



*Drainage solutions for the Beverage and Liquid Food Industry*  
**Ultimate hygienic performance**



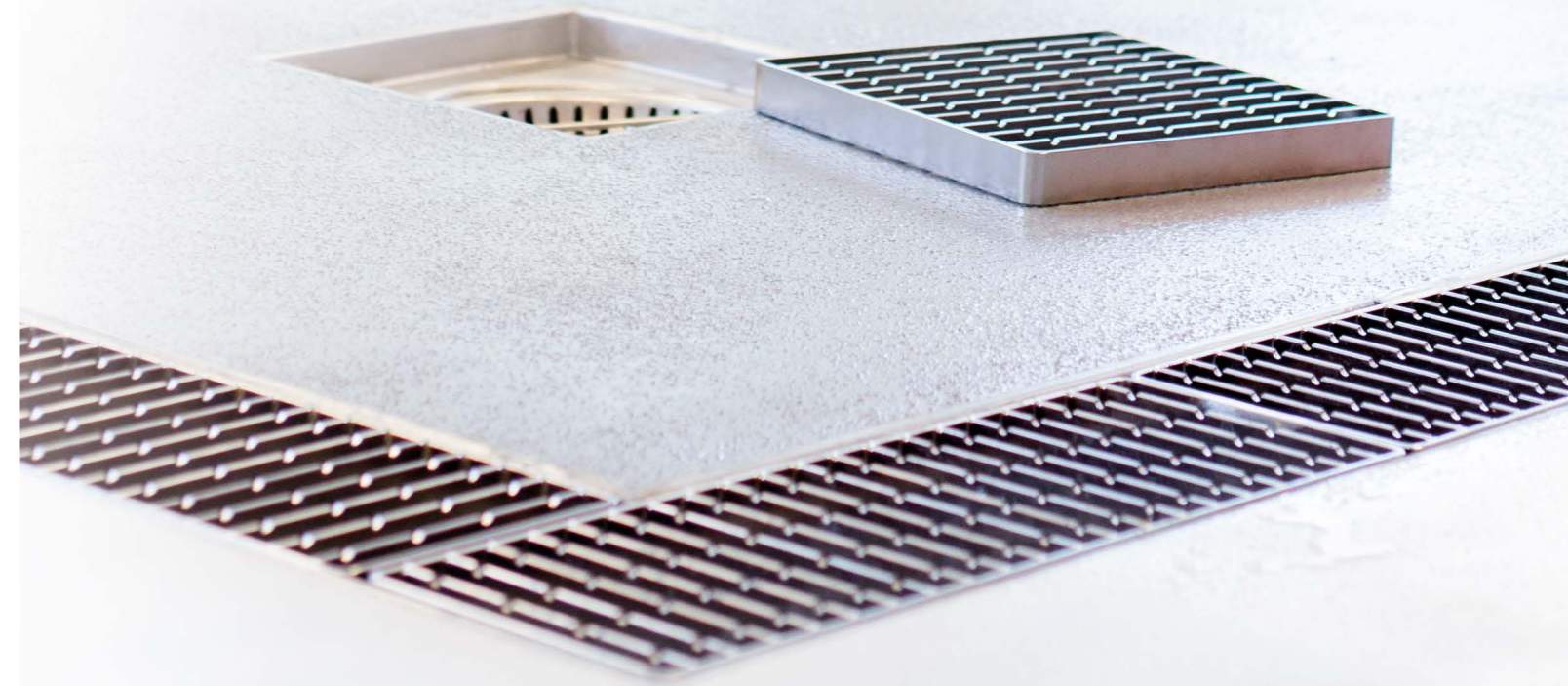
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## THE EFFECTIVE SOLUTION FOR WASTE WATER MANAGEMENT WITHIN THE BEVERAGE OPERATION.

Our solutions tackle two of the food and beverage industry's biggest concerns: reducing the risk of beverage contamination and optimizing cleaning costs. We incorporate hygienic design principles that are normally reserved for food contact equipment because we believe that hygienic performance is essential. As the future of drainage company we are committed to raising industry standards with regard to hygienic drainage. We call it HygieneFirst philosophy.

Hygiene**First**





## 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.



### 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

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.

