

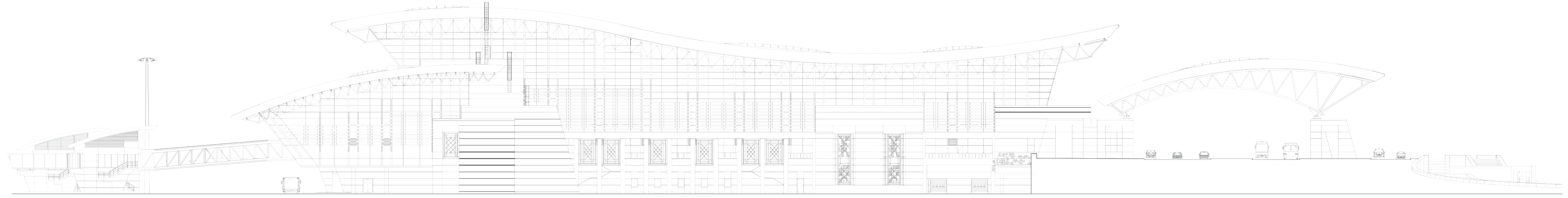
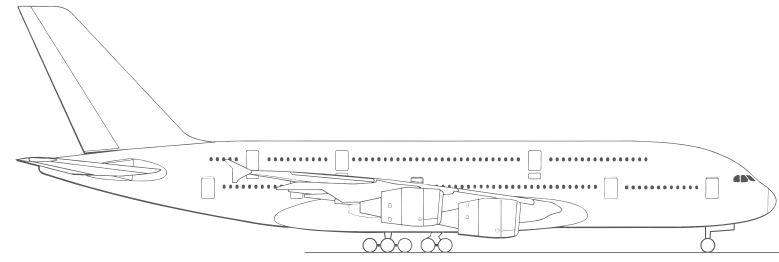


*Highest quality for maximum safety*

**ACO drainage systems for airports**







Airside

Building

Landside

### Highest quality for maximum safety –

#### ACO drainage systems for airports

As one of the world market leaders in drainage technology, ACO has the experience and the innovative strength to realise solutions to satisfy the extreme demands of the modern aviation business. Our products help consultants and airport operators enhance comfort and safety in many important areas.

#### ACO on the apron

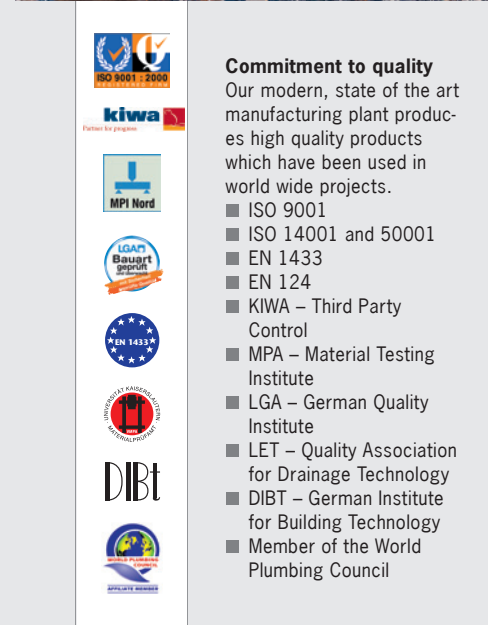
- Drainage channels
- Cable shaft access covers
- Light-oil separators
- Heavy duty manhole cover

#### ACO in airport buildings

- Separators
- Stainless steel channels and drains for catering areas
- Sanitary drains with fire protection
- Roof and parking deck drainage
- Bathroom drainage

#### ACO in front of the terminal

- Large area drainage
- Car park drainage
- Facade drainage
- Lights for directioning markers
- Access covers and top sections



#### Commitment to quality

Our modern, state of the art manufacturing plant produces high quality products which have been used in world wide projects.

