooding or injury?

### Bottling area

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

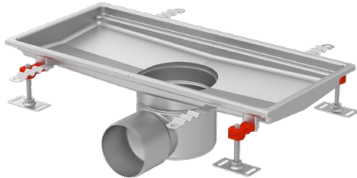
at the specification stage, how you will use the drainage on a daily basis. On the right, we highlight an effective drainage solution which is designed specifically for bottling areas.

Glass fragments

Slippery floors

Employees  
operating in  
bottling areas

### ACO product solution:



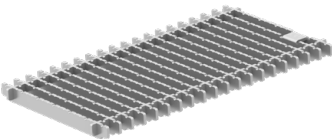
ACO Hygienic BoxDrain

ACO's hygienically designed trench drains 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.



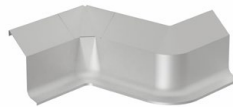
ACO Silt Basket

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 0.08 gal to 2.5 gal.



ACO Frameless Ladder Grate

ACO frameless ladder grates 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

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.

**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.

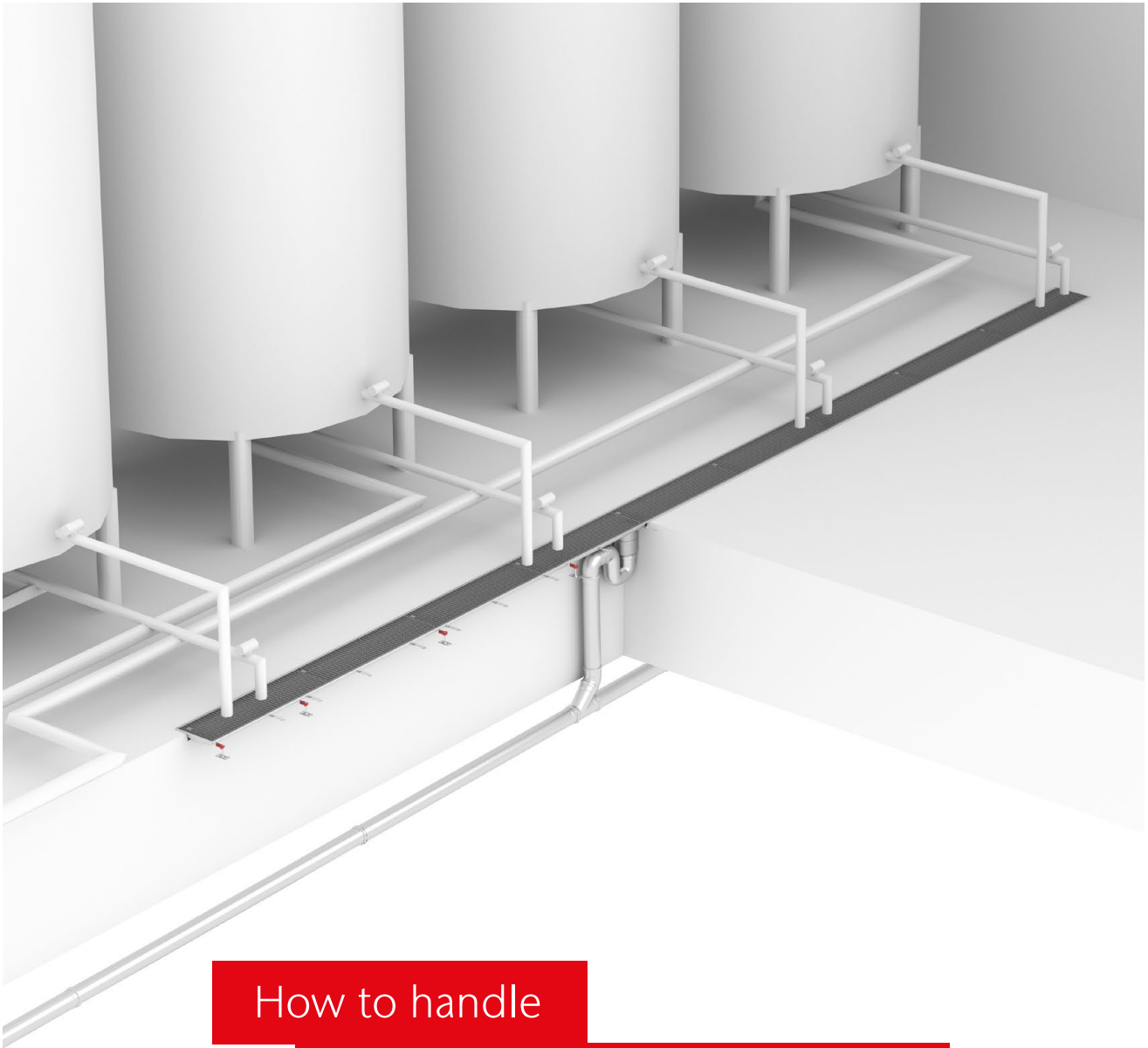


ACO Pipe with P trap

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 MD**



How to handle

large volumes of wastewater?