# THE CHALLENGE IS TO KEEP THE ENVIRONMENT CLEAN AND TO MEET FOOD AND HEALTH AND SAFETY REGULATIONS.

Drainage system design, as well as the design of drainage features, significantly influences hygienic performance, operational efficiency and costs in beverage production. A correctly designed drainage system also helps to create a safe working environment by preventing accidents in the workplace.

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

Inappropriate drainage with low retention capacity and flow rates can easily lead to flooding, endangering health and safety in the workplace, and also raises 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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# 1.

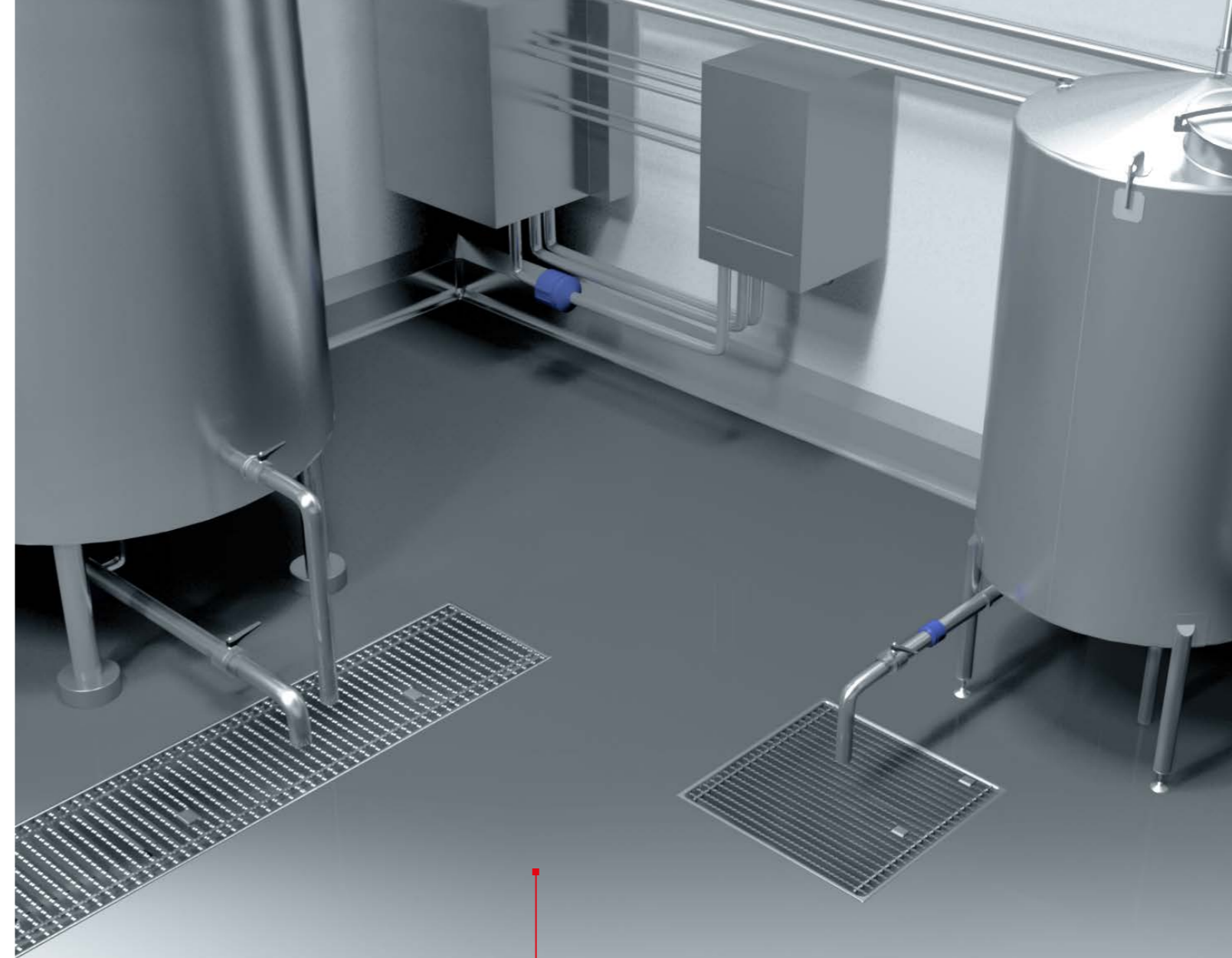
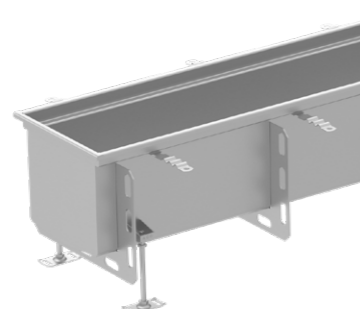
## EFFECTIVE LAYOUT AND SUFFICIENT CAPACITY