- ISO 9001
- ISO 14001 and 50001
- EN 1433
- EN 124
- KIWA – Third Party Control
- MPA – Material Testing Institute
- LGA – German Quality Institute
- LET – Quality Association for Drainage Technology
- DIBT – German Institute for Building Technology
- Member of the World Plumbing Council





Airside

Building

Landside



- Zagreb Franjo Tuđman Airport, Croatia
- Aeroportu Internacional Palo Negro, Colombia
- Moscow Domodedovo, Russia
- Calgary International Airport, Canada
- Kleine-Brogel Air Base, Peer, Belgium
- Phoenix Sky Harbor International Airport, Arizona, USA
- Václav Havel Airport Prague, Czech Republic
- Belgrade Nikola Tesla Airport, Belgrade, Serbia
- Venice Marco Polo International Airport, Tessera-Venezia, Italy
- Abeid Amani Karume International Airport, Unguja in Sansibar, Tansania

- Zagreb Franjo Tuđman Airport, Croatia
- Antalya Airport, Turkey
- Vienna International Airport, Schwechat, Vienna
- Shenzhen Boan International Airport, Guangdong, China
- Bratislava M.R. Stefanik Airport, Slovakia
- Rome Fiumicino International Airport, Italy
- Emirate Chhatrapati Shivaji International Airport, Mumbai, India
- Zafer Airport, Kütahya, Turkey
- Washington Dulles International Airport, Washington D.C., USA
- Perth International Airport, Australia

- Zagreb Franjo Tuđman Airport, Croatia
- Sofia Airport, Bulgaria
- London Heathrow Airport, United Kingdom
- Perth International Airport, Australia
- International Airport Falcone Borsellino, Palermo, Italy
- International Airport Brasilia, Brazil
- Rio de Janeiro International Airport, Brazil
- Burgas Airport, Bulgaria
- Melbourne Airport, Australia
- Adelaide Domestic & International Airport, Australia
- Canberra International Airport, Australia

Airside



**For really heavy-duty applications: ACO on the apron**

*What attributes does a channel need to withstand the weight of a 550 tonne Airbus A380? What do the increasingly frequent episodes of very heavy rain mean for the capacity of a drainage system? What happens to the surface water in refuelling areas? How can safe access be guaranteed to the supply and disposal pipes and cables? The answers to these and many other questions are already integrated within all ACO product systems for heavy-duty applications.*

**Safety even under extreme conditions – ACO DRAIN® heavy-duty channels**

Aprons and taxiways at airports are ideal applications for heavy duty ACO DRAIN® S 100 to S 300 systems which boast all of the benefits of many years of concentrated experience in line drainage. Safe drainage under extreme conditions with very high hydraulic capacities. The heavy-duty channels are supplied with either a bolted-down grating or the ACO DRAIN® powerlock boltless locking system.



- ACO polymer concrete is extremely tough, very durable, and completely frost and de-icing salt resistant
- ACO channel systems are designed for use in load classes up to F 900 pursuant to EN 1433
- ACO channels with V cross-sections boast much higher flow rates and have optimal self-cleaning properties

**Slim and extremely efficient – ACO DRAIN® PowerDrain**

The benefits of this product line include a new nominal width system, universal stability, functionality and design freedom. The special elastomer damping system between the channel and the grating, combined with a securely locked but still flexibly-gripped grating, means long-lasting noise suppression to damp down the sound made by vehicles crossing the drain. The damping also protects the system from wear and tear – for more durability and longer life-times.



**Flexible covers for shafts and utility ducts – ACO access covers**

ACO access covers satisfy all of the technical safety criteria for airports. Applications include supply and disposal shafts, and material and inspection shafts. The ACO Secant access cover is a flexible system with a range of combinable covers and frames and/or frame components. This ensures that the whole of the opening is accessible when the covers have been opened. ACO Servokat access covers are the ideal solution when covers have to be moved frequently for maintenance and inspection work. The covers with assisted-opening can be easily opened by one person. The surface covering integrated within the top is completely variable to ensure full incorporation within the design concept at each location.