Cleaning in place

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 directly under the outlets.

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

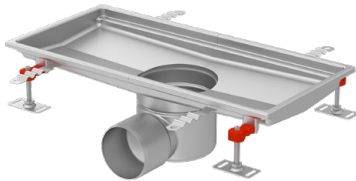
It is essential that the layout of the drainage system and production equipment is considered at specification stage and that a hygienically designed, high capacity drainage system is specified if large volumes of waste water are to be handled effectively.

Large volumes  
of wastewater  
and high  
flow rates

Hot wastewater

Aggressive  
chemicals

### ACO product solution:



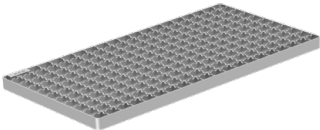
ACO Hygienic BoxDrain channels  
with a flexible floor joint

ACO's hygienically designed trench drains 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.



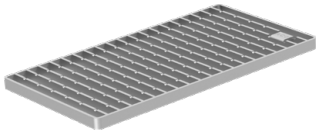
ACO Hygienic Floor Drain  
with flexible joint to the floor

ACO's hygienically designed floor drains are available a range of sizes to cater for flow rates and construction requirements specific to breweries. Our floor drains are suitable for use in shallow construction depths and applications where preventative fire measures are required. ACO hygienic floor drains are certified according to EN 1253 and ASME A112.6.3, section 5