Technologies like cooling towers, CIP or steam generation are extremely demanding with regard to waste water management. Inappropriate drainage with low retention capacity and flow rates can easily lead to flooding, endangering health and safety in the workplace, and raises the risk of cross contamination.

**For such high demanding situations, drainage with sufficient water retention capabilities and flow rates must be used.**

### The ACO solution:

- Hygienic gullies with high flow rates are part of ACO's standard portfolio. For applications with the biggest CIP capacity, **ACO also can produce customized high-capacity gully solutions.**
- In addition to ACO's standard hygienic box channel portfolio, customers can specify any customized hygienic channel design, including **hygienic extra deep box channels with high retention capacity.**
- The ACO tundish** is used to streamline discharged water directly into a gully.



WELL SPECIFIED AND EASILY ACCESSIBLE DRAINAGE HELPS WITH ONGOING CLEANING AND MAINTENANCE AND KEEPS EMPLOYEES SAFE BY HELPING TO PREVENT SLIP RELATED WORKPLACE INJURIES.

| CIP flow capacity [m³/h] | 5                      | 10 | 15                     | 20 | 30                        | 40 | 50 | 60 |
|--------------------------|------------------------|----|------------------------|----|---------------------------|----|----|----|
|                          | ACO hygienic gully 157 |    | ACO hygienic gully 218 |    | ACO gully - high capacity |    |    |    |
| RECOMMENDED GULLY        |                        |    |                        |    |                           |    |    |    |

# 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.

The floor-drainage connection must be specified with respect to the application.

ACO and flooring specialist Sika commissioned a three year study and research program to provide factory and processing operators with clear evidence-based guidance with regard to flooring-drainage connections.

More information on the research can be found here:

[www.aco-buildingdrainage.com/en/home/research/does-a-reliable-floor-drainage-connection-exist/](http://www.aco-buildingdrainage.com/en/home/research/does-a-reliable-floor-drainage-connection-exist/)

### The ACO solution:

- For areas where the drainage has to be resistant to both thermal and dynamic shocks, ACO has tested various floor-drainage connection solutions, which showed promising results. The results of the research led to the development of a customised **L-profile edge** solution. It is resistant to both thermal and dynamic shocks and is being incorporated into our product design and manufacturing process.

