



Drainage System for Garden, Landscape and Sports Centre Construction

ACO GaLaBau







Dear Reader,

The water-sensitive design of urban spaces is an essential aspect of modern landscape architecture. More than ever before, planners, contractors and building owners are attaching importance to well-functioning and aesthetically pleasing drainage solutions for outdoor facilities in urban areas.

By taking a holistic approach, ACO can provide you with support in these areas, offering not only the latest products but also a complete service that meets the requirements of today's landscape architecture.



Sebastian Danckert-Ebens

Managing Director Inotec
ACO GaLaBau segment management

Title Page:

Redesign of Holstenbrücke, Kiel
Working group bgmr Landschaftsarchitekten,
Ingenieurbüro Obermeyer,
Ingenieurbüro Masuch + Olbrich,
ifb Frohloff Staffa Kühl Ecker



08

Channels for the public areas
Multiline Seal in



24

Custom solutions
Stainless steel channels



42



46

Drainage around the home
ACO Self® Construction Kit

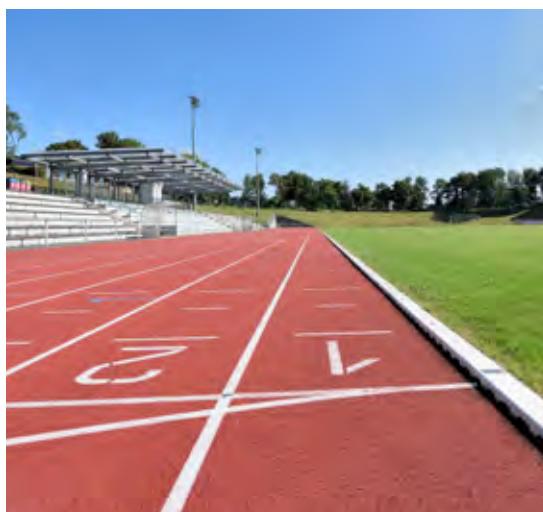


54

Inviting and practical
Doormats



60



68

Channels and construction elements for
Sports Facilities



82

Rainwater management with
Infiltration and attenuation



88

Content



Sensible and practical
Tree protection



Barrier-free terraces
Façade drainage



Unsealing and driving over
Gravel stabiliser

Drainage | External facilities and recreational areas 06

- ACO DRAIN® Channels with various gratings: Multiline Seal in..... 08
- Reinforced channel body - for every load class..... 10
- Design flexibility with beautiful gratings: Drainlock grating..... 12
- From practical experience: Promenade Möltenort..... 14
- Creativity in landscape architecture: Cast iron grating Freestyle 16
- Lighting effects on paths and squares: Eyeleds, Light spot, Sideline 18
- Brickslot grating and special shapes for discreet drainage 20
- Circulation and drainage channels for fountains 24
- Car park drainage: channel systems and road gullies 28
- One single component for increased load absorption: Monoblock PD..... 32
- Excellent linear drainage made easy: XtraDrain 36
- Customised manhole covers: with city coat of arms or company logo 36
- Special manhole covers: ACO Passavant Detego 38
- Point drainage for green spaces and yards: Yard drain Pointlock..... 40
- Tree protection system: Tree gratings and tree protection grating 42

Drainage | Everything for around the home 44

- Property and garage access roads: ACO Self® drainage in a modular system, Multiline Seal in..... 46
- Manhole covers made of plastic: SAKU 50
- Yard drainage and water extraction point: XtraPoint, Europoint 52
- Shoe scraper for outdoors and indoors: Vario 54
- More than just a light shaft cover: Vario Design light shaft cover and design gratings 58

Drainage | Roof and façades 60

- Façades, balconies and roof gardens: façade channels
- Profiliner, flat roof gullies and attachments for green roofs 62
- Perfectly adaptable to every level: Profiliner and Profiliner X 64

Drainage | Sport facilities 68

- ACO SPORT®
- Draining running tracks and playing fields 70
- Draining stadiums and stands 72
- Draining all weather pitches and alternative sports facilities 74

Drainage | Rainwater management 76

- Rainwater management is our task for the future..... 78
- Sustainable use of water as a resource: sedimentation and filter systems 80
- Retaining and storage in the infiltration ditch: Stormbrixx 82
- Economy and ecology - a win-win combination 84
- Rainwater seeps away on site: Gravel stabilisation, honeycomb grass paver 88
- Save up to 50 % of drinking water: Rain4me 90

- **ACO Architects and Planners Day; beyond.aco** 92
- **Carlshütte artwork** 94
- **ACO group** 96
- **ACO Materials** 98

askACO: Can I get some help? The ACO service chain at a glance..... 100
Contact the companies of the ACO Group..... 102

Drainage

Outdoor Facilities and Recreational Areas



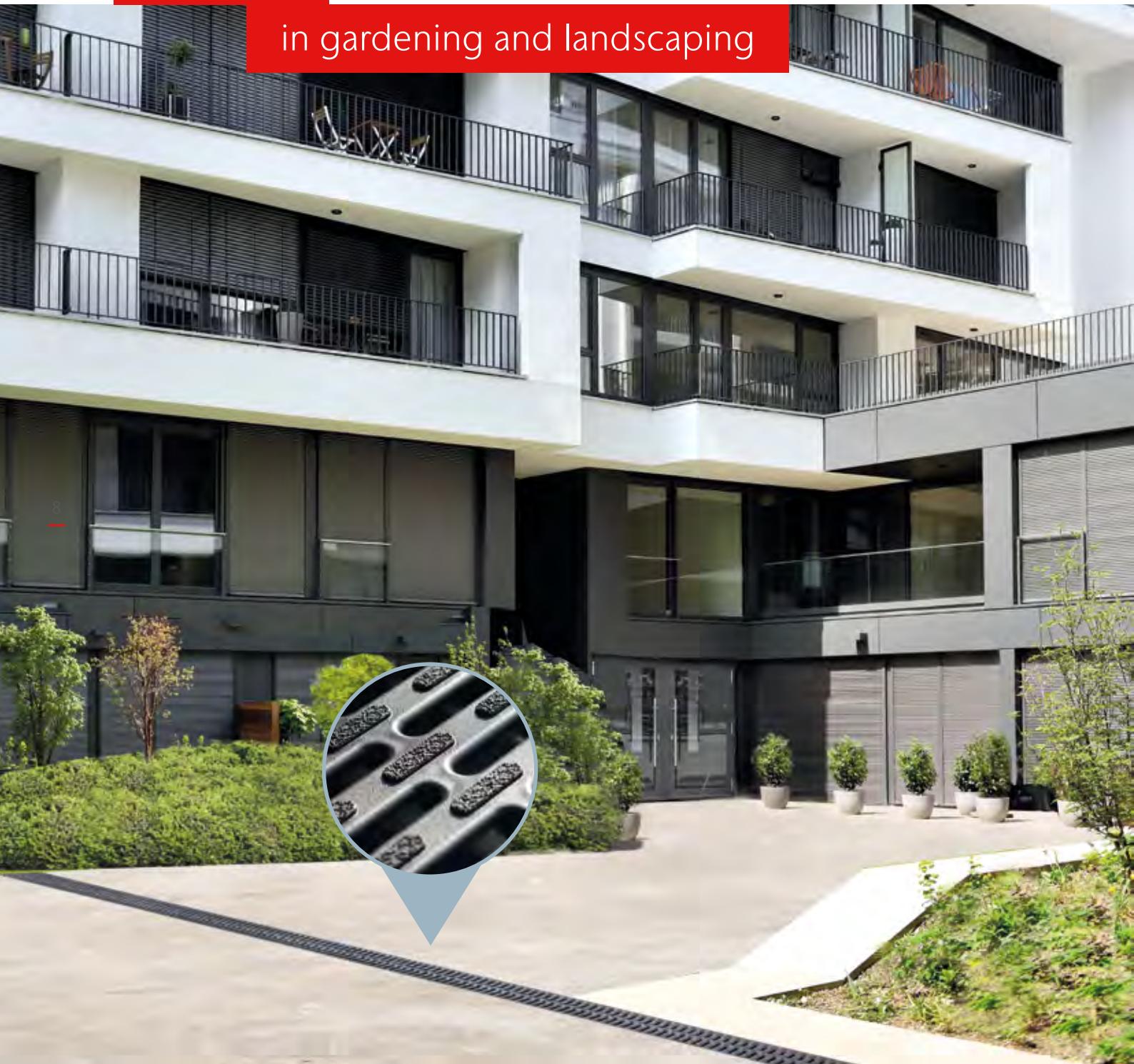




Not only does the Microgrip grating have a special appearance, it also makes a major contribution to safety on residential paths-due to its anti-slip surface structure.

Expertise

in gardening and landscaping





ACO DRAIN® Multiline – Channels with versatile gratings

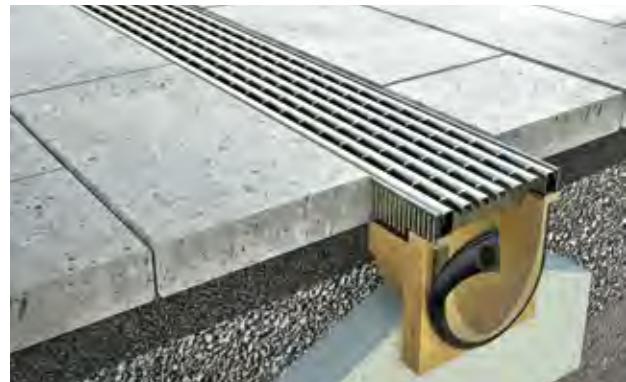
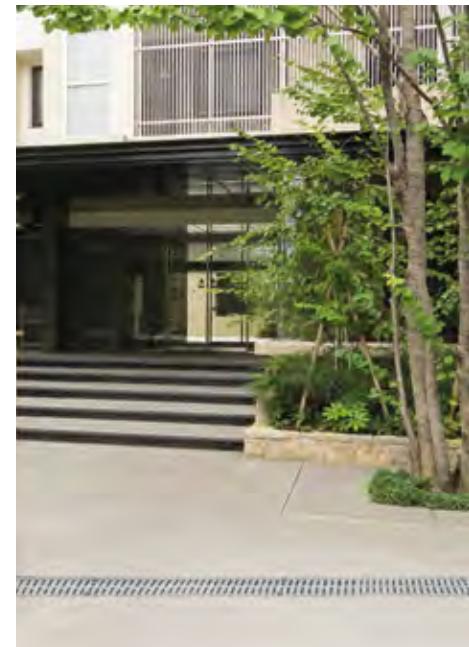
In order to keep public squares and access paths free of rainwater, appealing and custom drainage facilities are required.

ACO DRAIN® Multiline Seal in is defining the development of linear drainage with strong innovations such as its Seal in technology.

The extensive product range of Multiline Seal in creates plenty of scope for intelligent design and construction solutions.

There is a choice of different materials for edge rails and gratings, various nominal widths and accessories. The channel system therefore enables flexible linear drainage for a wide range of applications in modern rainwater management. You can see suitable gratings on Page 12 etc.

