



Reduce Risk of Food Contamination with
Hygienically Designed Drainage Solutions
Food Safety Summit – May 10, 2017

**How much do you consider the
hygiene of your non-food
contact surfaces?**

- Drainage systems are frequently underestimated as they are often out of sight and out of mind
- Understanding the critical role drainage can play is vital in protecting food preparation environment
- Poor, ineffective and non-hygienic drainage systems can lead to costly ongoing maintenance or contamination requiring drastic measures and costs to rectify and eliminate areas of risk
- Global organizations are raising food safety standards – including increased hygienic drainage design
- ACO is raising the standard of drainage performance by putting **HygieneFirst**

“Without good drainage kitchens can't function hygienically and risks to safe food production are created. If drainage is not well designed there is the risk of contamination. Good drainage is the very essence of effective food safety!”

Geoff Ward | Chairman Chartered Institute of Environmental Health

March 2013

Food consumption preferences are changing.

Today's consumers desire products which are fresh and easy to prepare often with little or no heat treatment.



Less preservatives and heat treatment increases the risk of food contamination.



The global scale of food business, multiplies this threat.

A single mistake in one facility often impacts many other locations and geographies.



Mistakes are often catastrophic for both people and businesses.

Reputations can be damaged in second's in today's hyper-connected society.

Listeria hysteria sweeps the nation

Beware of bugs in the salad

Big stores in salad scare

BABIES IN PERIL FROM INSTANT SALAD GERM

Packaged salads 'may be lethal'

Deadly bacteria found in quarter of frozen meals

Killer bacteria are found in sealed supermarket salads

Cheese withdrawn as 'Listeria hysteria' mounts

DANGER SALADS
 A FLUENT bug found in prepackaged salads sparked panic among food stores yesterday. Listeria bacteria—which can cause meningitis and miscarriages—was found in four out of 60 salads tested by scientists. Swissmilk, Tesco and Marks and Spencer were among chains who ordered tests. The salads' origin is unknown.

The annual cost of foodborne illnesses in the USA



Low estimate based illness from 14 major pathogens. (Hoffman 2012)

High estimate – based on 30 known pathogens plus foodborne illness for which no pathogen source was identified (Scharff 2012):

- 47.8 million cases
- 127,839 hospitalizations
- 3,037 deaths

\$77.7 Billion annually.

The challenge is to keep the environment clean.

Everything is constantly cleaned – most of the focus is on process equipment and food contact surfaces.



Unfortunately, the reality for drainage is different.

While we want it to look like this.

Frequently drainage looks like this.







Hard to clean design and construction creates maintenance and operational issues – from both a health and safety and a time and cost perspective.

More importantly - Poor drainage design will have a serious impact on food safety sooner or later.



Transition from
flooring to
drainage &
cleaning regime



30%

of total

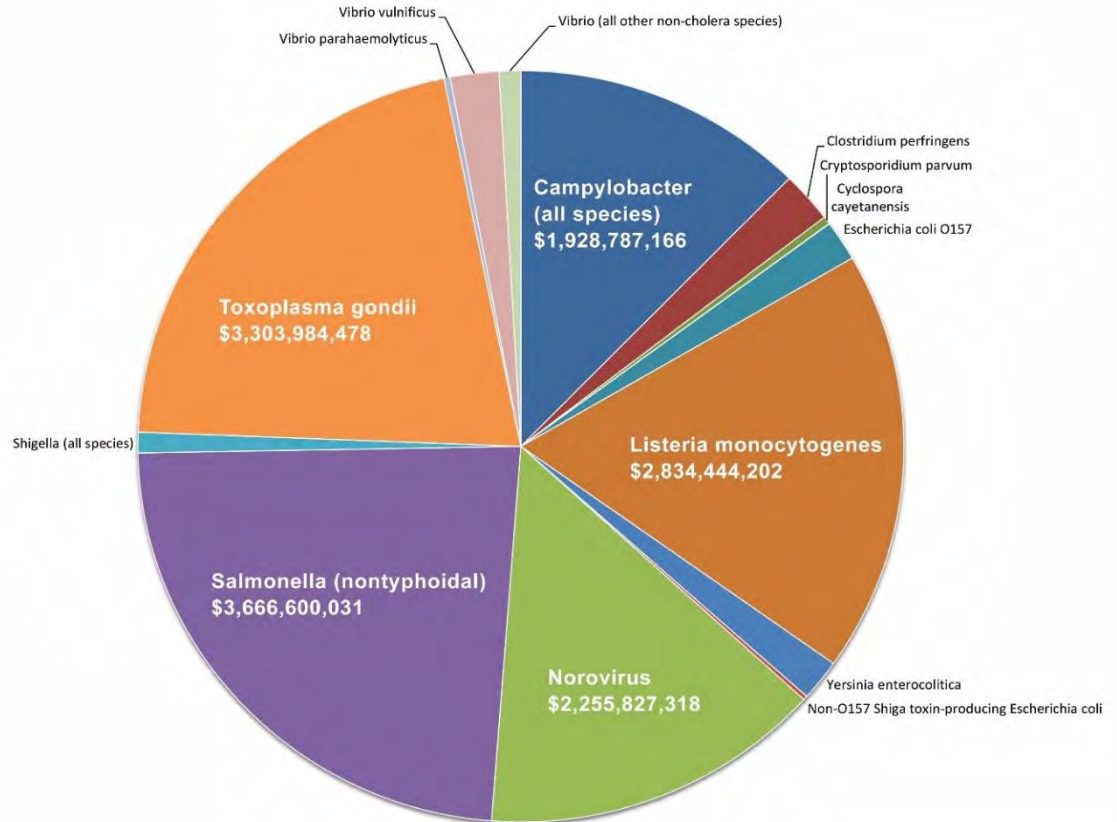
bacteria contamination risk

within food processing area comes

from the drainage.