ACO Mesh Grate

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



ACO Hygienic Ladder Grate

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

**Practical advice**

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



ACO Tundish

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

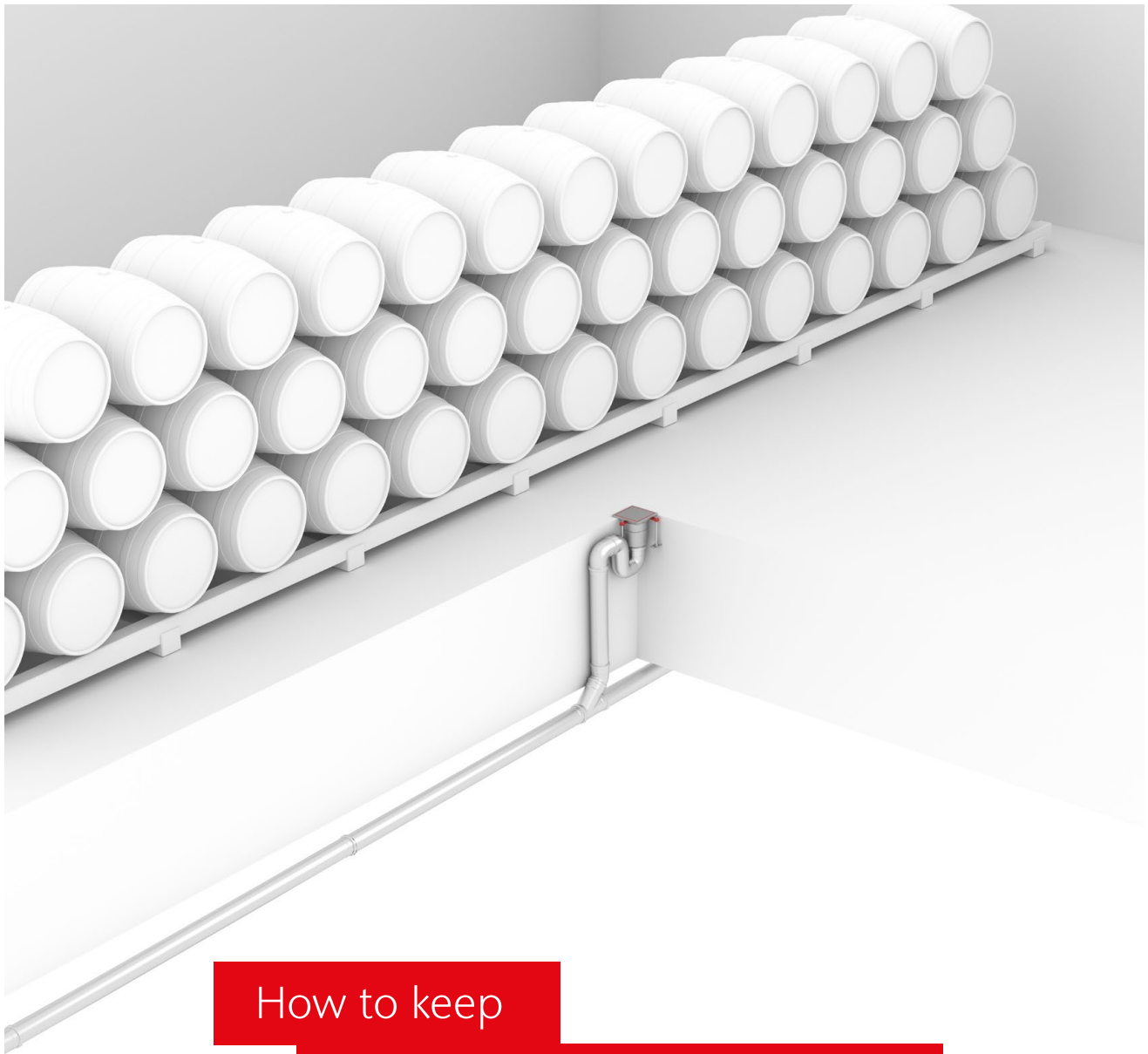


ACO Pipe with P trap

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 MD**



## How to keep your guest safe and satisfied?

### Tasteroom

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

To help prevent such odors from occurring, it is essential to collect any glass fragments which could be washed into your drainage

and cause blockages. Heel safe grates can also be specified to prevent shoes from becoming trapped in drainage grates.

Accidental spillages

Visitor safety

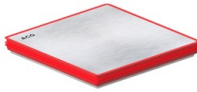
Aesthetic opportunity

### ACO product solution:



ACO Hygienic 8" Floor Drain

ACOs hygienically designed floor drains are available in various sizes to cater for flow rates and construction requirements specific to breweries. Our floor drains are suitable for use in shallow construction depths and applications where preventative fire measures are required. ACO hygienic floor drains are certified according to EN 1253 and ASME A112.6.3, section 5.



ACO Odor Proof Covers

ACO's odor proof cover hermetically separates the floor surface above the floor drain 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 odor protection is required. Tested and certified according to EN 1253 and ASME A112.6.3, section 5.



ACO Heelsafe Grate

An ADA compliant grating protects heels of your visitors from getting stuck. The continuous profile of the filling bars is V-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 0.3" wide so even shoes with narrow heels cannot get stuck.



ACO pipe

ACO's stainless steel push-fit pipe system is designed for grey or black water applications. ACO Pipe products offer more than 40 years' product life 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.

**Practical advice**

Make visiting and working in your brewery a pleasant experience. When your drain is not used frequently, the foul air trap can get dry and a bad smell can develop. Odor 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.



**Load class MD**



## How can large external areas which are subject to heavy loads be effectively drained?

### Brewery loading area

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® HD200

ACO DRAIN® HD200 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.



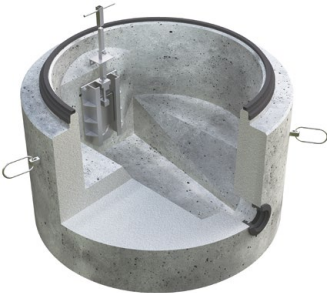
#### ACO Stormbrixx

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 optimized.



#### 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.

#### 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.



Load class HD



## 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 minimize 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.



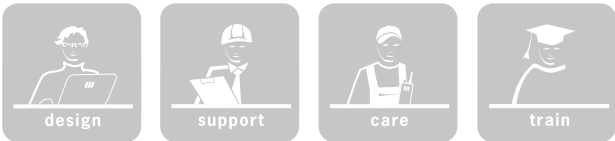
**Maintenance support**

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



**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.



# ACO. creating the future of drainage

## 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.



Headquarters of the ACO Group  
in Rendsburg/Büdelndorf



**5,000**

Employees in more than 40 countries (Europe, America, Asia, Australia, Africa)

**1 Bil.**

USD Sales in 2019

**30**

Production sites in 15 countries



ACO Academy for practical training

Owners Hans-Julius and Iver Ahlmann (left)



ACO products support the ACO System Chain



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## Surface Water Management

- ACO Drain - Commercial Trench Drains
- ACO Infrastructure - Heavy Duty Drainage
- ACO Sport - Athletic Venue Drainage
- ACO StormBrixx - Geocellular Tanks
- ACO Aquaduct - Custom Drainage
- ACO Environment - Solid & Oil Separators
- ACO Wildlife - Guidance & Passage
- ACO Self - Garden & Landscape Drainage
- ACO UtilityDuct - Ducting System

## Building Drainage

- ACO Stainless - Stainless Trench Drains
- ACO BoxDrain - Stainless Hygienic Drains
- ACO FloorDrain - Stainless Point Drains
- ACO Pipe - Stainless Push-fit Piping
- ACO ShowerDrain - Bathroom Drainage

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the future of drainage