Sealin
TECHNOLOGY

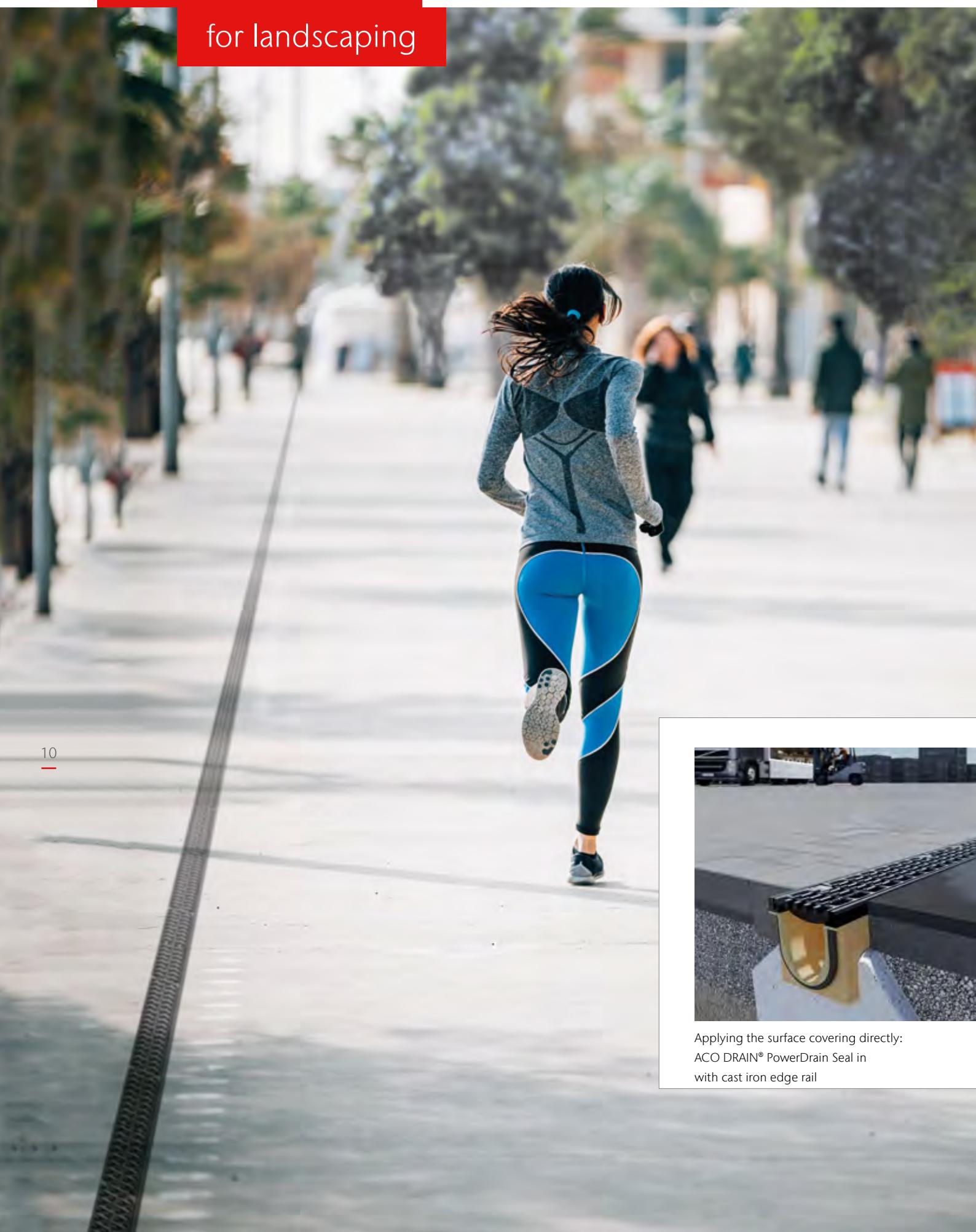


ACO DRAIN® Multiline Seal in
edge rail available in galvanised steel or stainless steel

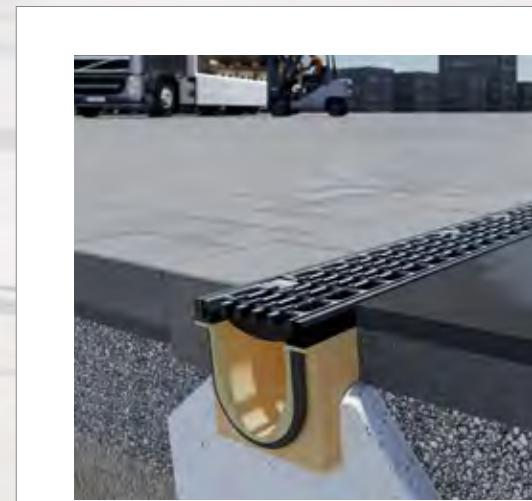
askACO

www.aco.com/en/products-and-services/ask.aco

The strong solution
for landscaping



10



Applying the surface covering directly:
ACO DRAIN® PowerDrain Seal in
with cast iron edge rail



Longitudinal rod
cast iron grating

Strengthened channel body – for every load class

Boulevards are open access areas in the urban environment. They serve as a meeting and communication point. Precipitation must be drained in a functional and visually appealing way.

The new ACO DRAIN® PowerDrain channel system not only offers water-tightness as standard thanks to the integrated seal at the channel joint, but is also equipped with a 12mm cast iron edge rail and the strengthened channel body.

This range is enhanced by innovations that provide you with a strong and safe system that is individually and economically tailored to your needs using the modular principle as PowerDrain Seal in or directly as an all-in-one package with the PowerDrain Performance version.

Powerlock grating
D 400
Cast iron

Powerlock grating
F 900
Cast iron

Cast iron gratings with a longitudinal rod design as well as all other cover gratings (p. 12 et seq.) from the Multiline Seal in range offer a wealth of creative possibilities for the design of open spaces.



askACO

www.aco.com/en/products-and-services/ask.aco



Discreet lines

with elegance



NOMINEE 2015



reddot design award
winner 2015

The Drainlock grating with longitudinal profile is available in stainless and galvanised steel. It has received many awards for outstanding design quality.



A wide range of Drainlock gratings in a variety of designs, colours and materials, provides creative scope for individual planning and configuration.

The Drainlock gratings made of cast iron, stainless steel, galvanised steel or composite material meet architectural demands for aesthetics, functionality and load. All covers are equipped with the Drainlock screwless locking and fit the ACO DRAIN® Multiline Seal in and PowerDrain Seal in drainage systems.

Depending on the design, they are available in classes A 15 - D 400 according to DIN EN 1433. The brickslot grating (Page 20 et seq.) and the unmistakable design of the Freestyle covers (Page 16 et seq.) create additional design possibilities.

for more information
on the Voronoi design,
see page 46



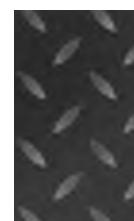
Voronoi
Cast iron
natural Design



LightPoint
Cast iron
LED lighting



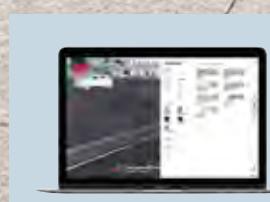
Sideline
Stainless steel
LED lighting



**Cover plate
closed**
Cast iron



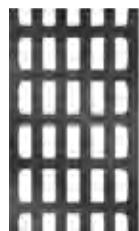
Freestyle
Cast iron grating
custom design



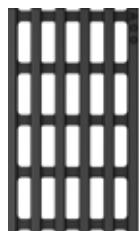
The **grating configurator** allows you to select covers according to visual criteria in different scenarios. Technical information can be downloaded or saved in the object file. www.draindesign.de



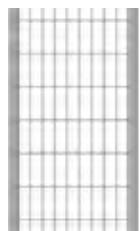
Design flexibility with beautiful gratings



Longitudinal bar grating
with mesh design
Cast iron



Longitudinal bar grating
Design Ray
Cast iron



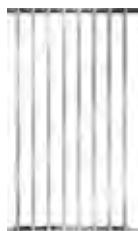
Mesh grating Q+
Galvanised steel
Stainless steel



Perforated grating
Galvanised steel
Stainless steel



Crosswise rod grating
Stainless steel



Longitudinal bar grating
Galvanised steel
Stainless steel



Longitudinal slotted grating
Stainless steel



Longitudinal profile grating
Galvanised steel
Stainless steel



Slotted grating
Galvanised steel
Stainless steel



Slotted grating
Cast iron



Slotted grating
Heelguard
Cast iron



Composite grating
black, silver-grey
plastic

13



All ACO steel gratings can be provided with a special surface treatment or RAL coating. This creates individual color shades for very special applications.

askACO

www.aco.com/en/products-and-services/ask.aco

Promenade Möltenort

The new business card of the Baltic seaside resort

Schleswig-Holstein: The newly designed promenade at Möltensort beach was completed in time for the tropical summer of 2018. Now the path between the art kiosk and Seeblick beach has been given a modern look and is once again at the disposal of sun-loving tourists and locals.



New sand-coloured concrete pavement, natural stone wall, benches and drainage



Square manhole covers blend in with the concrete blocks





Cast iron gratings in Ray design

Planning/tendering/construction management:
BHF Bendfeldt Herrmann Franke
Landschaftsarchitekten GmbH
bhf-ki.de
Costs: approx. € 1,300,000
Completion: 7 July 2018



Idea sketch
Landscape architect Jens Bendfeldt

Visitors to the newly designed promenade in Möhlenort in summer 2018 required a bit of luck to find a free spot for their towel on the beach. For weeks, the thermometer showed temperatures between 25 and 30 °C, which meant that the beach and the associated promenade were packed with hundreds of guests every day. Möhlenort is located on the east side of the Kiel Fjord between Laboe and Heikendorf and is blessed by the sun into the evening. This is very beneficial for the promenade, which has acquired much more living quality and has been enhanced by the current redesign.

On the seaward side, the promenade is enclosed by a low undulating quarry stone wall with a 12 cm thick cover of granite slabs. On this approx. 250 m long seating wall with integrated wooden cushions, visitors and seamen have the best view of the international shipping traffic of the fjord and of the entrance to the locks of the Kiel Canal (NOK), the most frequented artificial waterway in the world.

The centre of the approximately 9 m wide promenade is the new multifunctional area, which offers ample space for events. Right next to it is a centrally located children's play area on the beach, with a stranded wooden ship that invites young and old to climb and play.

The promenade was paved with a sand-beige concrete stone from Metten Stein+Design (60/40/12 and 40/40/12 cm) to continue the visual appearance of the beach. The promenade is drained via an ACO DRAIN® PowerDrain Seal in line drainage system running parallel to the seat wall with cast iron cover gratings.

Numerous benches in the northern part invite visitors to pause for a while. The southern section of the promenade has a new white wooden pavilion which was erected under existing trees.



Unique design



With the ACO Freestyle type „Wave 180“ ...

... a continuous wave design can be created.



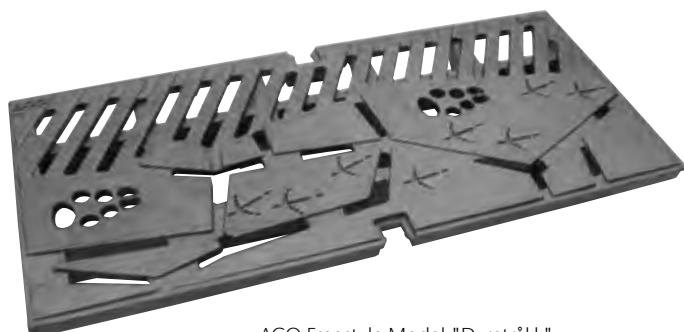
All you need is an idea. The gratings are then manufactured in the ACO foundry. You design it - ACO takes care of the details!