Here are the 14 pathogens included in a USDA study, along with the average figure for the economic burden they represent.



The CDC estimates that approximately 1,600 illnesses and 260 deaths due to listeriosis occur annually in the United States.

The largest listeriosis outbreak in U.S. history occurred in 2011, when 147 illnesses, 33 deaths, and 1 miscarriage occurred among residents of 28 states



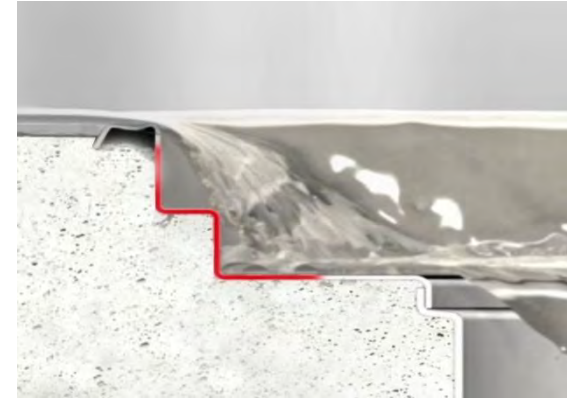
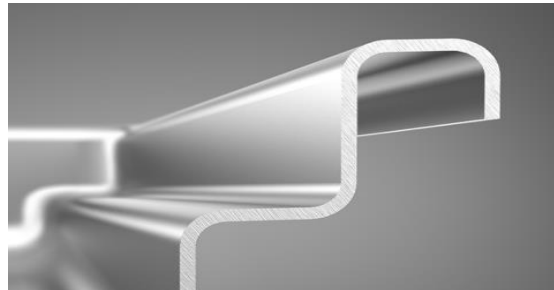
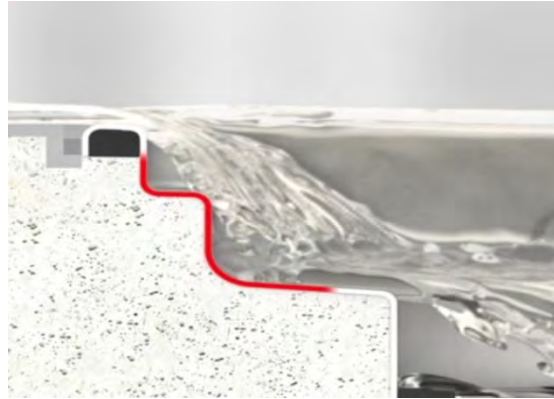
Listeria is unlike most other germs because it can grow even in the cold temperature of the refrigerator. *Listeria* is killed by cooking and pasteurization.

“Floor drains in food processing facilities are a particularly important niche for the persistence of listeria and can be a point of contamination in the processing plant environment and possibly in food products”

“Drainage is a critical component affecting the hygienic performance of food production. Effective drainage helps mitigate hazards from the external environment and is central to the safe and hygienic operation internally”

Applied and Environmental Microbiology Volume 72

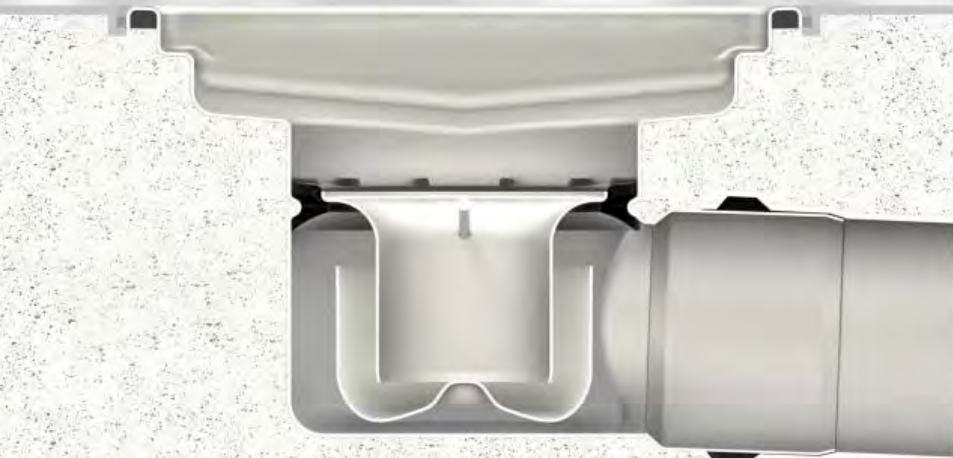
- All internal radii equal or larger than 1/8" (3 mm)
- Greatly increases cleaning effectiveness and makes cleaning easy
- Welding in corners avoided
- Welding butt joint away from corner is recommended