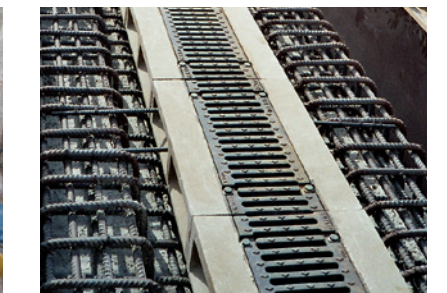
**Environmentally-friendly solutions for water protection – ACO catch pits, separators and pumping stations**

The drainage pipe network beneath large aprons can often not accommodate the volumes of water quick enough after episodes of very heavy rain – ACO rainwater catch pits act as buffer tanks to throttle the outfall. Residues from airport operations such as petroleum products must not pollute sewer networks. This can be prevented by low-maintenance and reliable ACO light-oil separators which collect the separated-out materials. The ACO big tank system is used when large volumes of rain or groundwater need to be treated or contained. ACO pump stations guarantee 100 % protection against backflow – even from flooded sewers.



**Customised drainage systems poured in situ – ACO CR Subframe**

The rugged polymer concrete subframe is fitted with an extremely tough cast iron bar grating, specially designed for applications involving concrete drainage channels poured in situ. The gratings are firmly bolted to the polymer concrete to ensure permanent connection to the poured concrete surround. Integrated modules ensure uncomplicated installation and a wide range of layouts.



Airside







**For enhanced comfort and safety:**

**ACO in airport buildings**

*How can parking decks be safely drained even under extreme weather conditions? Which solutions help optimise fire protection between storeys? How can the highest standards of hygiene be guaranteed in sanitation and catering areas? Answers to these and many other questions are already integrated within the numerous ACO solutions for building services in terminals and service buildings.*



**Grease disposal concepts – ACO grease separators**

All ACO grease separators are manufactured pursuant to DIN EN 1825 and DIN 4040-100 standards, and satisfy international regulations. ACO grease separators are adaptable and available in a range of sizes and materials. The comprehensive product line includes grease separators for ground installation, or free standing separators. A modular complete package for the subsequent treatment of greasy gastronomy wastewater can also be used: the ACO Biojet wastewater treatment plant. Depending on the specific product solution, this system can reduce lipophilic contaminants to min. 80 mg/l. Many years of experience and in-depth technical expertise guarantee fully developed and tested separators with guaranteed quality standards.

**Drainage in commercial kitchens – box channel hygiene**

Drainage channels and floor gullies for industry and commercial kitchens must be hygienically faultless, safe for the staff, reliable in operation, and permanently durable. The design must also consider the in-situ sealing method, the connection of the floor covering, and the load. The combined channel-base developed by ACO is the perfect solution for hygienic and safe installation of thermal cooking appliances. The material of choice for floor drainage in commercial kitchens is stainless steel (material grade 304 or 316). Its most important benefits are its smooth surface and robustness.

**Collecting and disposing of commercial food waste – ACO Waste-Jet wet waste collecting system**

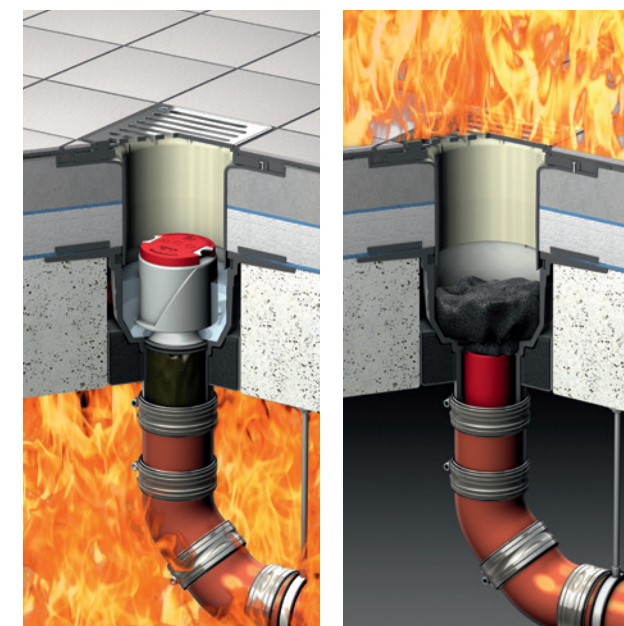
Using normal rubbish bins and organic waste bins to store and dispose of kitchen (wet) waste is a potentially considerable hazard. When moving the waste bins from the clean to the unclean area, there is a risk of cross-contamination as pathogenic microorganisms can sneak into the kitchen work area. The ACO Waste-Jet system eliminates the need for manual transport in buckets and bins, thus guaranteeing the safe handling of leftover and waste food. These wet waste collecting plants are closed systems. Kitchen and food waste are fed at the collection station in the work area straight into an odourproof tank and emptied by a disposal vehicle.