ACO Freestyle with Eyeleds

Creativity in landscape architecture

ACO Freestyle cast iron gratings fulfil the desire for customised solutions for exceptional linear drainage.



ACO Freestyle Model "Dyretråkk", installed in Geilo, Norway

The unique design options for cast iron cover gratings can express special features and highlight themes or events in pedestrian zones or promenades.

Using ACO Eyeleds creates a special kind of highlight:

The round LED luminaries with a 20 mm diameter are permanently installed in the cast iron grating. The individual design is underlined by lighting accents.



ACO Freestyle „Stör“ in Itzehoe



ACO Freestyle "FASS" (nominal width 300 mm)



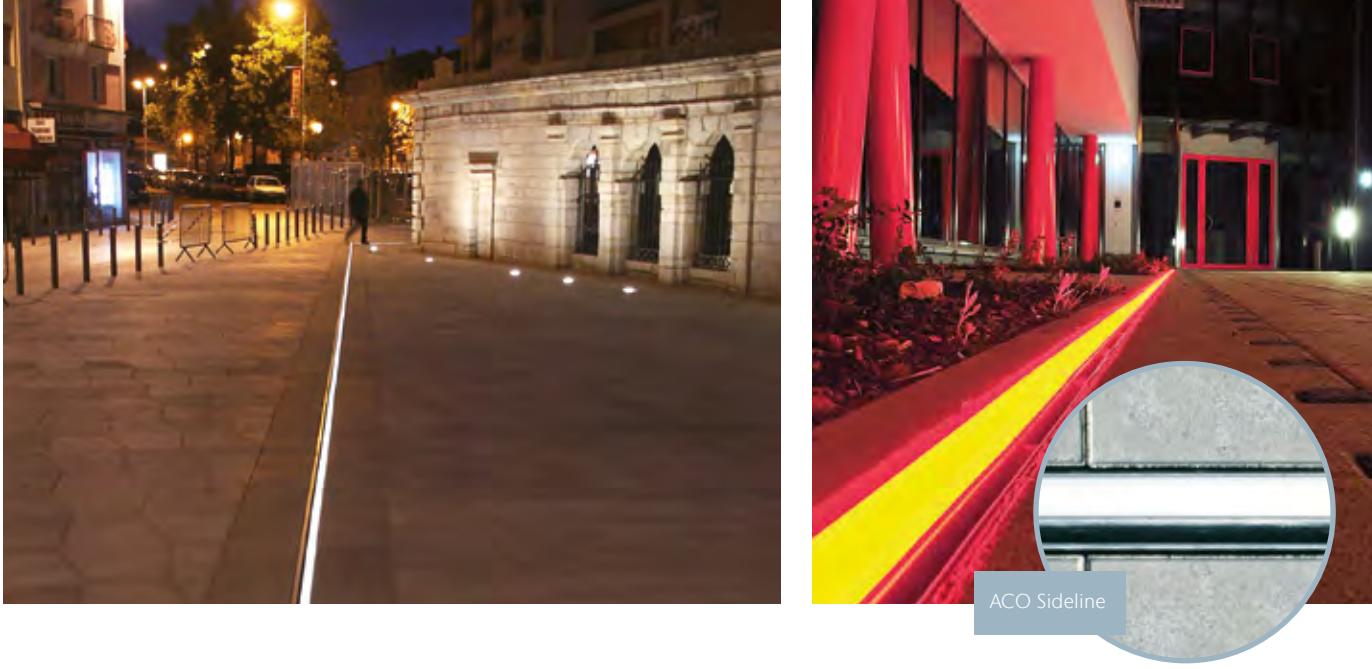
ACO Freestyle „Leaf“



Setting

vibrant accents





Linear and point lighting effects

Attractive lighting sets radiant accents in architecture and in the design of open spaces. Both public squares as well as entrance areas and pathways can be enhanced in terms of design and function.

ACO Eyeleds, LightPoint and Sideline offer high-quality cover gratings for the ACO DRAIN® Multiline Seal in linear drainage system. In addition to the effective design, an important plus point is the increased feeling of safety, which is achieved by the lighting.

The ACO Sideline demonstrates a sophisticated symbiosis of drainage and LED technology. The linear light patterns perfectly emphasise the character of modern architecture. In addition to single RGB colours, it is possible to display mixed colours, colour gradients or dynamic light scenes. The new ACO Sideline OGL2 achieves a minimalist lighting solution for illumination of facades and architectural elements in outdoor areas.

Together with the ACO DRAIN® Multiline Seal in V 100, the stainless steel slotted frame and the ground light line from InstaLighting GmbH, a combined surface drainage and lighting is achieved with both variants.

ACO Eyeleds are light, expressive systems in the load class B 125. Integrated LED points in a grating made of high-strength plastic achieve an intensive lighting effect on garage entrances, squares, paths, access roads, boulevards or train platforms.

ACO light points can be used to showcase surfaces that are exposed to higher loads in an attractive way. LightPoint consist of high-quality LED luminaires, which are available for use in cast iron gratings up to load class D 400.

19

ACO LightPoint

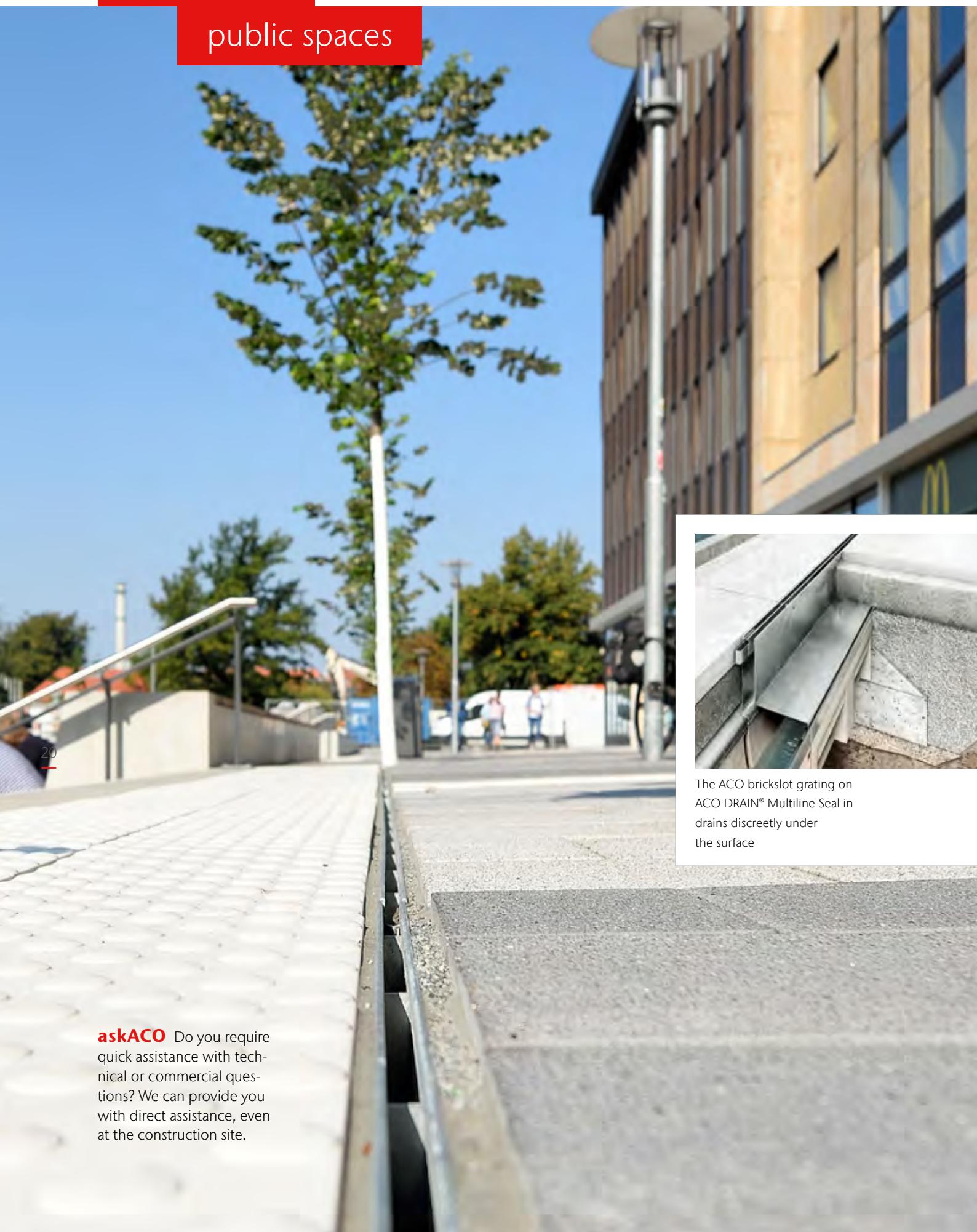
Radiant accent points in white or blue can be created using the large ACO LightPoint or the small ACO Eyeleds. Special colours such as e.g. red are possible on request.

ACO Eyeleds

askACO

www.aco.com/en/products-and-services/ask.aco

Drainage of public spaces



The ACO brickslot grating on ACO DRAIN® Multiline Seal in drains discreetly under the surface

askACO Do you require quick assistance with technical or commercial questions? We can provide you with direct assistance, even at the construction site.



Perfection down to the last detail:
brickslot grating and inspection elements with reinforced top edge.



Brickslot grating for discreet drainage

Open spaces provide a haven of tranquillity for life in the city. Design and function have an equally high priority. Storm events should be drained in an aesthetically pleasing and functional way.

ACO brickslot grating discreetly and unobtrusively open up new avenues for open space planning. A narrow slot replaces the grating

and forms a clear, inconspicuous joint in the paving. As a design element, it can follow the contours of the architectural structure. The brickslot gratings join together with the drainage systems ACO DRAIN® Multiline

Seal in and XtraDrain are available in various nominal widths and load classes and come in both galvanised steel and stainless steel.



Wismar old harbour: drainage of the historically restored surfaces is carried out via brickslot grating attachments to an ACO channel. The layout of the brickslot grating corresponds to that of the rails laid for the port's goods transportation at the beginning of the 20th century.

askACO

www.aco.com/en/products-and-services/ask.aco

Discreet and

elegant

ACO DRAIN® Brickslot grating

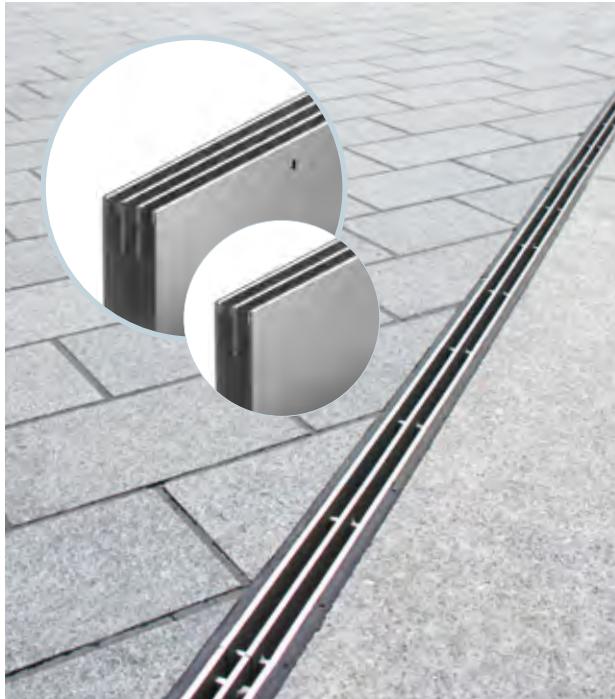


Designed with clear lines. Discreet and unobtrusive, brickslot grating opening up new possibilities for sleek open spaces.



