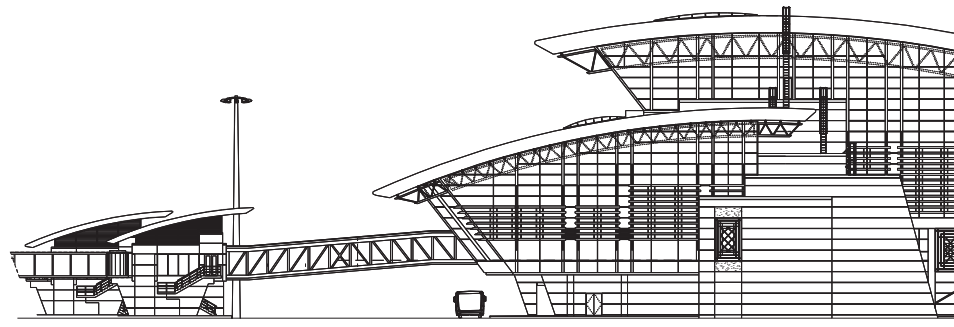
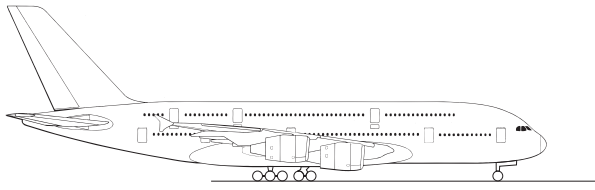


ACO Drainage systems for Airports

Highest quality

for maximum safety





## Airside

### ACO on the apron

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

Highest quality

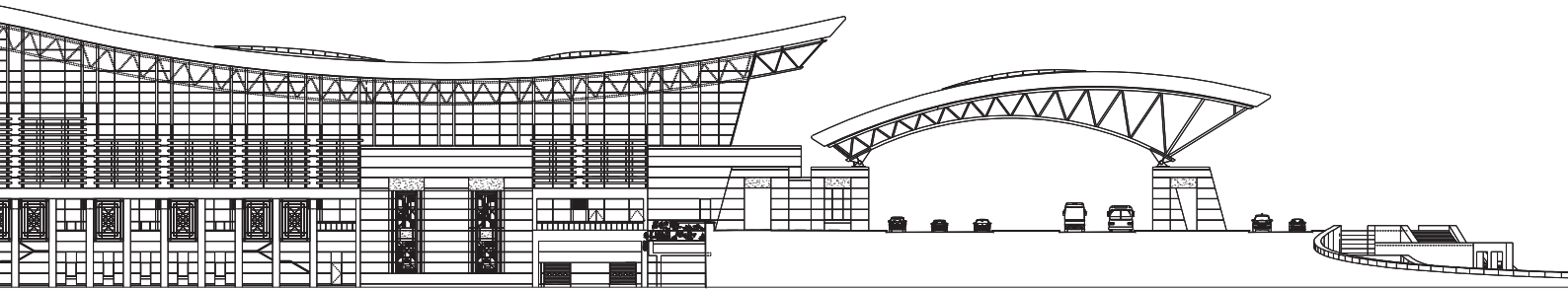
for maximum safety

### ACO Drainage systems for Airports

As one of the world market leaders in surface water management, ACO has the experience and innovative power to develop proper solutions for the extreme requirements in modern aviation. Our products enable airport designers and operators to increase comfort and safety in many different fields.







## Building

## Landside

### 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

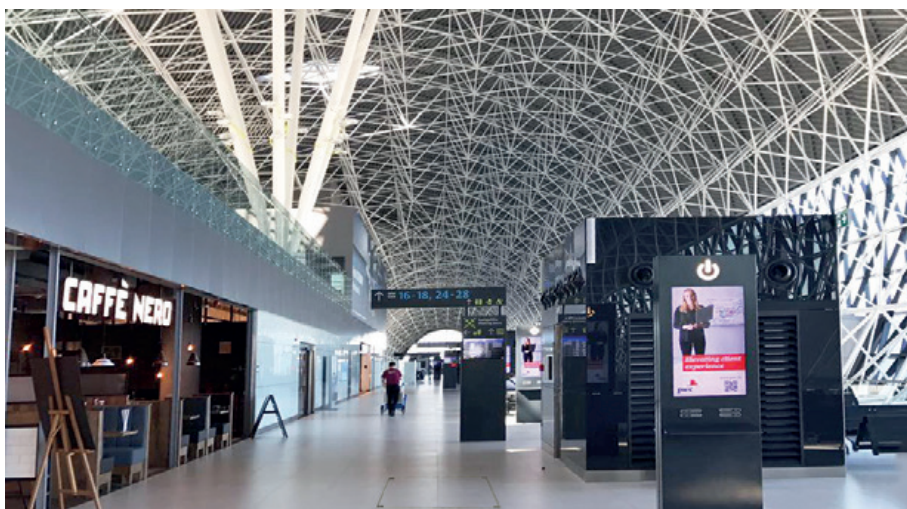
- Large area drainage
- Car park drainage
- Facade drainage
- Lights for directioning markers
- Access covers and top sections