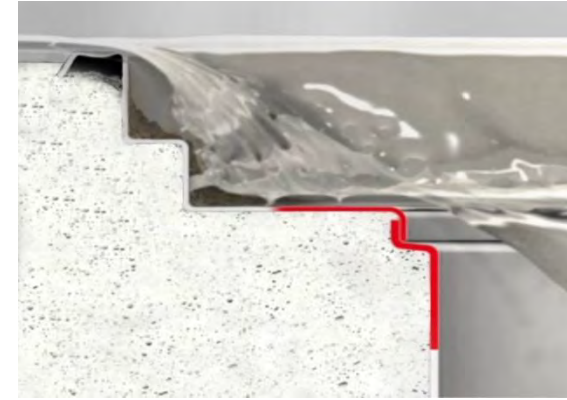
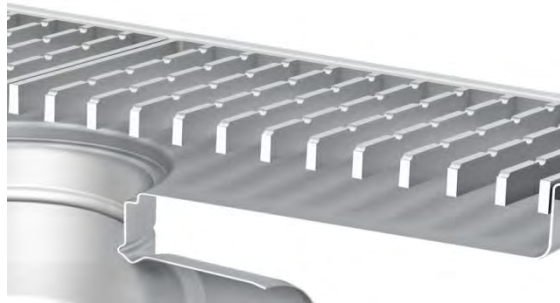


Hygienic solution

Non-hygienic solution



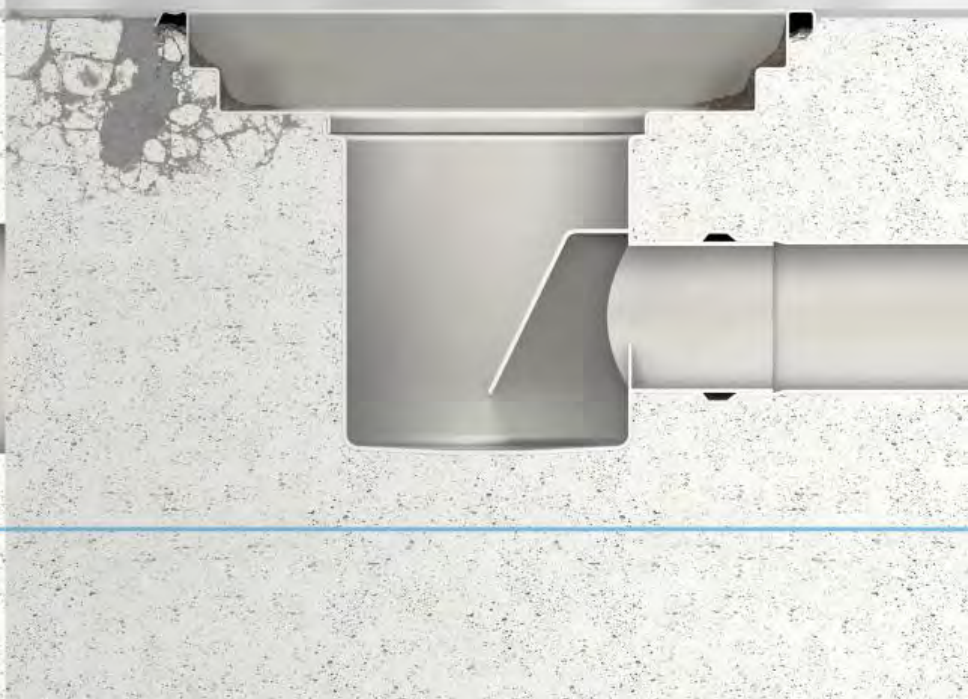
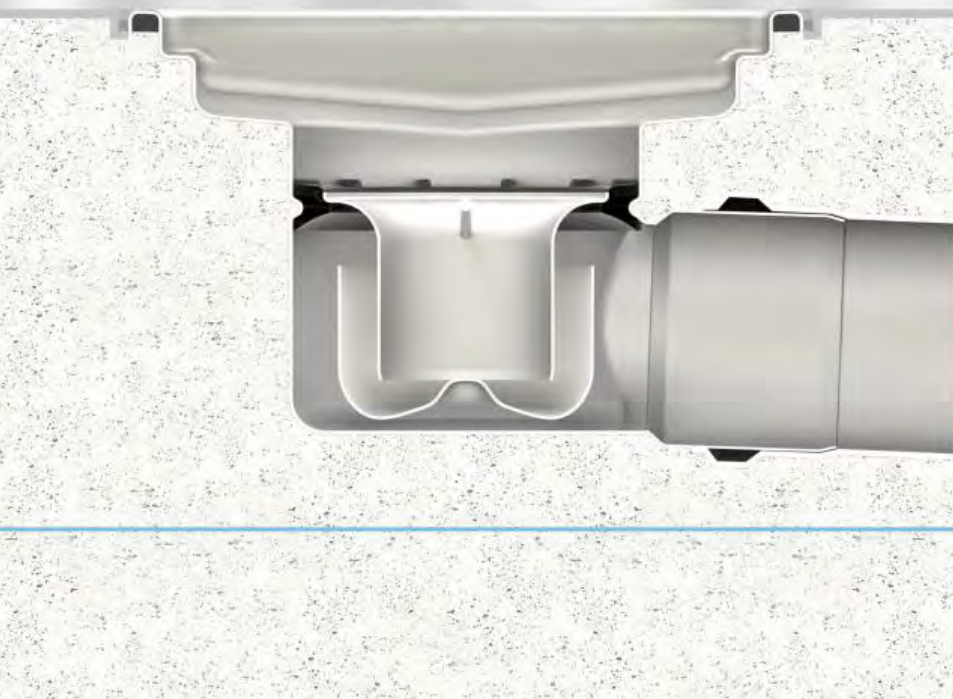
- Deep-drawn body ensures smooth contours, eliminating joints or welds in corners
- Prevents crevices that can harbour dangerous bacteria
- Permanent joints should be created with the use of a continuously welded butt joint
- Continuously welded lap joints and “intermittent” welds cannot be used