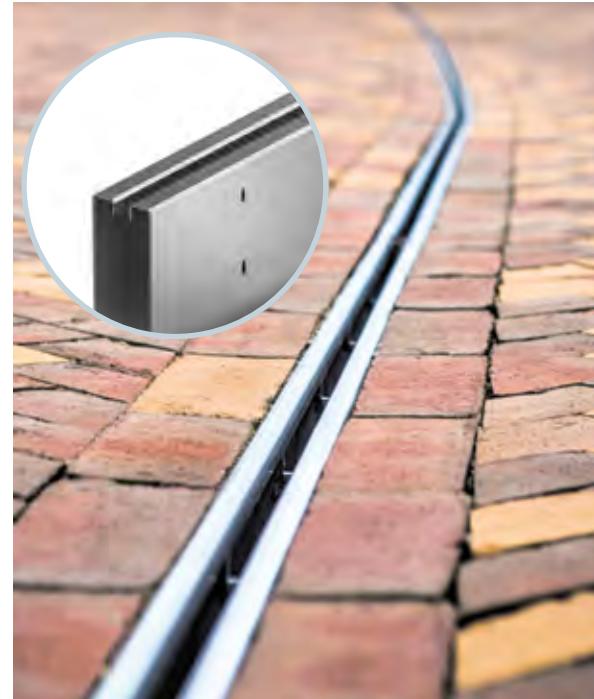
Brickslot grating

A narrow slot replaces the grating and forms a clear, inconspicuous joint in the surface. As a design element, this line can discreetly follow the course of the architectural complex. The system is also ideal for use as a transition between different surface materials.



Brickslot grating Double/Triple

Accentuated parallel slot design provides an even larger intake cross section than the single ACO DRAIN® brickslot grating.



Strip brickslot grating

The Strip slot attachment has an impressive restrained elegance. The wide bars of the slot are a classic timeless match for both modern buildings and historical structures.

askACO

www.aco.com/en/products-and-services/ask.aco

Sophisticated and elegant drainage



Inotec slotted and box channels in radial or straight form adapt to local conditions



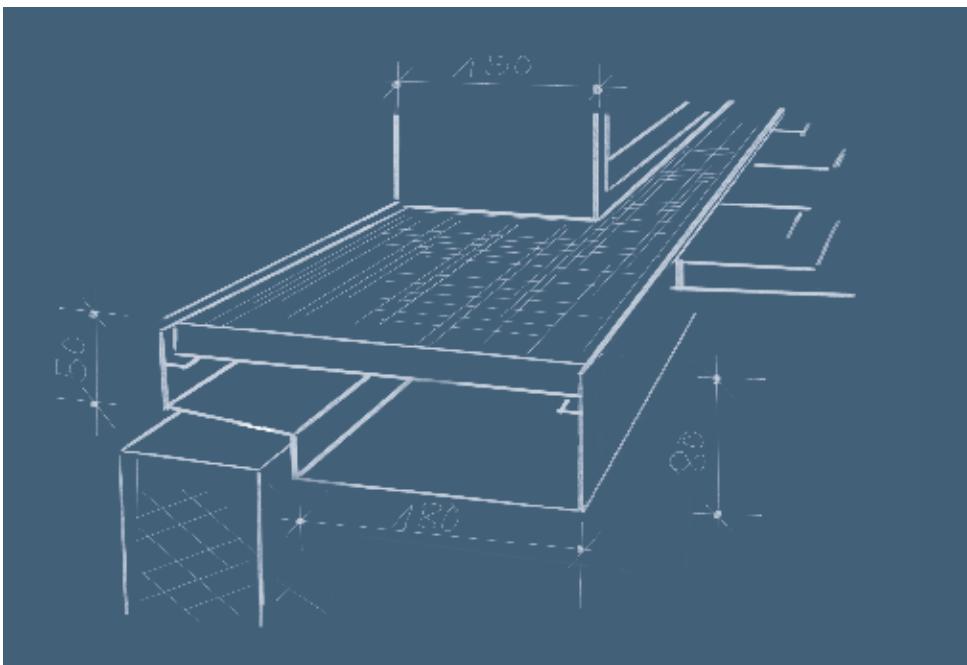
Cologne Cathedral: With around 6 million visitors, the cathedral built in the Gothic architectural style is one of the most visited sights in Germany. For drainage, a channel with two parallel inlet lines was constructed. The stainless steel channel features a unique cover filled with basalt lava, creating an aesthetically pleasing blend with the surrounding surface.

Right for every shape Drainage channel

Custom solutions for drainage systems are becoming increasingly necessary, especially radial channels. Whether you require façade connections, minimal installation heights or even specific requirements for outdoor areas: a sophisticated solution with unusual shapes can be perfectly implemented with stainless steel, hot-dip galvanised steel or Corten steel. Colour accents are also possible.

Radial channels are used in various applications. They can be designed for pedestrian areas as well as for heavy-duty traffic. The radius can be freely selected for grated channels and slot channels. Individual segments are available up to 3 m in length. An extensive product range allows for inspection boxes that can be paved over, channel perforations for infiltration or transition pieces to other channel types. Individual solutions are available for a wide range of requirements.

25



Drainage solutions that are custom designed for your building project

askACO

www.aco.com/en/products-and-services/ask.aco

Fountain systems and splash fountains





Stainless steel system solutions for sophisticated water features or splash fountains. Slot channels or covered channels ensure a secure circulation of the well water.



Circulation and drainage channels, water basins and edging elements

Water features and fountains are extremely popular in parks and gardens; in many inner-city squares they are a vibrant attraction for young and old.

There is hardly anyone who can resist the fascinating effect of urban waterfalls, streams, spouts, jets and fountains. Reflective pools increase recreational value, offer variety, serve as meeting places but also as quiet zones.



Longitudinal bar grating stainless steel
radial with U-profiles



Radial slot channel



Box channels



Floating fountain, Wittenberg

Quickly drain
large surface





Parking space drainage

Public car parks are high-traffic areas from which surface water must be drained quickly and safely. Both linear drainage and point drainage can be utilised here.

Parking spaces are not only used by vehicles but also by pedestrians. The drainage of these surface areas can therefore also be subject to different requirements. A linear drainage system has a higher absorption capacity than a point drainage system distributed over the entire distance.

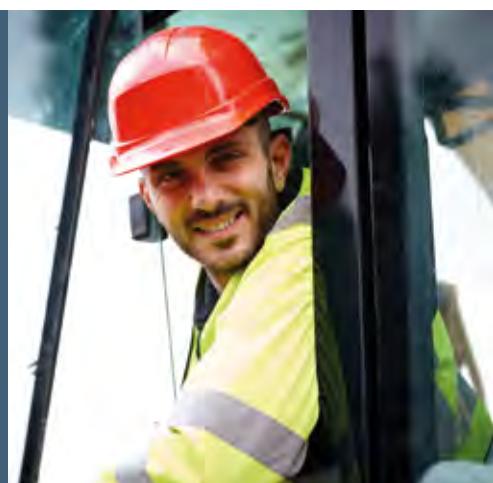
For priority areas where increased loads occur, e.g. when car parks are temporarily used as market or delivery zones, point drainage may be the better solution. In addition to surface paving that allows infiltration, care should be

taken to ensure that some form of emergency drainage is provided. It allows for drainage of these surfaces, especially during periods of frost/dew. Well thought-out planning tailored to the specific requirements is always worthwhile.

askACO ACO Application Technology will be pleased to support you, by calculating the hydraulic load and designing optimal solutions with various drainage options.



It is economical and faster to install kerbs and drainage in one go. The robust components of the ACO KerbDrain enable easy handling without heavy equipment.



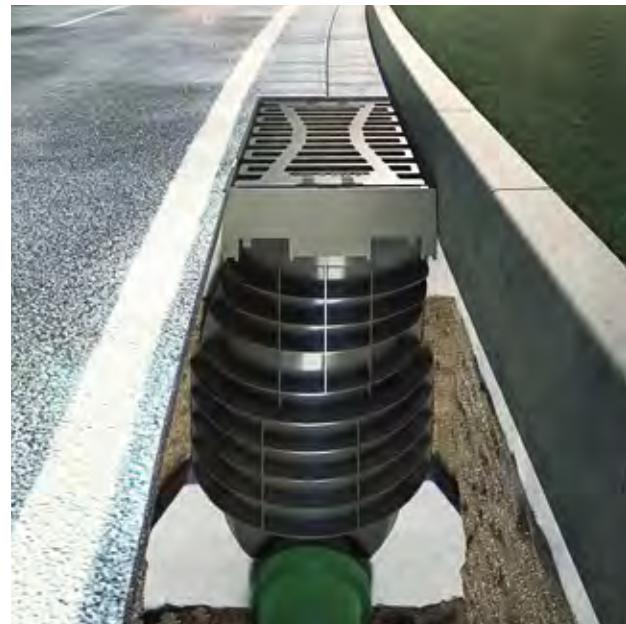
Gullies and channels

for dry parking spaces

Channel systems



Road gullies



Linear surface drainage makes sense at access points to car parks or as a separation between tramlines and parking spaces, as the slope of the surfaces can be ideally aligned and optimum utilisation of the system can be achieved. The drainage channel ACO DRAIN® Multiline Seal in or PowerDrain Seal in with cast iron edge rail, equipped as standard with a seal at the channel joint, intercepts polluted surface water and routes it into the natural rainwater circulation system without uncontrolled loss of water along the run. ACO has an extensive range of design options including different edge rails and gratings up to class E 600 in accordance with DIN EN 1433.

Point drainage is advantageous for parking areas and for car and lorry bypasses. The ACO Combipoint PP road gully, combined together with Multitop design attachments, provides ideal drainage for parking areas and driving areas. The lightweight gullies are made of plastic and can be rotated, telescoped, shortened and aligned to suit the inclination.