## Commitment to quality

Our modern, state of the art manufacturing plant produces high quality products which are 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



ACO. creating

the future of drainage

## The worldwide ACO Group. A strong family you can build on.

The ACO Group is a world market leader 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, backflow stop systems, pumps and pressure-water-tight cellar windows and light shafts.

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 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.

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



Headquarters of the ACO Group  
in Rendsburg/Büdelndorf





**5,000**

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

**900 Mio.**

Euro Sales in 2019

**30**

production sites in 15 countries



ACO Academy  
for practical training

Holder  
Hans-Julius und Iver Ahlmann (left)





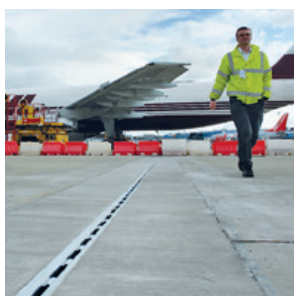


# Airport applications

## world-wide

### References of the ACO Group

#### Airside



- Odessa International Airport, Ukraine
- Fortaleza International Airport, Brasil
- Budapest Ferenc Liszt International Airport, Hungary
- Cataratas Del Iguazú International, Argentina
- Zagreb Franjo Tuđman Airport, Croatia
- Moscow Domodedovo, Russia
- Calgary International Airport, Canada
- Phoenix Sky Harbor International Airport, Arizona, USA
- Václav Havel Airport Prague, Czech Republic
- Abeid Amani Karume International Airport, Tansania
- Mytilene International Airport, Lesbos, Greece

#### Building



- Copenhagen Airport, Denmark
- Turkmenabat Airport, Turkmenistan
- Nelson Airport, New Zealand
- Santiago International Airport, Chile
- Zagreb Franjo Tuđman Airport, Croatia
- Shenzhen Boan International Airport, Guangdong, China
- Rome Fiumicino International Airport, Italy
- Emirate Chhatrapati Shivaji International Airport, Mumbai, India
- Washington Dulles International Airport, Washington D.C., USA
- Perth International Airport, Australia

#### Landside



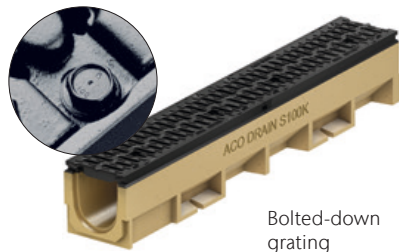
- Yinchuan Hedong International Airport, China
- Zaporizhzhia International Airport, Ukraine
- Dubrovnik Airport, Croatia
- Mostar International Airport, Bosnia and Herzegovina
- Brussels International Airport, Belgium
- Amsterdam International Airport Schiphol, Netherlands
- Marseille Provence Airport, France
- London Heathrow Airport, United Kingdom
- International Airport Brasilia, Brazil
- Rio de Janeiro International Airport, Brazil
- Melbourne Airport, Australia



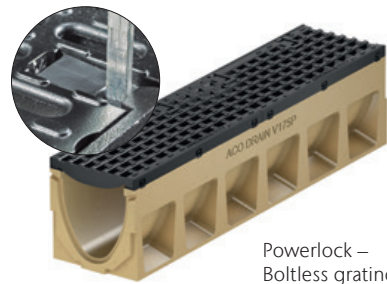
# For heavy-duty applications: ACO on the apron

What attributes does a channel need to withstand the weight of a 550 tonne airplane? What does 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.



Bolted-down  
grating



Powerlock –  
Boltless grating

## Good to know

- 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

## Safety 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.

## 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.



**Channel system from a single block – ACO DRAIN® Monoblock RD 100–300**

The unique Monoblock design guarantees highest levels of safety and stability for large-area drainage solutions. An ideal alternative to conventional systems. The monolithic construction makes the Monoblock durable and stable even under extreme loads. The channel and the grating are cast in one piece from polymer concrete.