**Roof and park deck drainage – ACO Jet and ACO Spin**

ACO is also successful with practical solutions for open channel drainage as well as syphonic drainage. The ACO Spin modular system consists of high capacity heatable flat roof and special parking deck drains made of cast iron and stainless steel for open channel drainage – with a capacity of up to 21.2 l/s. Syphonic drainage guarantees even higher drainage capacities – particularly for large roof surfaces: the special functional components ensure complete draining of the rainwater pipes. The ACO Jet underpressure/modular system made of cast iron and stainless steel achieves drainage capacities of up to 38.9 l/s with its products. Fire protection inserts are available for both drainage systems and give modern roofs the necessary security.

**Cast iron floor gullies – ACO Passavant floor gully**

Preventive fire protection in the vicinity of floor gullies is an issue of central importance when building airport terminals. For years now, ACO has been working on effective fire prevention solutions for technical building systems and offers just the right solution in the shape of the Passavant cast iron gully. Since cast iron belongs to building material class A1, no additional fire risk is introduced into the building when an ACO Passavant floor gully is used. The ACO fire protection kit and smoke block guarantee maximum safety. The fire protection suitability of the ACO Passavant floor gully was proven in fire protection tests with a fire resistance rating of 30 – 90 or 120 minutes as a basis for national technical approval (Z-19.17-2144).







**For intact infrastructures:  
ACO in front of the  
terminal**

*How can surface drainage and way markings be intelligently combined? Which materials, dimensions and surfaces satisfy the demands of modern architecture? How can design and drainage be harmoniously combined? Answers to these and other questions are integrated within the wide range of ACO drainage systems for green spaces and traffic areas.*

**Intelligent design solution –  
ACO DRAIN® Multiline Seal in**

The Multiline Seal in drainage channel boasts intelligent design with the V cross-section for high flow rates. The body of the channel and the details and materials of the frames and gratings combine aesthetic diversity, high functionality, and extreme durability. The system solution has an extremely varied range of covers. Gratings and frames are available to satisfy all load classes.