Combining line and point drainage



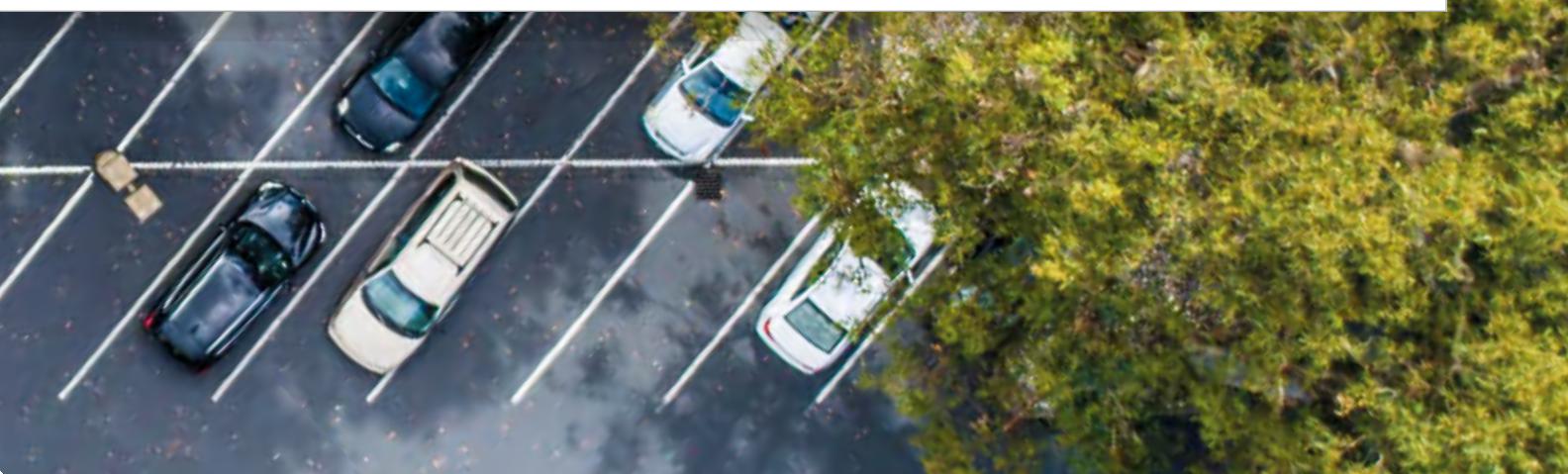
ACO Drain®Box is the new solution module for dangerous flooding hotspots. The special feature is the combination of line and point drainage. Up stream the gully, the lateral openings of the kerb channel along the kerb absorb part of the incoming water. With just a few metres of ACO

KerbDrain, a significant hydraulic performance improvement is achieved. The connection of the kerb channel with the gully is made via the sump unit. Suitable for retrofitting, renovation and new construction projects.

31

askACO

www.aco.com/en/products-and-services/ask.aco





Stable Unit

32



Installation is straightforward, as it is easy to cut sections to length on the monoblock. The universal installation direction is ensured by the tongue and groove system and the circumferential sealing groove.





A single component for high load-bearing capacities



ACO Monoblock

A monolithic drainage system made of polymer concrete is guaranteed to be safe and stable in public areas.

Thanks to the mono-casting process, ACO DRAIN® Monoblock PD is characterised by better durability compared to channel and grating drainage systems.

ACO Monoblock enables significantly higher load-bearing capacity, absorbing and distributing the load vertically and horizontally into the surrounding haunch. It is an innovation in landscaping and ideally suited for pub-

lic spaces where vandalism resistance is required. We recommend the installation of this channel system for the load class A to D range.

The entire polymer concrete block of the PD 100 V is coloured as anthracite. ACO Monoblock is both an attractive and practical design feature.

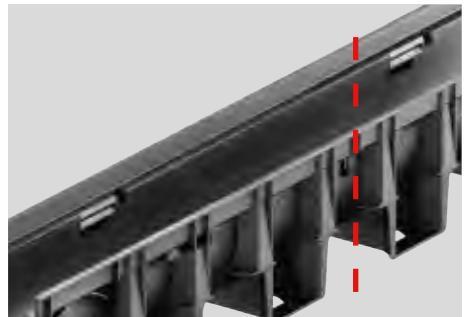


Demanding line drainage made easy

Drainage and design of open spaces has now become even easier with the ACO XtraDrain. The high-quality composite material combines light weight design with high stability performance.

Comfort all along
the line





The divisibility of the 1-metre elements is very practical: if you separate the ACO XtraDrain at the pre-drawn cut, it can also be used as a 0.5-metre element.



The channel body made of high-quality plastic offers easy handling combined with top quality performance. Technical details, such as the tried and tested V-profile or the hexagonal structure of the side walls fulfil all requirements for a modern drainage channel. The tongue and groove joint at the start and end of the channel enable simple and convenient installation.

Cover gratings with screwless Drain-lock stop locking are available in various designs in load classes A 15 to C 250 for the XtraDrain (Page 12 etc.).



XtraDrain with steel edge and longitudinal profile grating



Manhole covers

like no other city





#IfoundACO



Custom manhole covers

Inspection chambers are ubiquitous in urban traffic areas. It is often required that manhole covers include an attractive design

Visually appealing manhole covers are also part of the positive overall impression of aesthetically designed traffic areas with high-quality paving or slabs (for example in pedestrian zones or in front of company buildings). With specially designed covers, ACO offers you the option of customising the surface of manhole covers with a city coat of arms, company logo or similar motifs. You design it - ACO takes care of the details!

Join in - find an ACO product under your feet, take a picture, post it publicly with the hashtag #IfoundACO and location on Facebook or Instagram.

askACO Our team of experts will be happy to advise you regarding the design of your manhole cover.

37



Manhole cover with coat of arms

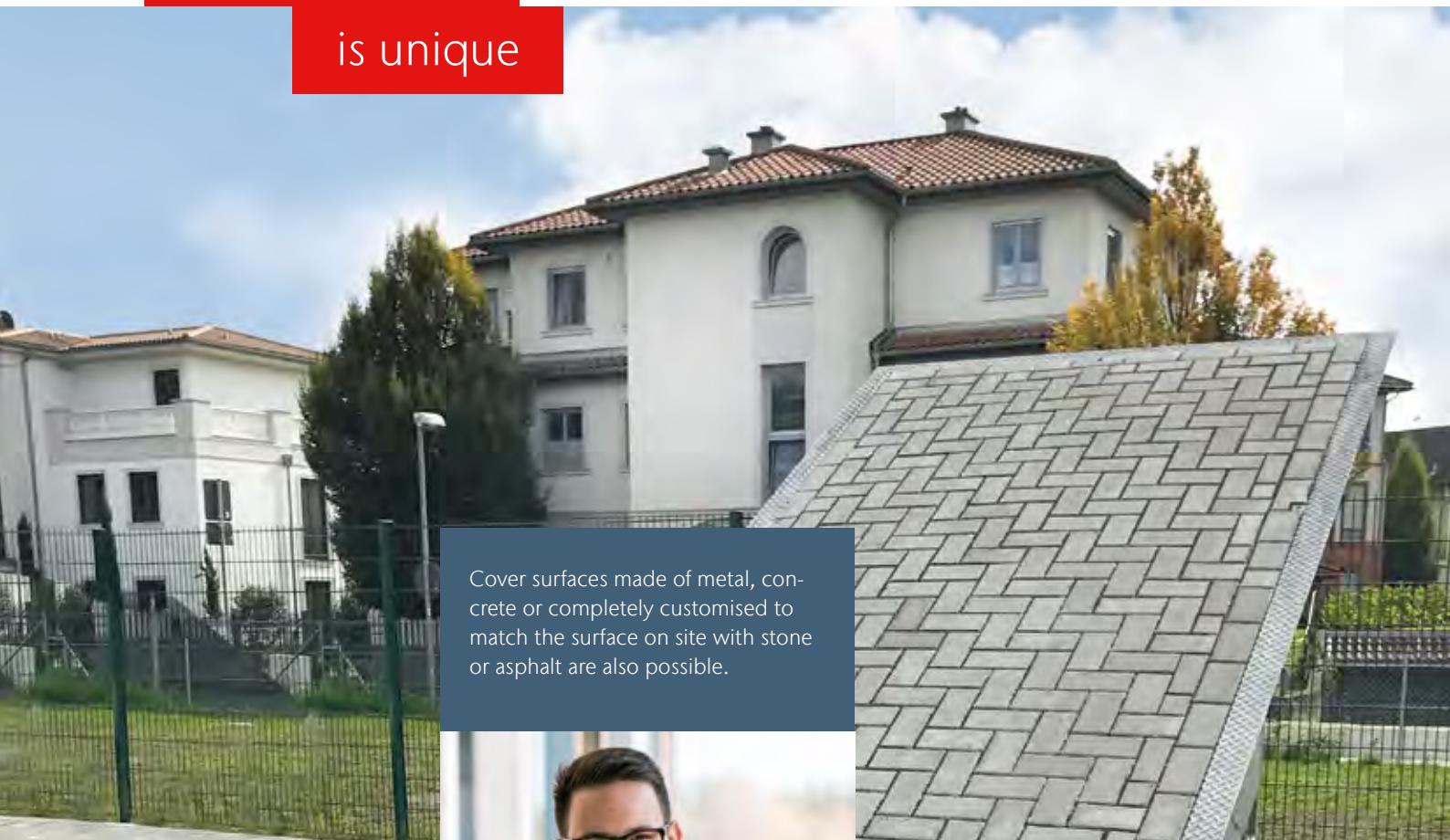


Manhole cover with company logo

askACO

www.aco.com/en/products-and-services/ask.aco

Every product
is unique



Cover surfaces made of metal, concrete or completely customised to match the surface on site with stone or asphalt are also possible.





Special shaft covers offer the possibility of visual integration into the overall appearance

Special shaft covers to meet individual requirements

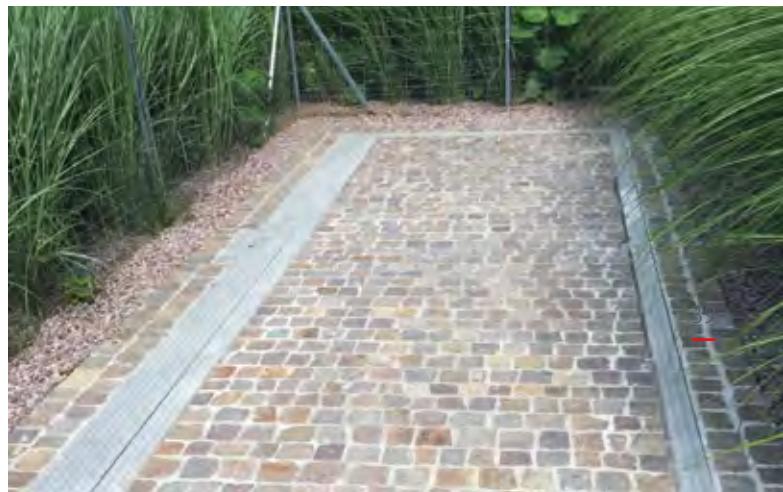
Entrances, installation openings and inspection openings:

The specialised market for custom shaft covers
is all about high-quality and high-performance products.

Custom shaft covers are used when conventional covers no longer meet the specific requirements of the project. As an emergency exit or floor hatch: ACO Passavant Detego are specialists and offer an individually tailored solution for every requirement.

The high-quality special shaft covers can be single or multiple pieces, have opening aids or automatic openings and can be made in any round or rectangular size required.

askACO The ACO Passavant Detego team of employees with many years of expertise, plans, coordinates, constructs, renovates and maintains shaft covers according to your specific project requirements.