**Controlling large volumes of water – ACO DRAIN® Qmax slot drainage**

Rainfall on large paved areas can rapidly generate very high flow rates of several hundred litres per second. ACO Qmax with the continuous slot is specially designed for draining large areas such as airport aprons or extensive car parks. The large ovoid channel shape made of MDPE – a recycled polymer – optimises the flow rate. Ideal in water management solutions which require further treatment of the drained-off surface water.



ACO Qmax Neo is a new subgroup of the existing Qmax family. This effective option differs in terms of material, manufacturing and transport process. Due to the low component weight and the simple assembly of several channel bodies, a quick installation without additional lifting device is possible.



**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.



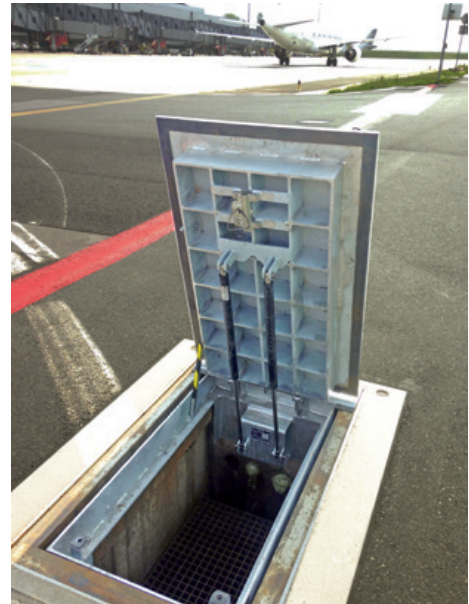


## Covers

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

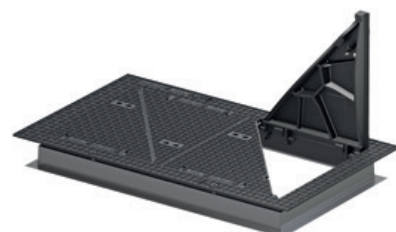
ACO access covers satisfy all of the technical safety criteria for airports. Applications include supply and disposal shafts, and material and inspection shafts. The ACO Secant access cover is a flexible system with a range of combinable covers and frames and/or frame components. This ensures that the 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.



### Cable shaft covers – surface-water-tight design

Only watertight shaft covers may be used in sealing surfaces – and only those that also have sealing systems that are resistant to substances present in polluted water. ACO Detego has a high-quality range of shaft covers that meet all requirements and at the same time are extremely operator-friendly. For example surface-water-tight cable shaft covers with a reinforced concrete frame or prefabricated triangular cable shaft covers with a height-adjustable reinforced concrete frame. All covers are available for load classes D 400–F 900.