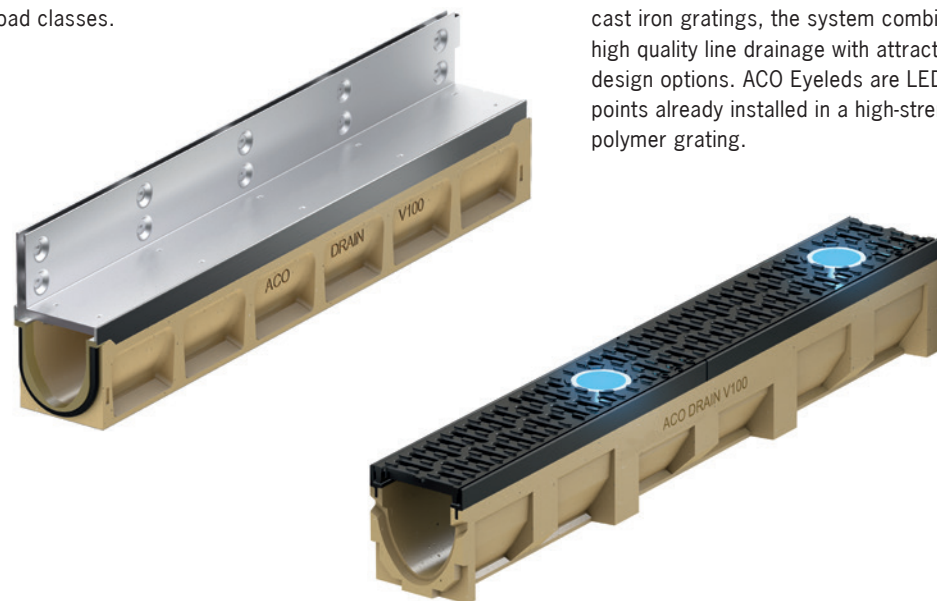


**Drainage and design –  
ACO DRAIN® Slotted channel**

Discreet and restrained, the ACO DRAIN® Slotted channel V 100 S/V 150 S Multiline open up new opportunities for space planning in airport forecourts. The narrow slot replaces the grating, and forms a clear, discreet line in the paving. This elegant slot can be used as a design element emphasising the lines of the architecture. The slotted frame for instance can be integrated discreetly and elegantly within steps.

**Illumination within the drainage channel –  
ACO Lightline, Lightpoint and Eyeleds**

ACO Lightline and ACO Lightpoint, or the new ACO Eyeleds, create bright accents within architectural features and open spaces – and also act as unmistakable way markings for paths, etc. ACO Lightline boasts variable colour effects to open up numerous applications for planners in designing the colour dimension of outdoor spaces within airport complexes. ACO Lightpoints are particularly beneficial for enhancing the attraction of areas frequented by heavy traffic. Combined with the ACO DRAIN® Multiline drainage channel, and D 400 load class cast iron gratings, the system combines high quality line drainage with attractive design options. ACO Eyeleds are LED points already installed in a high-strength polymer grating.



**For tomorrow's infrastructure –  
ACO manhole covers and road drains**

Operational safety, durability and cost efficiency are the main criteria defined for airport infrastructure. With the Multitop range of manhole covers, top sections and inlet gratings, ACO satisfies all specifications pursuant to DIN EN 124/E DIN 1229. Intelligent product features such as lightweight covers and gratings, boltless locks, damping frame inserts, and hydraulic, optically attractive and technically sophisticated surface designs, underpin the ACO Multitop product line's high engineering standards.