Discreet and functional in landscape architecture



askACO

www.aco.com/en/products-and-services/ask.aco

Water brought
to the point



40

The ACO DRAIN® Multipoint
with Voronoi cast iron grating



Thanks to the Pointlock screwless, locking system, the point gully can be easily opened for cleaning with a grating hook. An ideal quick solution in busy public areas.



Point drainage for green areas and courtyards

Due to constructional or terrain-related conditions, some areas have to be drained at certain points. Yard gullies with screwless stop provide advantages in many areas of application.



ACO Multipoint made from polymer concrete

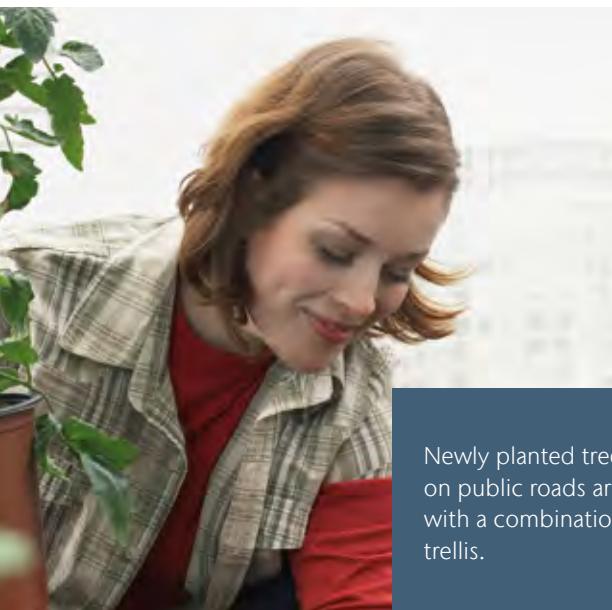
The areas of application for gullies are diverse: gullies are often installed in classic landscaping areas where, in addition to their actual function, the aesthetic design is also a decisive factor when selecting the product.

However, gullies are also used in the transition to higher-load applications, such as in inner-city areas with occasional delivery and lorry traffic.

ACO DRAIN® Multipoint combines these requirements into a new modular platform. It is characterised by its design options which includes different gratings or frames and is also enhanced by a significantly more robust gully version for applications up to class D 400.

Protecting and shaping tree habitats





Newly planted trees in car parks or on public roads are best protected with a combination of grating and trellis.

System for tree protection

The sensitive root and trunk area of trees need to be well protected. The ACO tree protection systems ensure that trees are provided with the required habitat, especially in cities.

ACO Wotan tree gratings come in various shapes and sizes. They may also be adapted to the growth of the tree at a later stage. With round, square or rectangular tree gratings as well as protective gratings in corners or on a wall, creative open space design is possible. Tree gratings do not require substantial support or substructure, making them easy to incorporate into the overall design.



A tree protection trellis protects the trunk against damage. Especially important for newly planted trees.

Drainage

for around the home





Inspired by the beauty of nature



As the visible element of the drainage system, covers emphasise the design and enhance the overall appearance of the building and its surroundings.



4b

The Voronoi cast iron grating for ACO drainage systems is inspired by the beauty of nature. The seemingly random arrangement of geometric shapes creates a unique design.

The pattern can be found in the spots of a giraffe, in dragonfly wings, the veins of leaves or the cracks of dried earth. Thanks to this organic motif, the gratings fit perfectly into our organic landscape.





Gratings made of
aluminum (silver or
black), corten steel
or stainless steel



ACO Slimline combines discreet drainage and beautiful design. The overall width of only 6 cm is perfect for terrace drainage.

Access roads and driveways to property and garages

The ACO Self® and the ACO DRAIN® drainage system provide numerous creative possibilities and impressive design options to quickly remove precipitation and stormwater from driveways.

The ACO Self® modular drainage system (refer to next Page) combines functionality with high-quality design. The grating covers can be driven over by cars and therefore fulfil all the requirements for draining surfaces around the house. Various materials are available for the channel bodies and covers and thereby provide a wide range of design options.

ACO DRAIN® Multiline Seal in is the channel equipped as standard with a seal at the channel joint. We recommend the installation of this system for the load class A to E ranges. The system is complemented with various cover gratings. An overview can be found on Page 12 etc.



Double slot top,
for individual finish



Slot top version



askACO

www.aco.com/en/products-and-services/ask.aco

Versatile,

simple, beautiful

ACO Self® modular system



The ACO Self® Programme provides drainage channels for all types of property and the most diverse requirements.

In the ACO Self® modular system, all grating covers fit on all channel bodies. The materials are available in various materials, from galvanised powder-coated steel to stainless steel, cast iron and plastic.

The channel bodies are made of polymer concrete or plastic and, in the area of the façade channel, are available in stainless steel or galvanised steel. The ACO Self® shallow channel can be utilised in areas with low installation heights.

With the ACO Self® Highline for balconies, patios and terraces, façade drainage is possible through an open channel system over two levels.

askACO

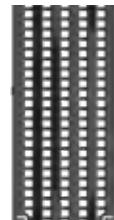
www.aco.com/en/products-and-services/ask.aco

Gratings

* Class B 125
according to
DIN EN 1433
in connection
with ACO Self®
Eurolines



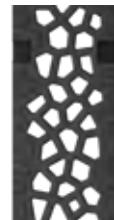
Longitudinal
bar grating
stainless steel



longitudinal
bar grating*
plastic with
microgrip



longitudinal
profile grating
stainless steel
Galvanised steel



Cast iron
grating*
„Voronoi“



Longitudinal
bar grating*
“Intercept”
cast-iron



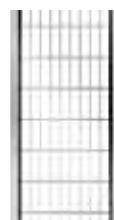
Cast iron
grating*



Double slotted
grating
stainless steel
Holder for wood,
tile or Stone



Slotted
attachment
Stainless steel
Galvanised steel
Plastic



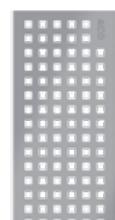
Mesh grating
Stainless steel
Galvanised
steel



Slotted grating
polished
stainless steel
Galvanised steel
anthracite
powder coated



Anti slip -
microgrip
grating
Plastic



perforated grate
„Quadrato“
stainless steel
Galvanised steel

Channel body



Euroline
polymer concrete
Car trafficable



Shallow channel Euro-
line 60
polymer concrete
Car trafficable



Hexaline
Plastic
Car trafficable



Façade channel Highline
Stainless steel or galvanised
steel
Pedestrian traffic only



The SAKU B 125 manhole cover is made of plastic and remains permanently black and beautiful.

Durable



stainless appearance





ACO SAKU B 125 manhole cover made of plastic

Manhole covers made of plastic

A conventional standard concrete cover for a manhole in the middle of the driveway? The beautiful alternative is robust, light and durable.

The ACO SAKU B 125 manhole cover with plastic cover and frame complies with load class B 125 according to DIN EN 124 and can be driven over by cars. The frame is equipped with a monolithically moulded concrete adjustment ring.

The cover is extremely easy to operate and weighs just 9 kg.

The anthracite-coloured glass-fibre reinforced plastic promises a durable, sophisticated look and uniform colour of the frame and cover.

The ACO Self® plastic grating with a consistent black cast-iron finish is the ideal visual match for the SAKU manhole cover installed on your driveway drainage system. The surface with Microgrip ensures high slip resistance even in wet conditions.

For the modular ACO Self® drainage system, see the previous page.





Collection point for rainwater

52



The paving edge of the XtraPoint point drain enables precise paving. With the 90° rotatable gratings, the cover can be integrated into the surface design.



ACO Self® XtraPoint





Yard drainage and water intake point

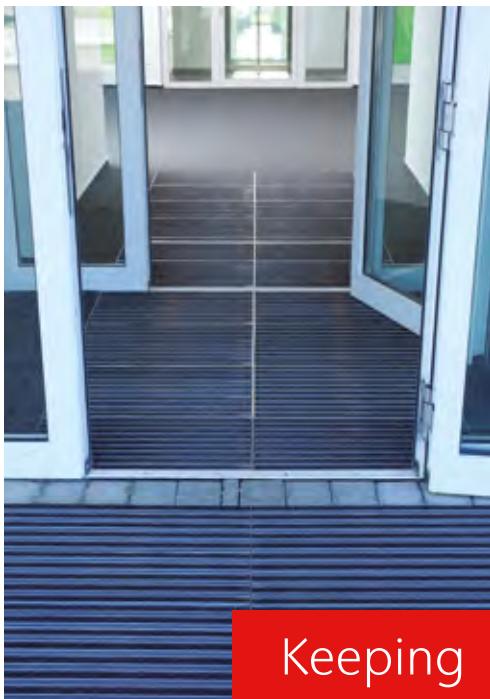
ACO Self® gullies are a good alternative to linear drainage, especially when designing courtyards. They reliably ensure the rapid removal of stormwater.

The ACO point drainage system guarantees a visually and technically optimal drainage solution for driveways and courtyards. As drain gullies for dirty and rain water, the Point drainage can be also be installed to ensure drainage under water taps in the garden or patio. A variety of design grat-

ings visually enhance the outdoor area. The ACO Self® XtraPoint gully is made of permanent colour-fast plastic and can be driven over by cars (load class B 125). The discharge capacity is at least 4.5 l/s.



As a modular system, the ACO Self® Europoint made of polymer concrete offers numerous combination options. For a uniform design, the gratings are visually matched to the linear drainage.



Large area shoe scrapers and clean linear gratings

An effective shoe scraper system is essential for a well-maintained and well-designed entrance. This keeps the dirt outside.

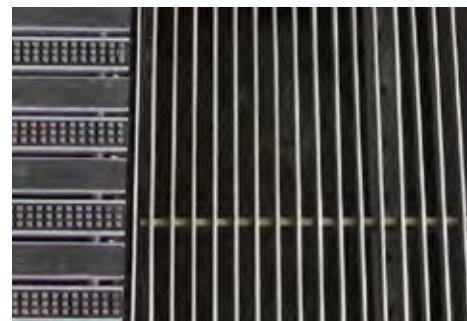
Keeping
entrances clean



The individual elements, which are resistant to frost, complement each other to form a practical and easy-to-install large shoe scraper surface.



New: drivable grate (class B 125)
for commercial areas



linear bar grating option

ACO provides professional shoe scraper solutions that combine high variability, functionality and visual appeal. The combination of shoe scrapers for outdoor area use (Vario system) and indoor area use (indoor system) is recommended.

Large-surface solutions in front of prestigious entrances can therefore be made attractive in the simplest way by installing several shoe scrapers.

Individually constructed clean linear gratings can also be used as a design element. They adapt ideally to modern architecture and set new accents.