#### Testing conditions



Thermal shocks  
20° - 90°C



Dynamic shocks  
over 100 000 cycles

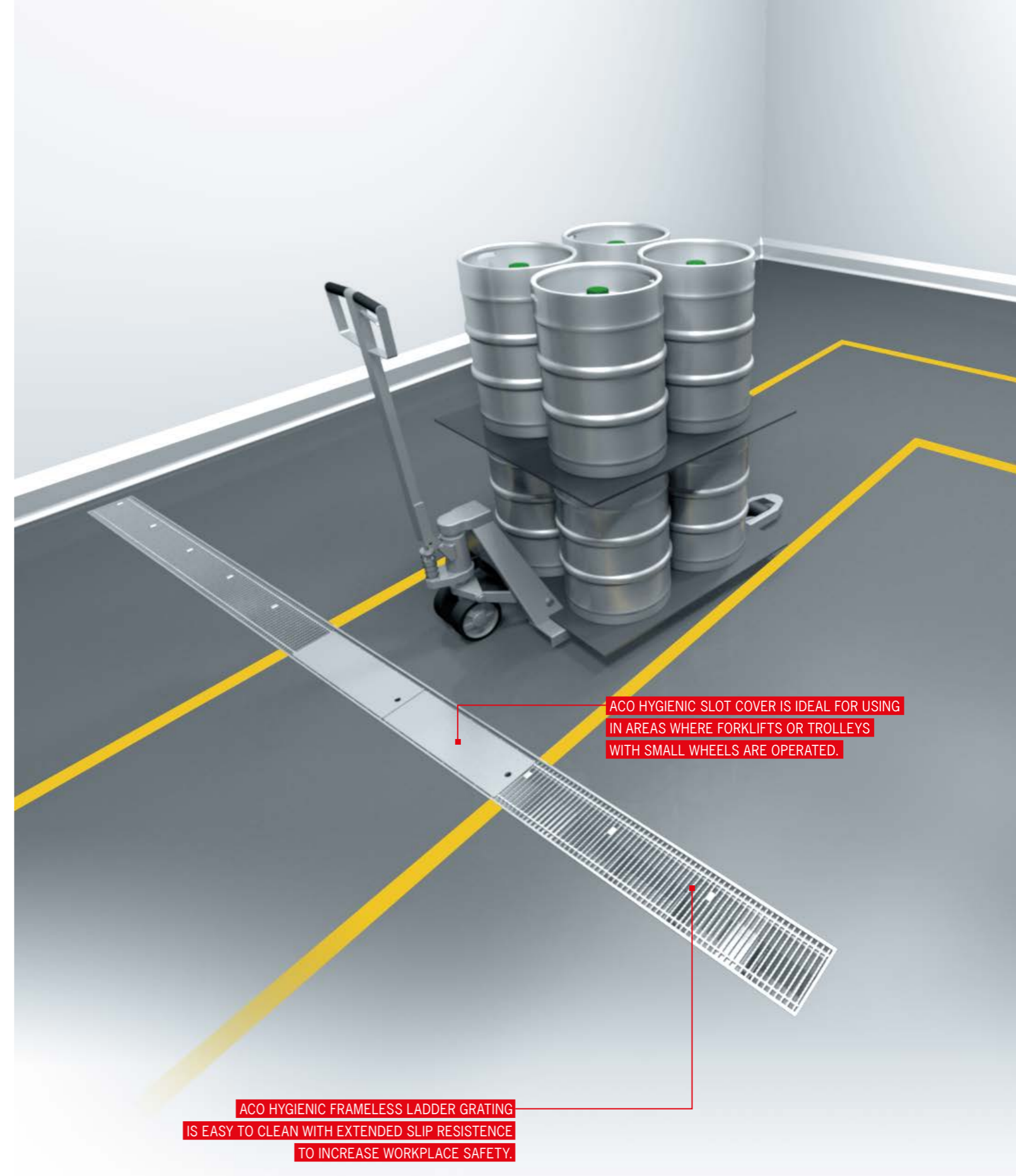
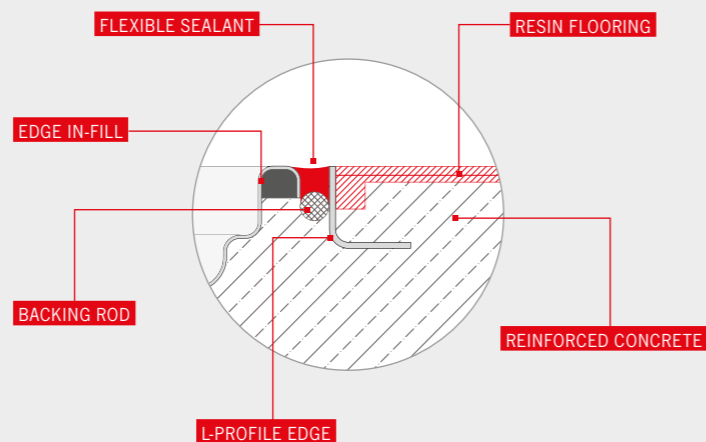


Load class  
L 15 - N 250

- ACO industrial gratings are designed to sustain a range of load classes whilst retaining slip resistance (refer to class R9-R13 as specified in DIN 51130) to ensure safe working conditions.