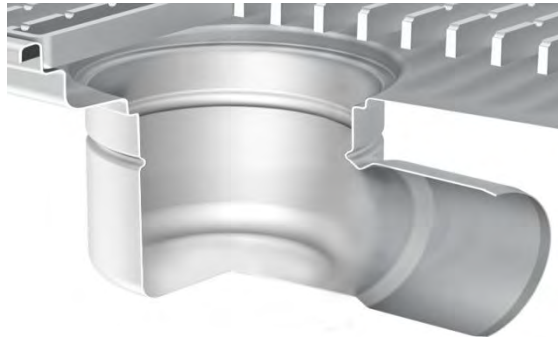
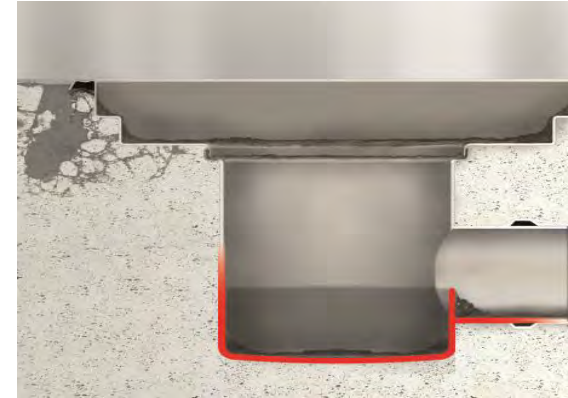
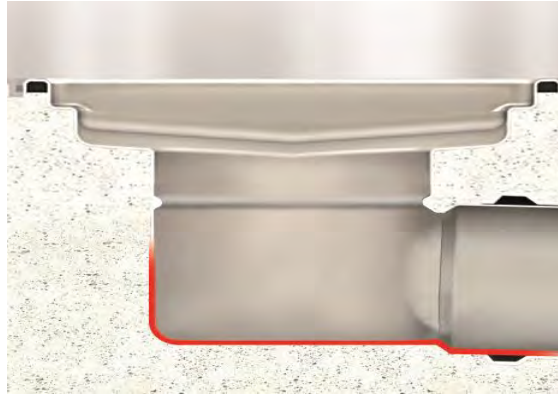


Hygienic solution

Non-hygienic solution



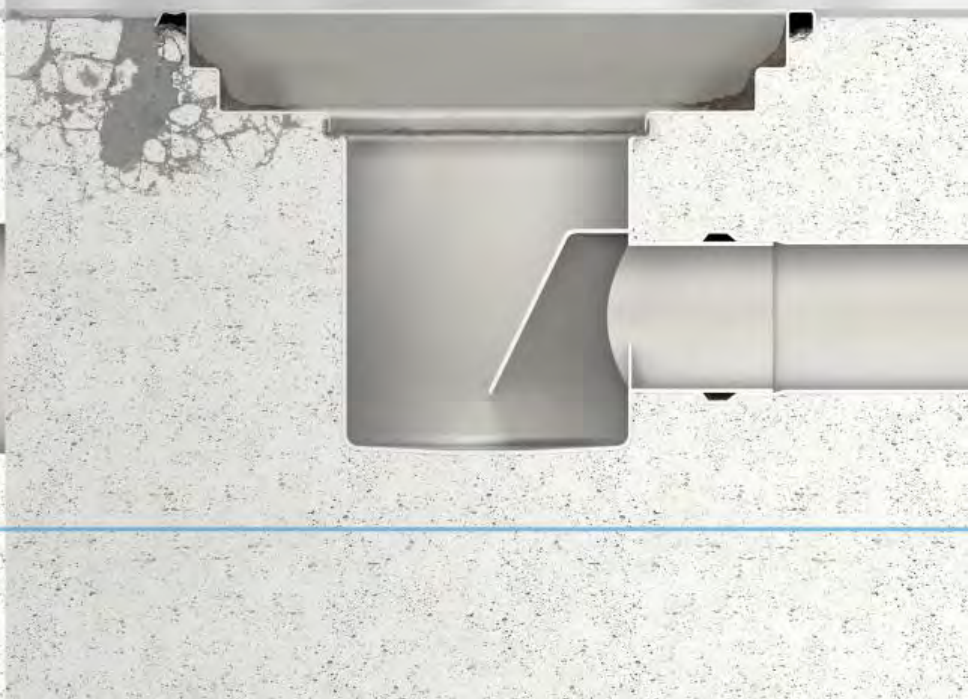
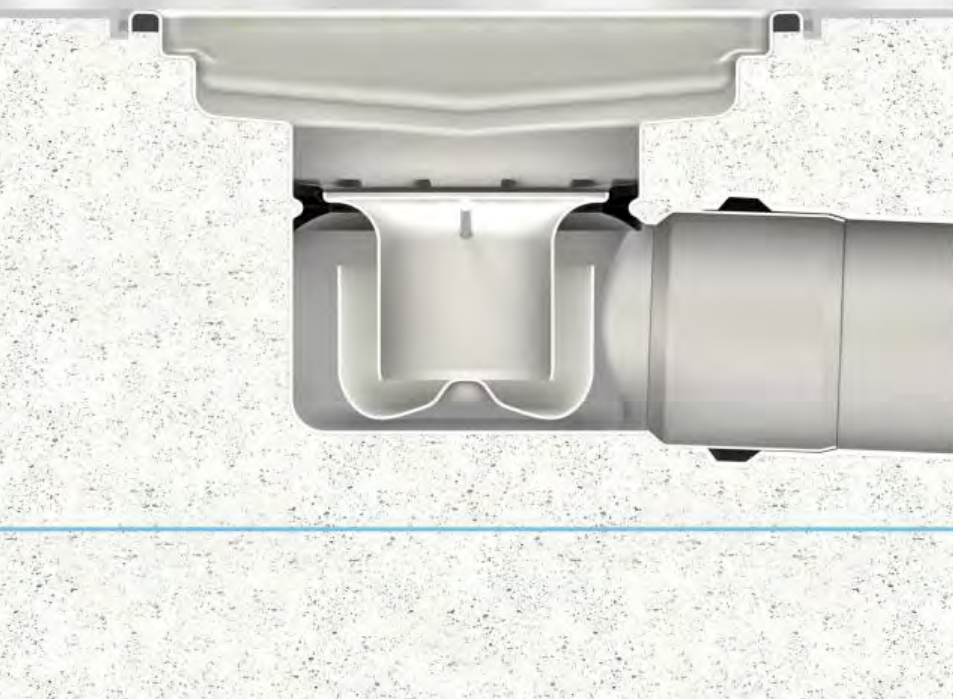
- Eliminate standing water, smells, microbial growth and potential chemical hazards
- Discharge point must be below the lowest point of the equipment to ensure complete self drainability