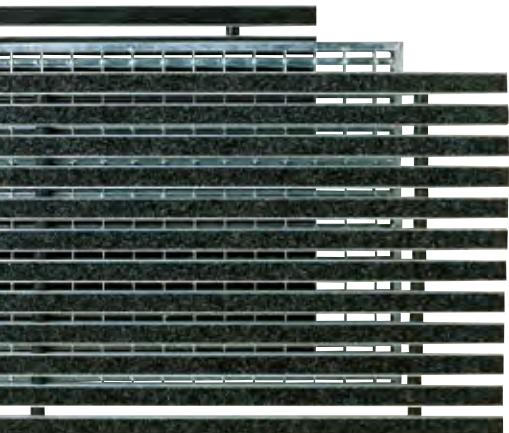
55

NEW: The floor trays can be joined together using connection adapters – so only one drainage connection is required



askACO

www.aco.com/en/products-and-services/ask.aco

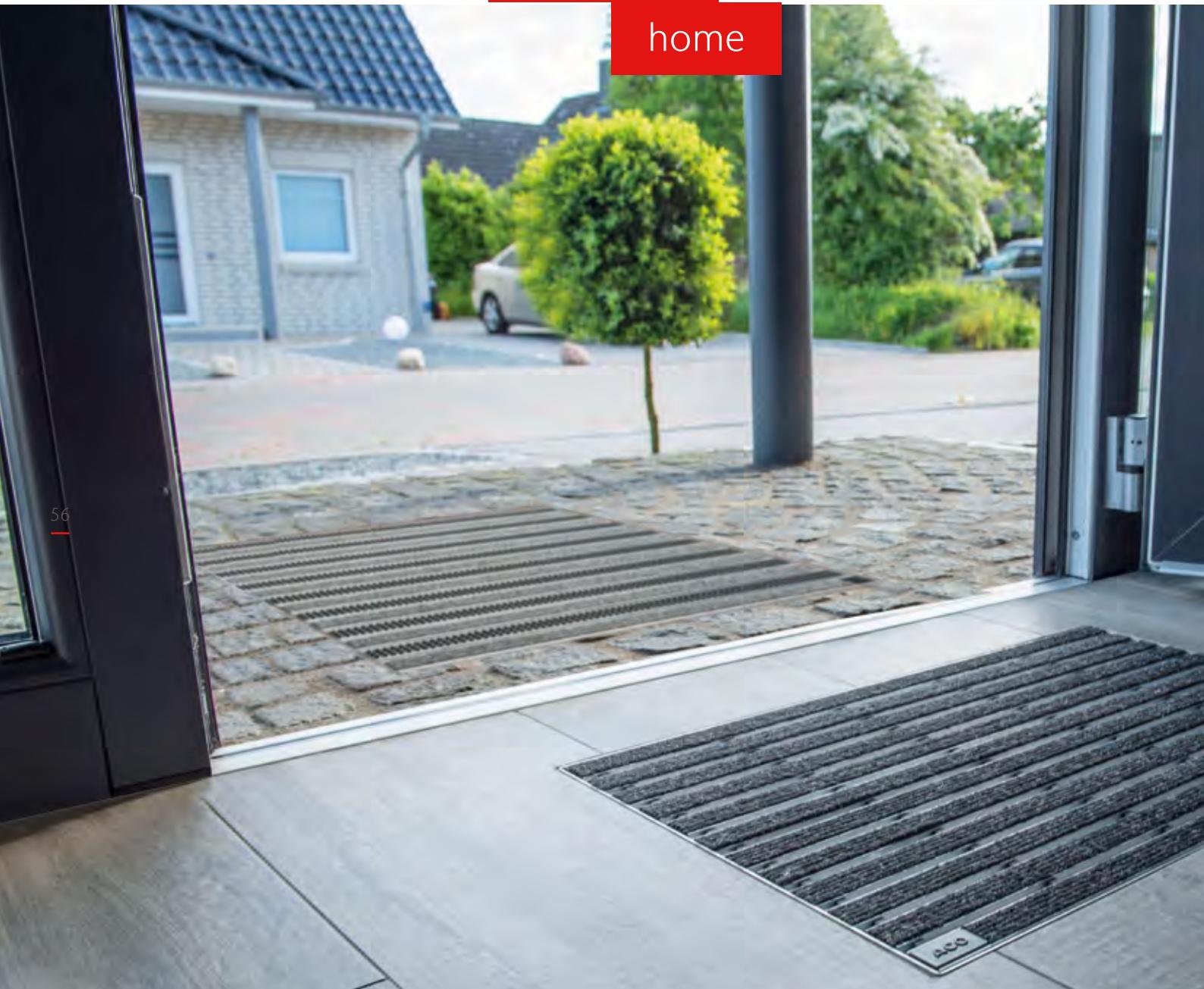


Shoe scraper for outdoors and indoors

First impressions are important – especially in the entrance area of a house. Shoe wipers are inviting and welcome the person who is entering. They also keep the dirt away.

Welcome

home



a b c d e f g h i j k l
p q r s t u v w x y z

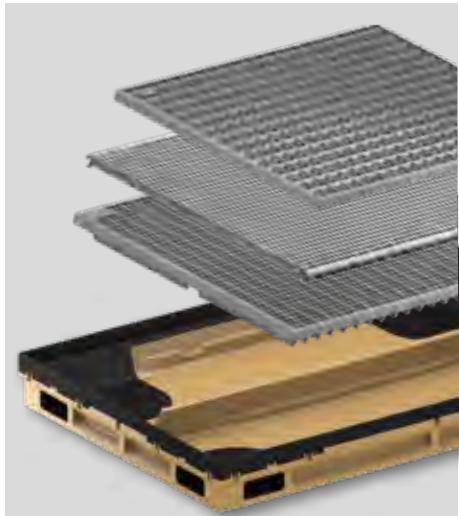
A B C D E F G H I
N O P Q V W X Y Z

Personalised Vario shoe wipers can add a special touch to any home. An original motto at the front door gives a unique first impression.



Floor coverings in the entrance can be exposed to heavy wear and tear from dirty shoes, especially on wet days. The ACO Vario shoe scraper system provides professional solutions that combine high variability, functionality and visual appeal in order to create a clean, well-kept impression and protect the floor coverings from damage.

When installed outdoors and indoors, the shoe scrapers absorb moisture and coarse dirt in front of the door on the one hand and dust and fine dirt in the house on the other hand. The flush-to-the-floor installation of the shoe wiper mats, which lie in the frame in a way that prevents slipping, enables a safe design without thresholds.



57

NEW: Easy-to-clean Vario floor tray in four sizes – with corrosion-free plastic frame

askACO Select the appropriate scraper for the house entrance of your property in the shoe scraper configurator.

askACO

www.aco.com/en/products-and-services/ask.aco



Elegant, flexible
and individual

More than just a light shaft cover

58

As unique as a terrace design:
Design covers and design gratings for light shafts
– perfectly suited to your personal style.

The ACO Vario Design light shaft cover is an elegant design object for patios, terraces and outdoor surface areas. The modular design and construction provides numerous, flexible design options. Even the individual floor covering can be integrated into the surround frame of the light shaft cover – creating a harmonious overall impression. The use of ant-slip surfaces that can be walked on, as well as high-quality stainless steel gratings, ensures a modern and straightforward look.

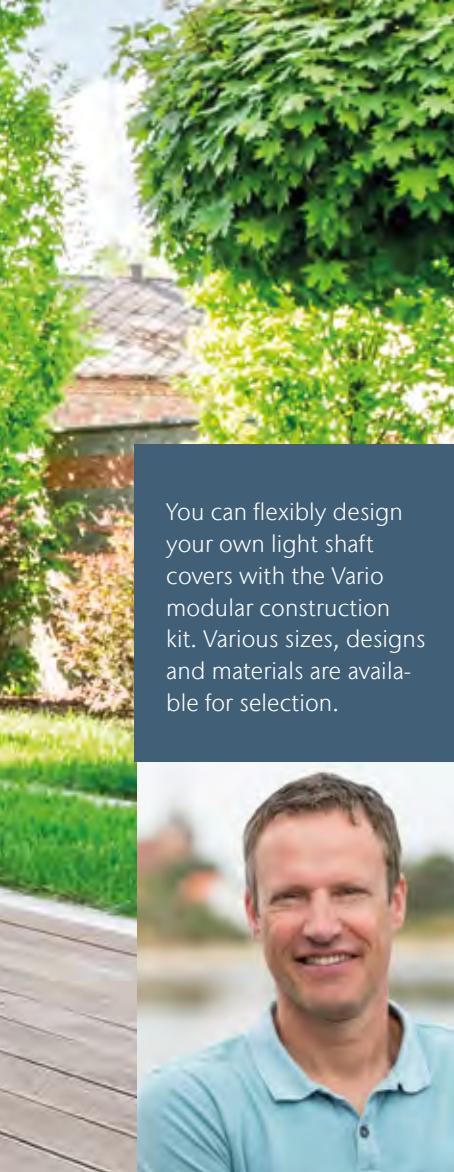
An alternative to the Vario design light shaft cover is the Designer Grating. It impresses immediately with its high-quality appearance, is made entirely of stainless steel and is equipped with an extra element to cover the white light shaft edge. The longitudinal bar grating has therefore received the Plus X Award as the best product of 2016/2017.



Vario Design light shaft cover



Designer grating: available as longitudinal profile or longitudinal rod grating



You can flexibly design your own light shaft covers with the Vario modular construction kit. Various sizes, designs and materials are available for selection.



Vario modular construction kit

59

Mix and match: exemplary configurations

askACO Ready-made combination or custom designed by ACO.

Vario Design light shaft cover
The Vario modular construction kit presents the various possibilities online.