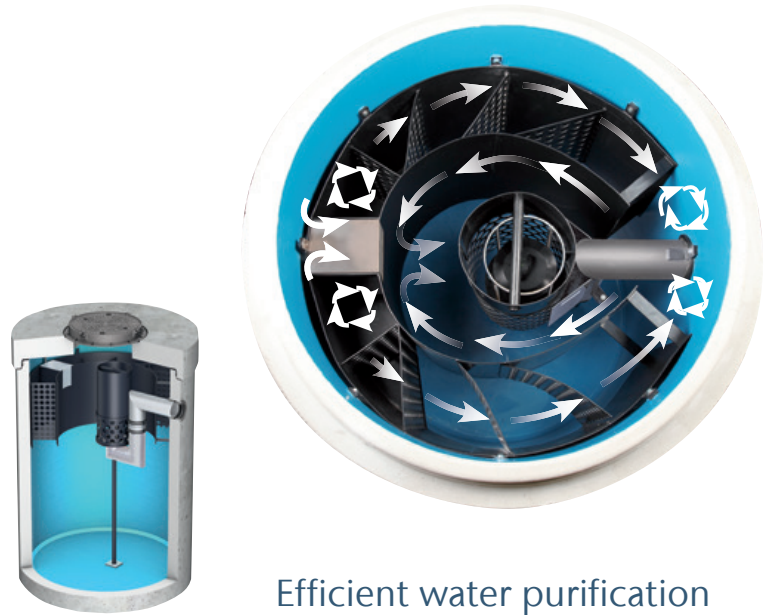


## Rainwater management

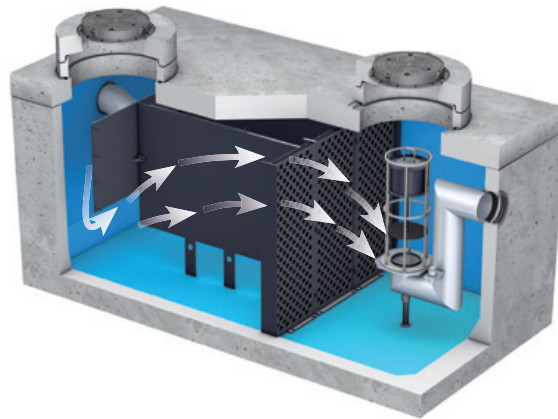


### Environmentally-friendly solutions for water protection – ACO catch pits, separators and pumping stations

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.



Efficient water purification



## For enhanced safety: ACO in airport buildings

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.



### Drainage in commercial kitchens – ACO 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.



### 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. Separators are adaptable and available in a range of sizes and materials. The comprehensive product line includes 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.

### Proven safety – 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.







**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 heata-ble flat roof 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. Fire protection inserts are available for both drainage systems and give modern roofs the necessary security.

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 perfect 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 parking decks be safely drained even under extreme weather conditions?

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**

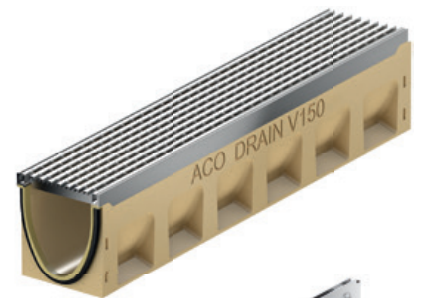
The Multiline Seal in drainage channel boasts intelligent design with the V cross-section for high flow rates. The body of the channel and the details and materials of the frames and gratings combine aesthetic diversity, high functionality, and extreme durability. The system solution has an extremely 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**

The ACO Lightline and Lightpoint or Eyeleds create bright accents within architectural features and open spaces – and also act as unmistakable way markings for paths. Lightline boasts variable colour effects to open up numerous applications for planners in designing the colour dimension of outdoor spaces within airport complexes. Big Lightpoints or smaller Eyeleds are particularly beneficial for enhancing the attraction of areas frequented by heavy traffic.



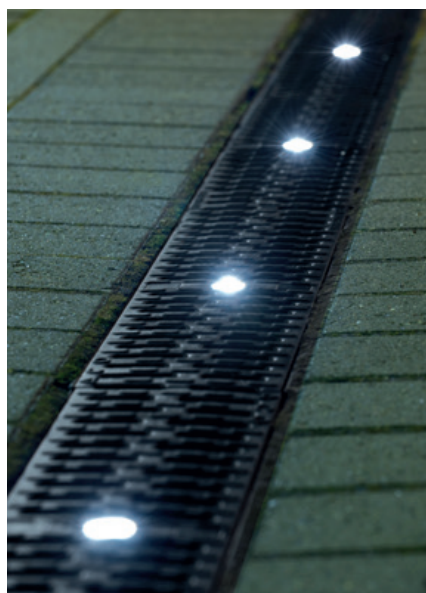


**Parkdeck drainage –  
ACO Parkdeck channels and gullies**

ACO has developed optimal solutions that protect exterior and interior of car parks safely and permanently from moisture, thus making them resistant to mechanical, chemical and weather-related influences. A secure, permanent seal even in the connection area noticeably extends the maintenance interval - the building construction remains intact in the long term.

The ACO stainless steel and cast iron parkdeck gullies and comply with building material class A1 and do prevent any additional fire load into the building. If fire protection is required, the gullies can be installed with flat roof outlet Passavant with integrated fire protection cartridge. The tested fire protection insert complies with fire resistance classes R30 - R120.

The ACO DRAIN® Deckline P 100 drainage channel made of polymer concrete has been specially developed for the drainage of parking decks and underground garages. The system is 100% leak-proof and due to the minimal installation height, it is suitable for decks with limited construction height. Load classes up to C 250 ensure a long service life. The material polymer concrete is resistant to dirt, fuel, oil or road salt to prevent corrosion and premature wear. In combination with the non-slip plastic ACO Microgrip composite grids, a corrosion-free and very cost-effective solution is guaranteed.