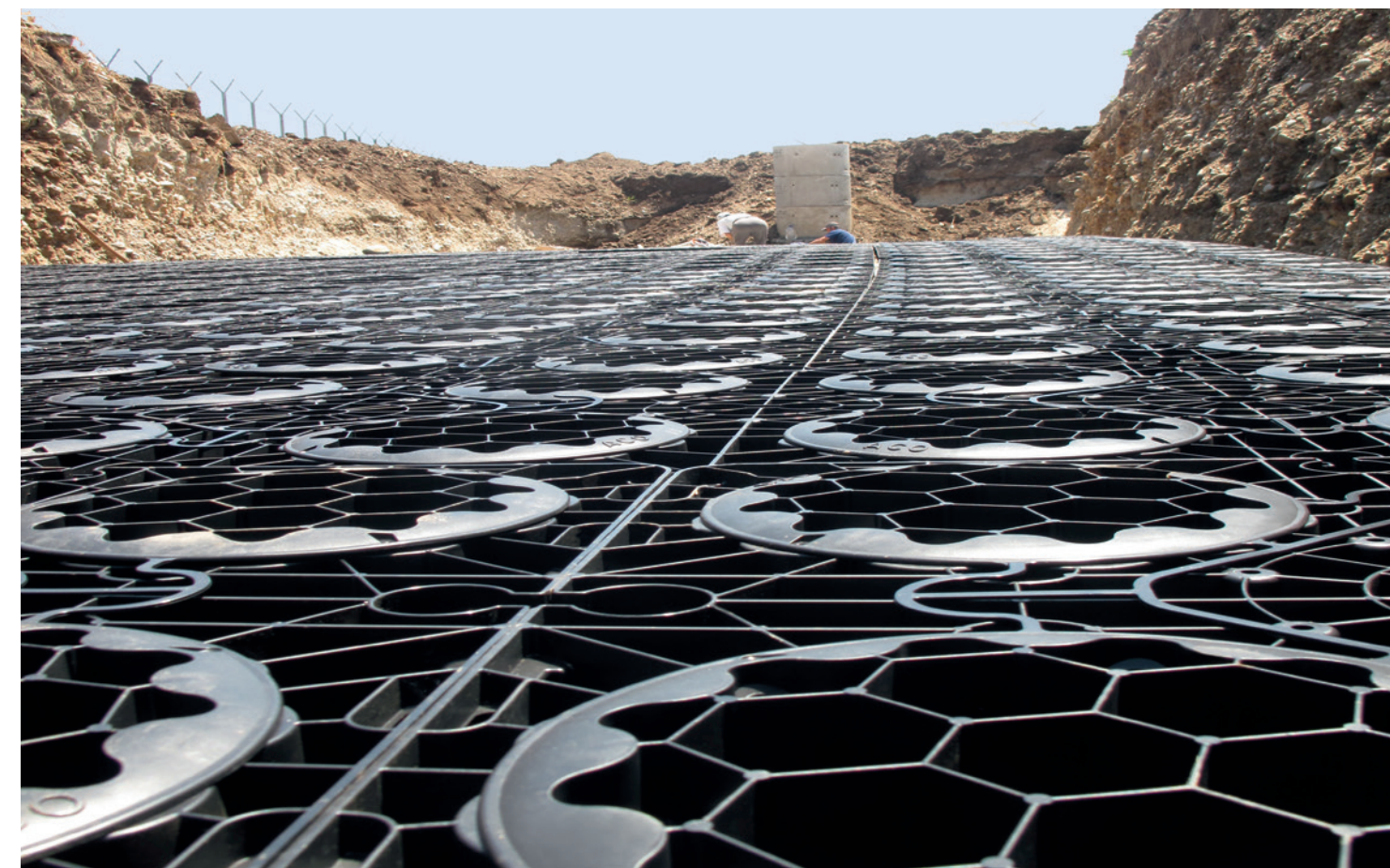


The ACO Combipoint road drain system was specially developed to satisfy all the stringent criteria defined for roadside drainage. The benefits of this road drain include the absolute tightness of the PE drain body, and its low weight. The range was expanded in 2008 with the wet sludge version. The separation road drain (SSA) for minimising the amount of solids entering the drain, is an optional accessory rounding off the Combipoint system.