Hygienic solution

Non-hygienic solution



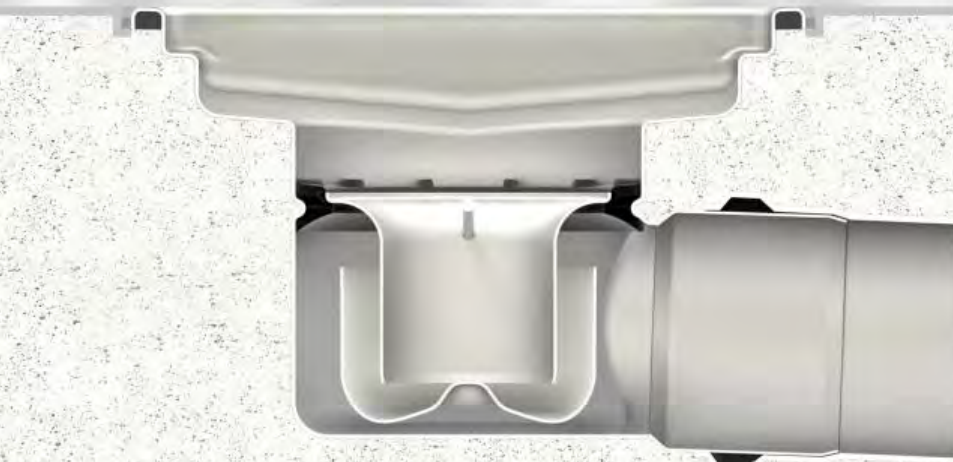
- Edge profile should be filled with waterproof material to resist vertical and horizontal stress and eliminate areas for bacterial growth
- Ensures a stable and durable connection between the floor drain and surrounding floor
- Helps to minimized the risk of floor cracks that spur bacteria growth