#### Typical applications:

- Beverage production
- Packaging plant
- Bottle washing plant



# 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.

Industrial drainage must be designed with cleanability and safe handling in mind. **The research findings of the Fraunhofer Institute IVW Dresden clearly show that the use of ACO's hygienically designed drainage dramatically improves cleanability.**



More information about the research can be found here:

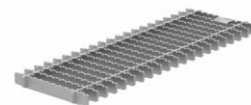
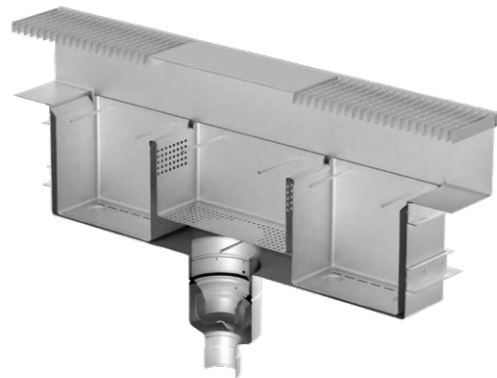
[www.aco-buildingdrainage.com/en/home/research/fraunhofer-cleanability-research-2016/](http://www.aco-buildingdrainage.com/en/home/research/fraunhofer-cleanability-research-2016/)

## The ACO solution:

- The ACO drainage portfolio is designed in accordance with the relevant **hygienic design principles** that are reserved for food contact surfaces by European standards and EHEDG documents.



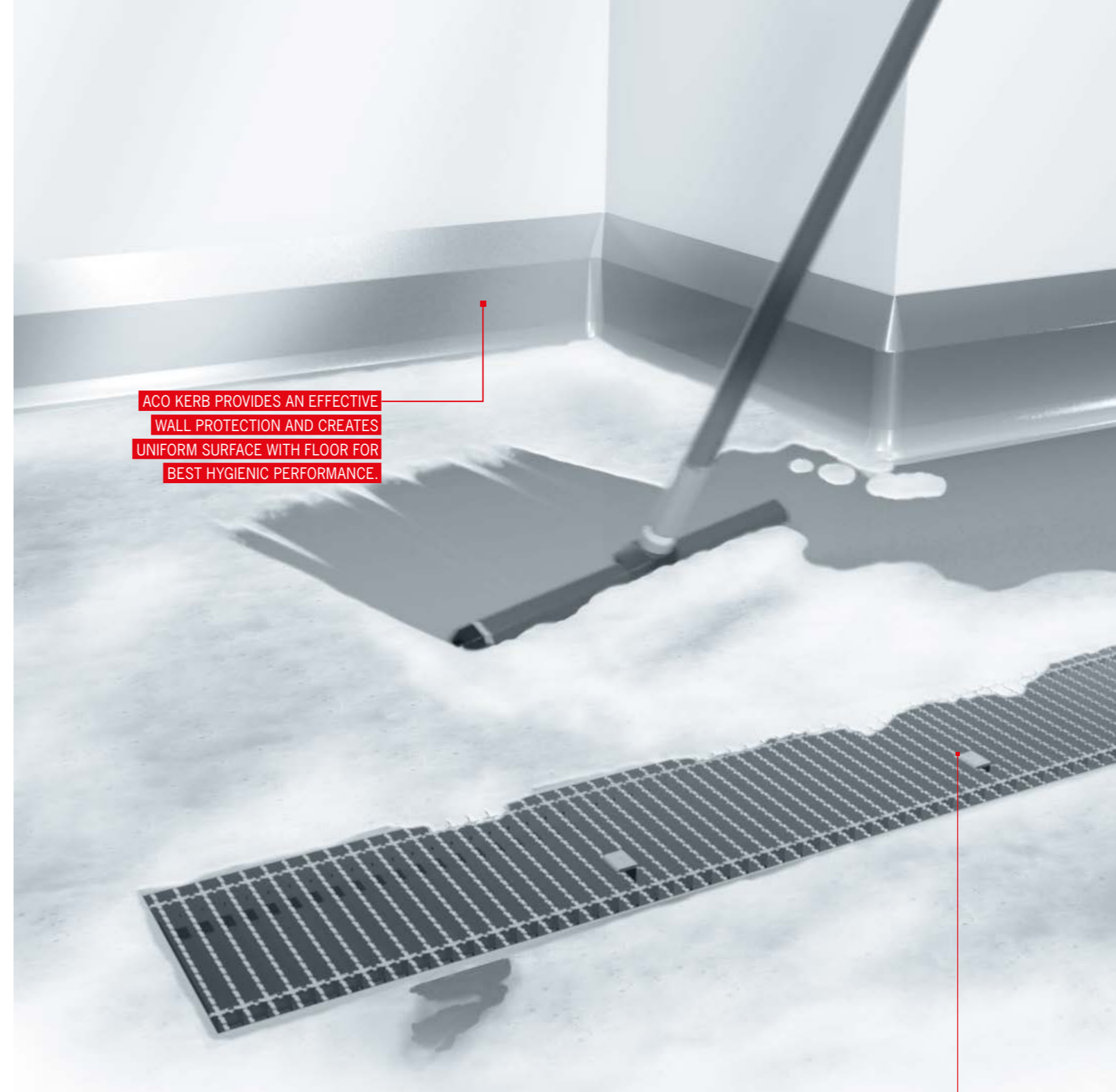
- ACO glass collector** helps to deal with excess waste which would eventually end up inside the drainage. Not only glass, but also labels that get separated from the bottles during the manufacturing process will be stopped by the glass catcher before they can enter the drain.