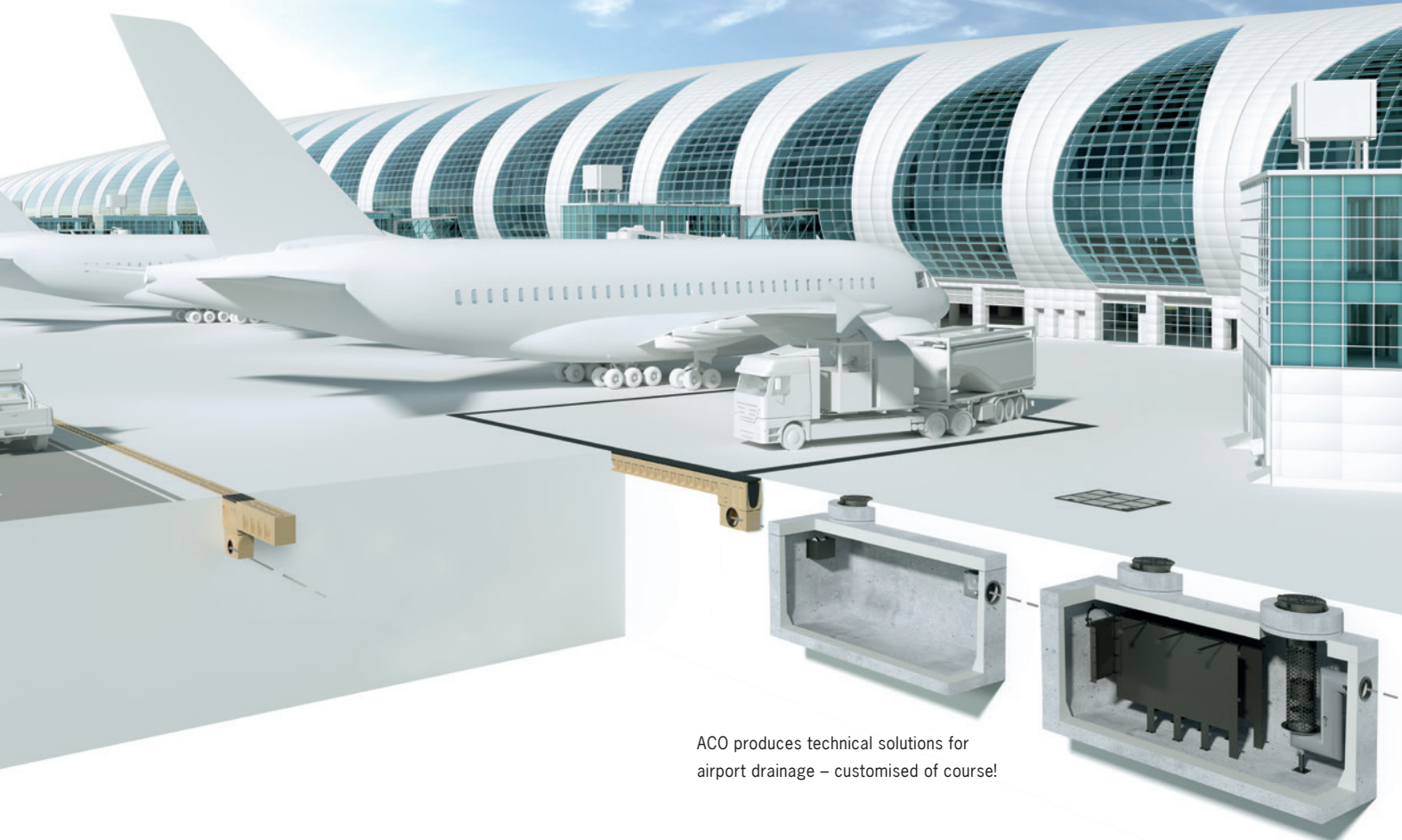
**Surface water retention or seepage**

Modern airports frequently provide large, asphalted car parks for their passengers and staff. The ACO Stormbrixx infiltration system supports the natural water cycle by retaining underground the water collected from these surfaces, and releasing it gradually. The bulk percolation procedure releases the surface

water in moderate quantities into the ground. Throttle or other devices may be used to control the release of the water from the bulk storage into the watercourse. This helps to replenish groundwater levels and reduces the load on the sewage system.







ACO produces technical solutions for airport drainage – customised of course!

### The ACO service package for airport planners

Every project is different, with its own demands and challenges. In addition to our top products, we also make available our in-depth know-how and our services to assist you in developing individual customised solutions – from planning to service provision after completion.



train

**train:**  
**Information and further training**

At the ACO Academy, we share the in-depth expertise of the global ACO Group with architects, planners, operatives and dealers who place a high priority on quality. We invite you to attend and benefit from this know-how.



design

**design:**  
**Planning and optimisation**

Tendering and planning for drainage solutions can be based on a range of possible options. But which concept produces the best economic and safest technical solution? We can help you find the optimum answer.



support

**support:**  
**Construction advice and assistance**

To ensure that there are no nasty surprises between the planning and implementation of a drainage solution, we can provide you with project specific advice and support at your construction site.



care

**care:**  
**Inspection and maintenance**

ACO products are designed and manufactured for long service lives. With our after sales service, we ensure that ACO fully satisfies its high quality standards even after many years of efficient operation.