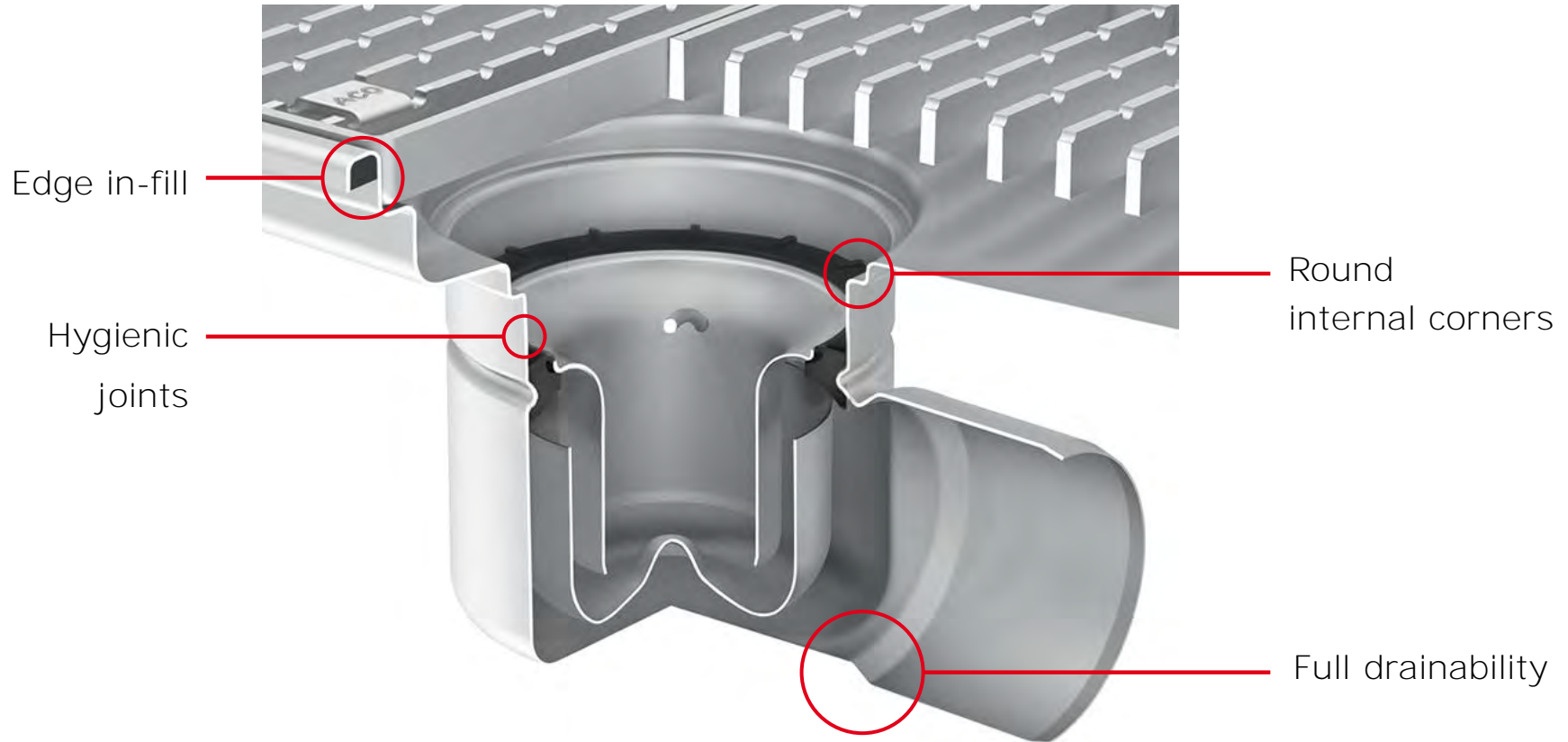




Hygienic solution

Non-hygienic solution







Pickle Passivation

- All ACO stainless steel drainage products are pickle passivated by immersing products in a series of chemical baths
- Removes embedded iron particles introduced in the fabrication process
- Restores chromium depleted regions generated during welding
- Ensures optimum corrosion resistance
- Hygienically smooth surface



Electropolishing

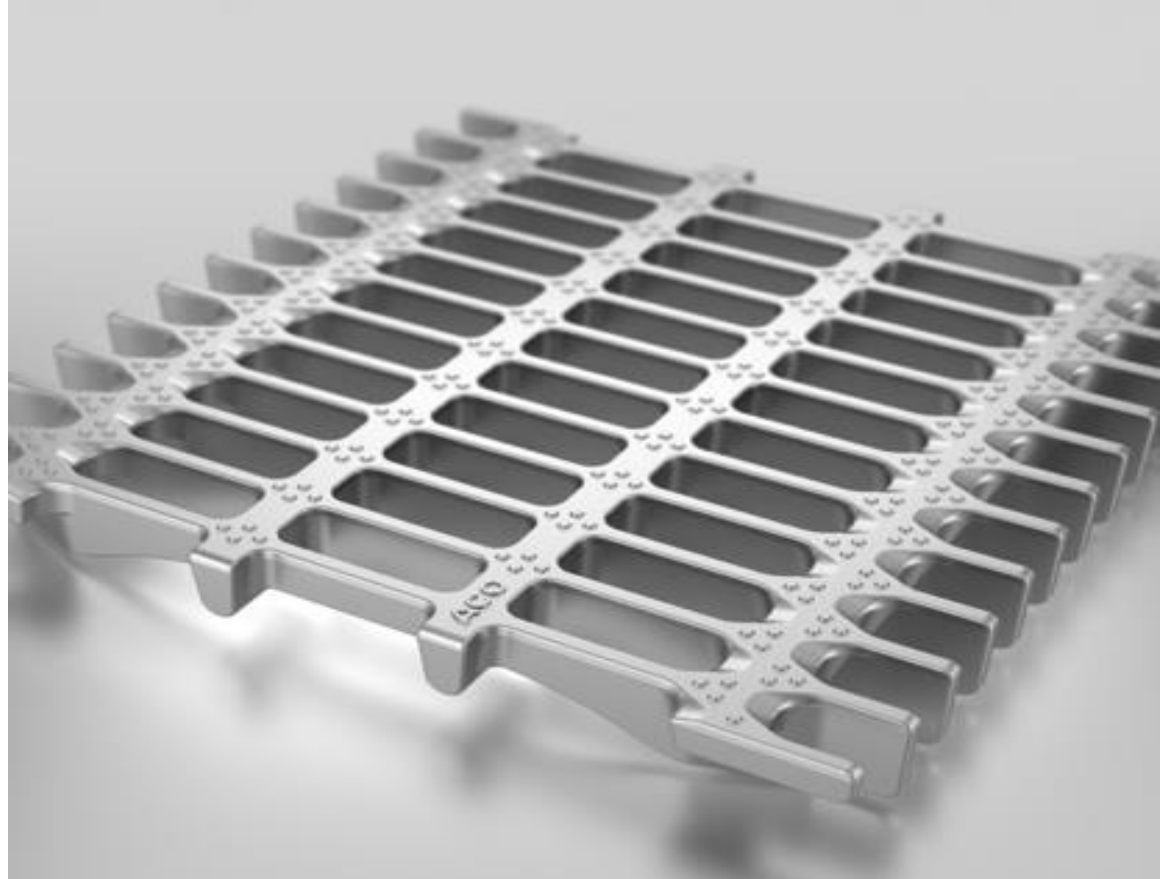
- Some products are immersed in an electrolytic fluid after pickle passivation – products become the anode of a direct current electrical circuit
- Roughness is dissolved, yielding an even smoother, brighter surface



- Easily maintained drainage systems, reducing harbourage and soil retention
- Reduced build up and reduced down time to clean and maintain
- Reduced cleaning costs
- Advanced manufacturing technologies ensure durability
- Surface treatment guarantees corrosion resistance
- Removable inner parts for easy access and cleaning



- Slip resistant grates available
- Efficient surface water removal
- Robust and durable – independently load certified
- No sharp edges to ensure employee safety
- Easily removable components



FDA Food Safety Modernization Act (FSMA)

The FDA Food Safety Modernization Act (FSMA), the most sweeping reform of our food safety laws in more than 70 years, was signed into law by President Obama on January 4, 2011. It aims to ensure the U.S. food supply is safe by shifting the focus from responding to contamination to preventing it.