- ACO frameless ladder grating** provides a unique hygienic and cost effective solution for the best cleaning performance.



- ACO kerb** provides reliable wall protection that prevents walls from impacts, water or chemical ingress, or other damages associated with traffic and production process. It is suitable for any food processing area.



ACO KERB PROVIDES AN EFFECTIVE WALL PROTECTION AND CREATES UNIFORM SURFACE WITH FLOOR FOR BEST HYGIENIC PERFORMANCE.

## CLEANABILITY TEST FINDINGS

✓ ACO HYGIENIC DESIGN    NON HYGIENIC DESIGN ✗

**8 min**



**180 min**

Spray cleaning time

**0%**



**2%**

Residual soiling (optical clean)

ACO drainage is manufactured from austenitic stainless steel, grades 1.4301 or 1.4404 according to EN 10088 (304 or 316L according to AISI) resistant to aggressive chemicals used during the cleaning procedures.

Cleanability tested by: Fraunhofer on ACO hygienic box channel 400x800 and current industrial standard equivalent.

WHEN IT COMES TO FLOORING WITHIN ANY FOOD  
OR BEVERAGE OPERATION – IT ALWAYS PAYS  
TO DO IT ONCE AND DO IT RIGHT...

WILLIAM TAUNTON, DIRECTOR OF GASTROTEC SPA





## ACO Products

At ACO we are committed to helping you bring the very best quality products to your customers.

ACO supports your brand at every stage of the production process and helps you deliver ultimate hygienic performance to your facilities. We understand the critical role that drainage plays in a successful beverage industry business and we appreciate that what's below the surface can really count.



### Building drainage



#### ACO hygienic gullies

ACO hygienic gullies are available in various body sizes to cater for sufficient 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 hygienic box channels

The ACO hygienic box channels range is ideal for applications where high standards of hygiene are required as products are capable of handling large volumes of fluid. ACO hygienic box channels are certified according to EN 1253.



#### ACO pipe

The stainless steel push-fit pipe system is designed for grey, black and rain water. ACO pipe offers 40+ years product life thanks to its material properties. Easy installation and handling on site is ensured by push-fit assembly system and available cutting tools.



#### 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.



### Surface water management



#### ACO StormBrixx

ACO StormBrixx is a unique and patented plastic geocellular storm water management system. Designed for surface water infiltration and storage.



#### ACO Qmax

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.



### Building materials



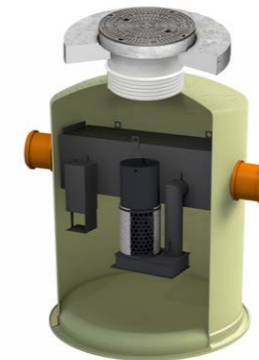
#### ACO Access Covers

ACO Access Covers provide quick and easy access to underground services and enable any floor finishes to be maintained with minimal interference. Access Covers are available in different load classes. They are water tight, odour tight and certified according to European standards EN 1253-4 and EN 124.



#### ACO Monoblock PD/RD

The innovative drainage system with unique monocast construction guarantees extremely high levels of safety and stability in all transport surface drainage applications.



#### ACO oil separators

Oil separator solutions which are up-to-date and have low ongoing costs thanks to a virtually maintenance-free coalescence unit and a build-up-free centrifuge unit.

## 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
- 4,400 employees in more than 40 countries (Europe, America, Asia, Australia, Africa)
- 30 production sites in 15 countries
- Sales 2016: Euro 711 million



**ACO. creating  
the future of drainage**

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



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