## Gullies and manholes

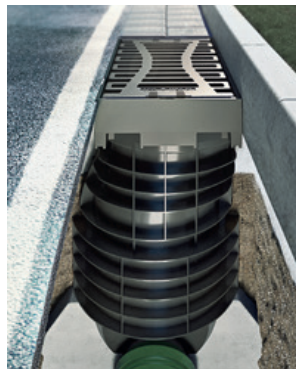


### For tomorrow's infrastructure – ACO road drains and manhole covers

Operational safety, durability and cost efficiency are the main criteria defined for airport infrastructure.

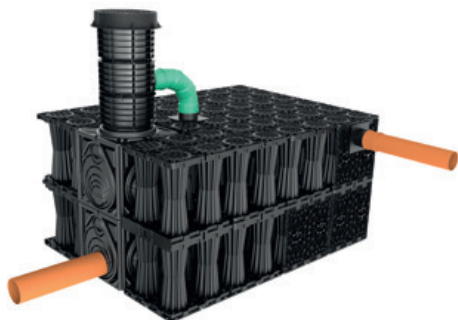
The ACO Combipoint road drain system was specially developed to satisfy all the stringent criteria defined for roadside drainage. The benefits of this road drain include the absolute tightness of the PE drain body, and its low weight. The range includes a wet sludge version. The separation road drain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

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.





## Infiltration and attenuation systems



### 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.



# 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

## Information and further training

ACO Academy shares the expertise of the global ACO Group with architects, planners, operatives and dealers who place priority on quality. We invite you to attend and benefit from this know-how.



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 help you find the answer.



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

## 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.



train



design



support



care

## ACO Service chain

In addition to personal consultation and training, ACO can also support you with a range of tools to help you simplify the planning, installation, servicing and maintenance of drainage systems.



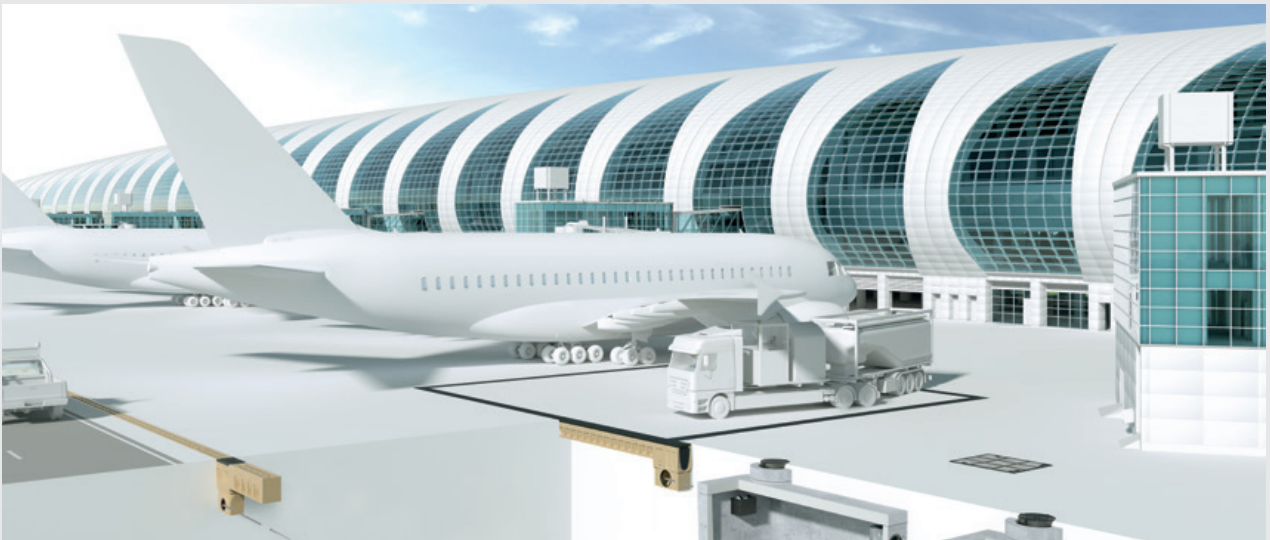
What can we do for you

and your project?



ACO produces technical solutions for airport drainage – customised of course! Together we will find the right answer for your special drainage challenge.

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



Every ACO product supports  
the ACO system chain



- 
- Drainage channels
  - Cable shaft access covers
  - Light-oil and grease separators
  - Heavy duty manhole covers
  - Stainless steel channels and drains for catering areas
  - Sanitary drains with fire protection
  - Roof and parking deck drainage
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- 

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