<http://www.fda.gov/Food/GuidanceRegulation/FSMA/>

The FDA Food Safety Modernization Act establishes requirements for hazard analysis and risk-based preventive controls for facilities that produce food for humans and animals.

Source: <http://www.fda.gov/Food/GuidanceRegulation/FSMA/ucm334552.htm>



The Symbol of Assurance



3-A Sanitary Standards, Inc.

3-A SSI is an independent, not-for-profit corporation dedicated to advancing hygienic equipment design for the food, beverage, and pharmaceutical industries. We represent the interests of three stakeholder groups with a common commitment to promoting food safety and the public health — regulatory sanitarians, equipment fabricators and processors.

Food Safety and Quality

Known as The Most Trusted Name in Food Safety™, NSF International has been helping businesses in the agriculture, processing, food equipment, restaurant and retail industries to navigate the food safety and regulatory environment for more than 70 years. Our extensive suite of food safety and quality services spans every link from farm to fork including certification, testing, training, consulting, auditing and regulatory compliance.



The **European Hygienic Engineering & Design Group (EHEDG)** is a consortium of equipment manufacturers, food industries, research institutes as well as public health authorities and was founded in 1989 with the aim to promote hygiene during the processing and packing of food products.

The principal goal of EHEDG is the promotion of safe food by improving hygienic engineering and design in all aspects of food manufacturing.






Hygiene**First**

- Stainless steel
- Smooth rounded edges
- Slope
- Edge infills
- Pickle passivated finish
- Slip resistant gratings
- Optional Hygienic FAT

Hygiene**First**

- 
- Improved Food Safety
 - Decreased Costs
 - Improved Health & Safety Conditions

www.hygienefirst.com



SUS Fraunhofer 20

Drainage matters!

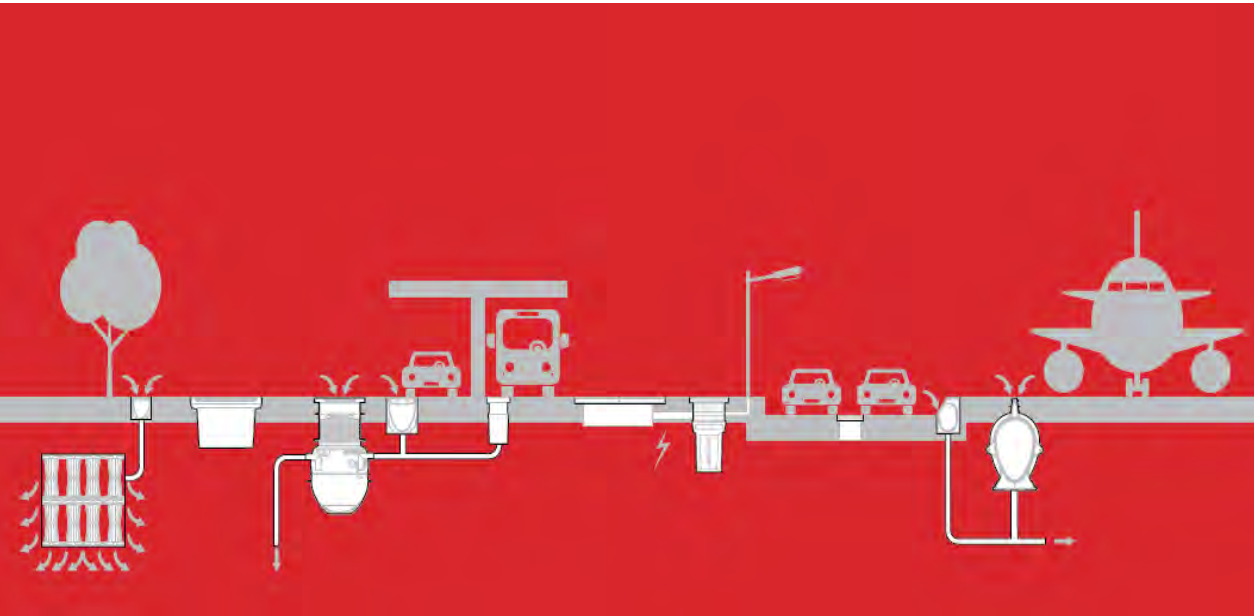
Don't let your drainage system become out of sight and out of mind. This can lead to costly ongoing maintenance or, in a worst case scenario, food contamination.

ACO understands the critical role drainage plays in commercial food preparation and offers integrated drainage solutions designed to protect your environment and your brand.