[www.aco.com](http://www.aco.com)

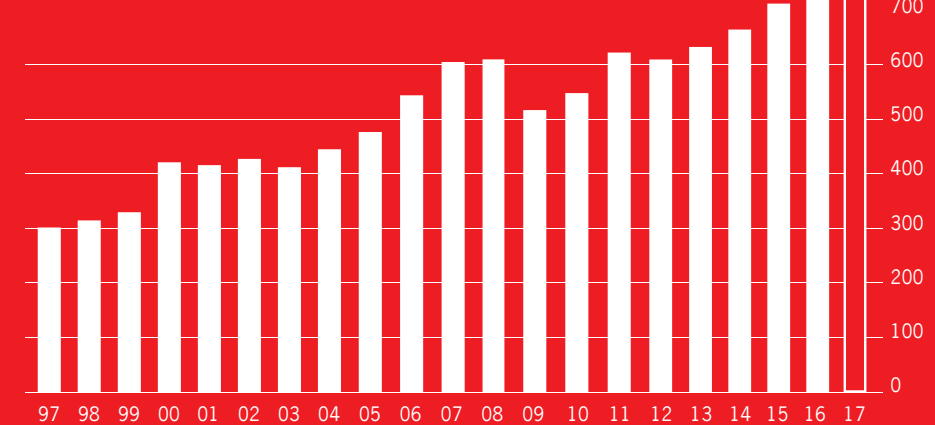
### The ACO Group

The ACO Group belongs to the world market leaders in drainage technology. Climate change sets us a challenge to react effectively with innovative solutions to new environmental conditions. With its integrated approach, ACO stands for professional drainage, efficient cleaning, and the controlled discharge or reuse of water.

Products include drainage channels and drains, oil and grease separators, back-flow stop systems, pumps and pressure-water-tight cellar windows and light shafts. The family-owned company headquartered in Rendsburg/Büdeltsdorf, 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. ACO has a presence in over 40 countries, with a total of 30 production sites on four continents. With a global workforce of 4,400, the company generated sales of Euro 711 million in 2016.

Development in sales in Euro million



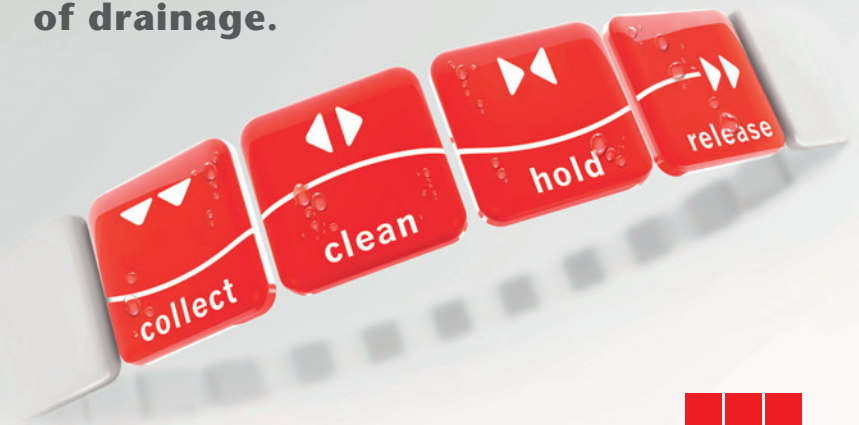
#### ACO Group at a glance

- 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. The future of drainage.

**The ACO system chain provides the drainage solutions for tomorrow's environmental conditions.**

Increasingly extreme weather must be counteracted by more complex and sophisticated drainage concepts. ACO achieves this with intelligent system solutions which have a dual purpose: protecting people from water, and water from people. Every ACO product within the ACO system chain therefore safely controls the water as it passes along the chain to ensure that it can be ecologically and economically reused in a viable way.



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