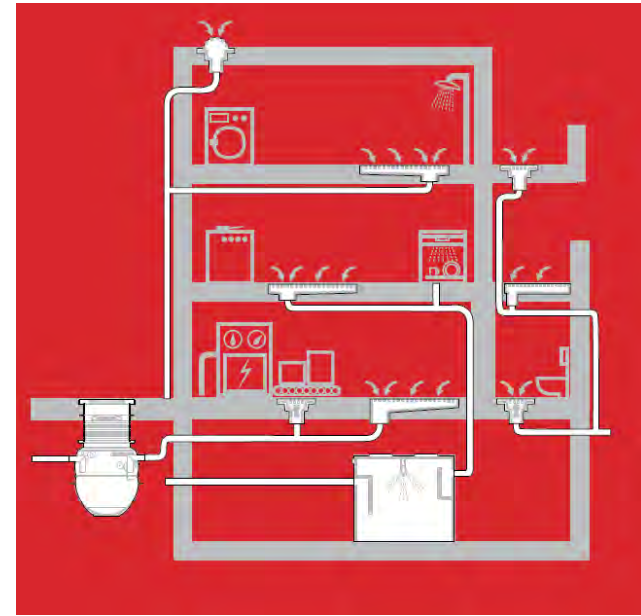
- Established world leader in water management systems for more than 70 years.
- Family owned and managed - in 3rd generation.
- 40 sales offices and 31 modern production sites worldwide.
- Over \$1 billion annual global sales.



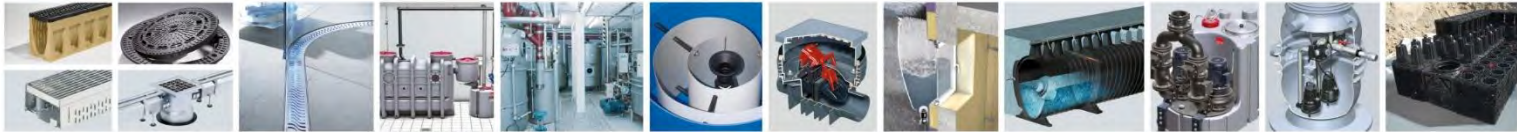
ACO's core markets



External Drainage



Building Drainage



Channels and Floor
Drains

Grease and Oil
Separators

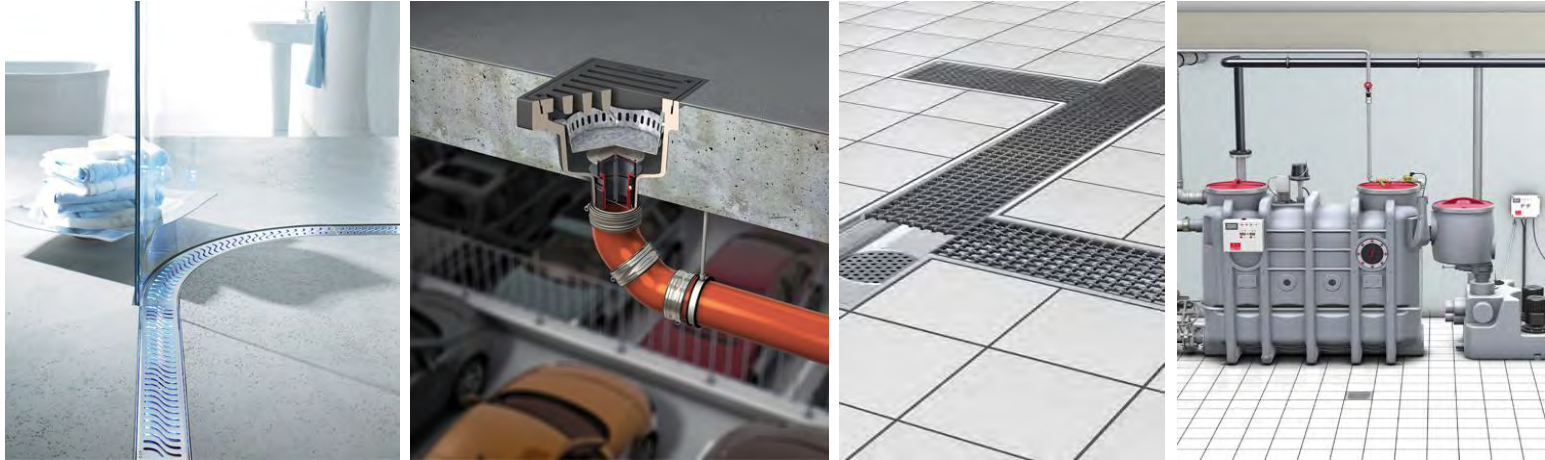
Backflow preventers,
StormBrixx –
Underground retention
and detention

Pumping stations,
Flow control



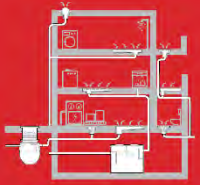
ACO External Drainage –

Elegant, pre-engineered
systems to suit any
application



We design and supply sustainable building drainage solutions for residential properties, industrial facilities and commercial buildings.

Including products for commercial kitchens, restaurants, hotels, retail – to food and beverage processing / industrial / manufacturing.



ACO USA Product Portfolio today

QuARTz Shower Drains



Bathroom Drainage

Industrial & Commercial Building Drainage



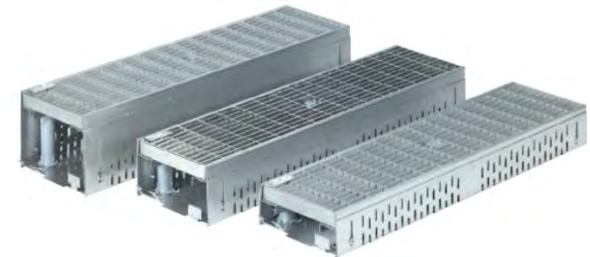
Stainless Trench Drainage



Floor Drain



ACO Pipe



Building Threshold Drains



Building Drainage –

Highest quality materials and production technology; innovative design based on hygienic principles.



Thank you

Questions?

Visit us at booth #625!

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