Edging frames, ventilation gratings, insert profiles

Basic elements e.g. with full or partial glass

askACO

www.aco.com/en/products-and-services/ask.aco

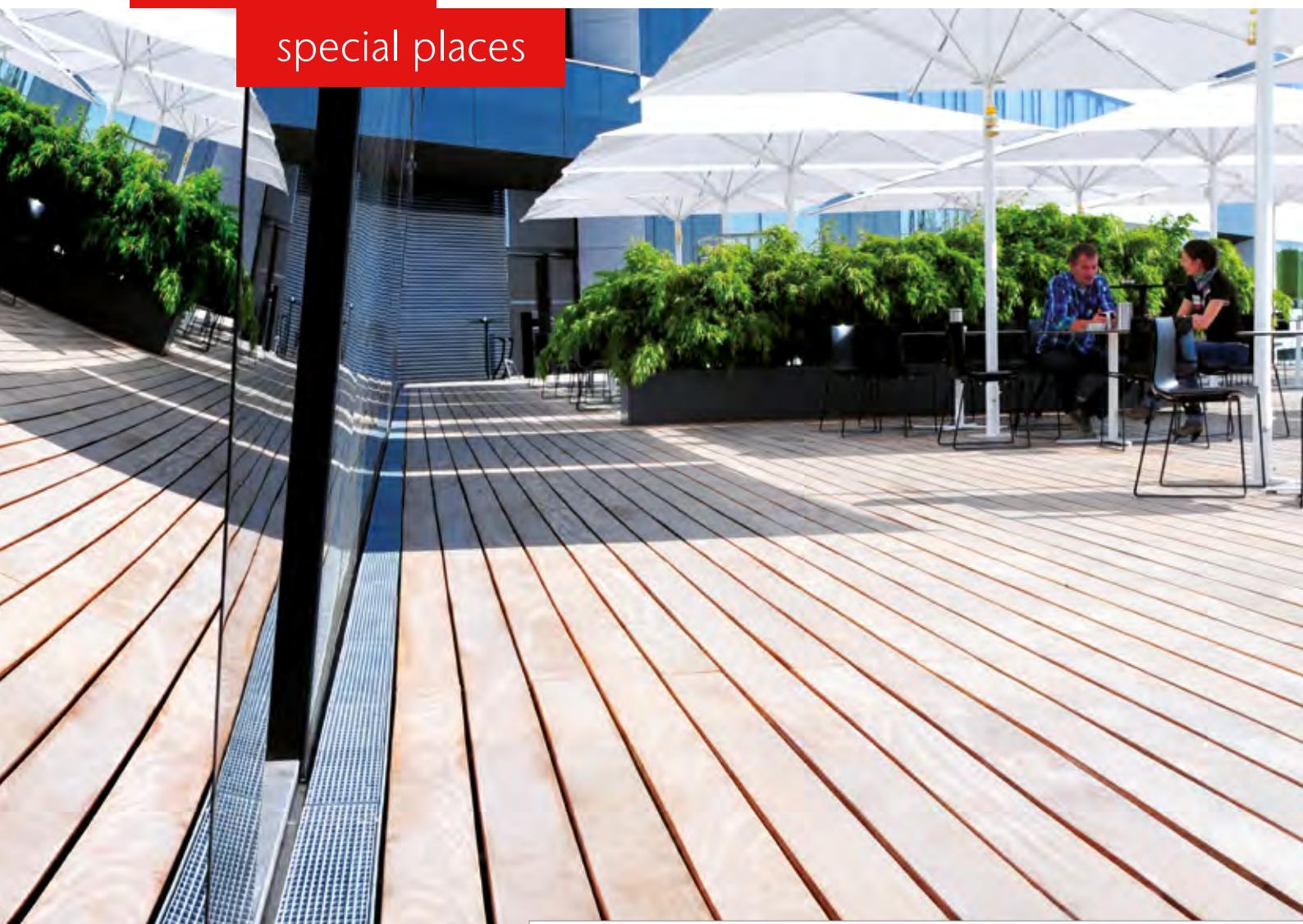
Drainage

Roof and Façades





Solutions for special places



62

Façade gratings from ACO not only focus on sophisticated design, but also on technical aspects such as drainage performance and protection for shoe heels "Heelguard"

accessible by foot
or wheelchair





ACO provides flat roof draining discharge and attachments made of polymer concrete and cast iron for the safe drainage of infiltrated rainwater on green roofs. They are easy to handle and can be graduated to the different roof greening variants.



Draining façades, balconies and roof gardens

All too often, the importance of drainage is overlooked within difficult localised circumstances. When it comes to terraces and green roofs, ACO offers intelligent solutions to meet every challenge.

Available not only in stainless steel but also in galvanised steel versions, the ACO Profiline façade channels fit in perfectly with all complex architectural building projects. Various design variants can be achieved by utilising the different grating designs.

The Profiline channel system functions on two levels. It drains the surface area and, at the same time, drains the water from the underlying drainage layer. Precipitation and rainwater flowing off the façade is also safely intercepted.



Highlights of the grating programme



Longitudinal
bar grating



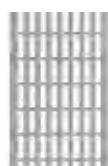
Heelsafe (coarse)



Heelguard (fine)



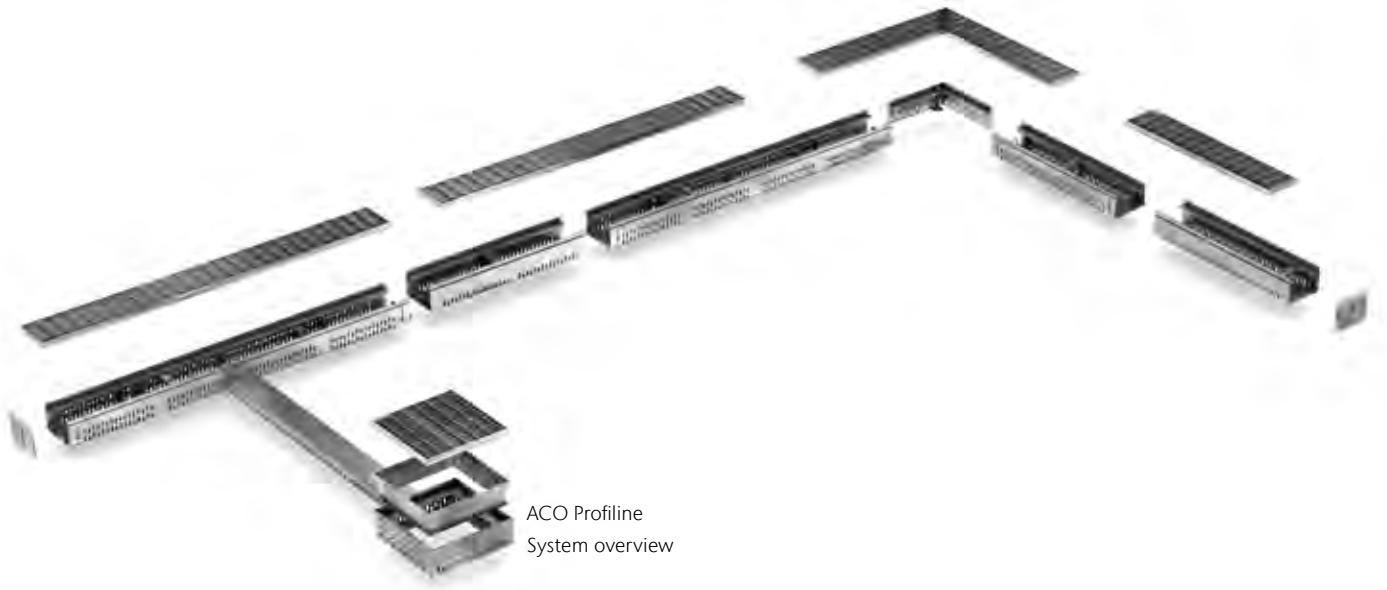
Longitudinal
profile grating



Longitudinal
slotted grating



Plastic slotted
grating



ACO Profiline
System overview

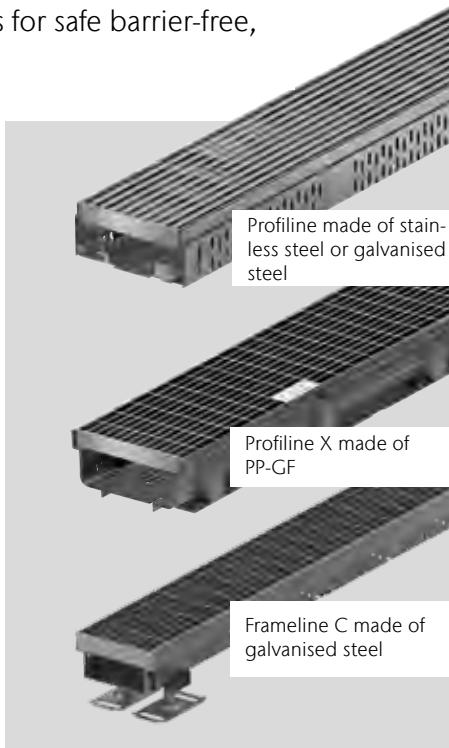
Transitions

without thresholds



Perfectly adaptable to every level

Threshold-free access onto patios, terraces and balconies is now part of the standard for upmarket residential construction. ACO provides façade, patio and terrace channels which fulfil all technical requirements for safe barrier-free, accessible buildings.



The variable height adjustment makes it possible to adapt to the local circumstances and makes this possible at any time.



Especially in sensitive door and façade areas, it must be ensured that water is prevented from being forced in as a result of wind load or accumulation at all times. Façade channels and patio or terrace channels prevent any moisture from penetrating into the building from outside.

The 15 cm connection height for building seals specified in the DIN 18531 and the Flat Roof Directive can be reduced to 5 cm by using the ACO linear drainage systems next to the door area. The amended Flat Roof Guideline 12/2016 is also easily complied with using ACO products: "When the splash water volume is not minimised by a roof, then mesh gratings which are at least 150 mm wide should be used."

The ACO Profiline X façade channel system is a further development to the ACO Profiline made of metal. Glass-fibre reinforced

plastic (PP-GF) is utilised in this application, which is designed for special installation situations in a loose laying method on roof gardens, patios, terraces and balconies. For example, the combination of PP-GF and a stainless steel cover is an economically attractive alternative.

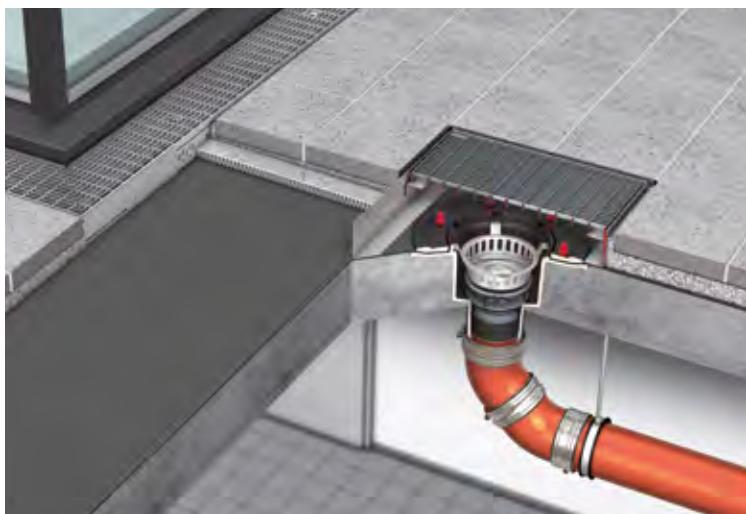
Special attention has also been invested in the new grating locking system, which now makes it considerably simpler to insert the gratings in the façade area. The design of the channel system allows it to be connected directly in any installation scenario. There are fixed and height-adjustable versions.

The Frameline C elevated channel allows individual height adjustment on all sides of the channel. It therefore enables ideal discharge in areas with reduced connection levels.

Draining

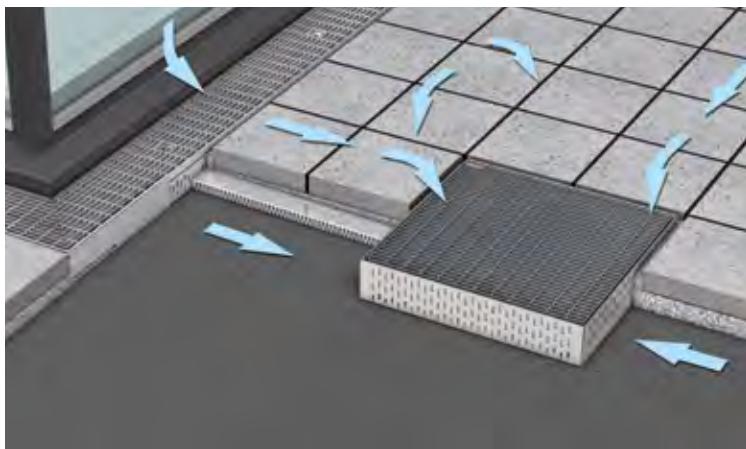
vulnerable areas

ACO façade drainage



Flat roofs are sensitive architectural areas, therefore the drainage for them is especially important for professional planning.

askACO ACO can support you with your roof drainage project with the calculation, planning and dimensioning of the wastewater pipes. Our consulting organisation is personally available at every point of the planning process.



Roof terrace system

ACO enables high-quality and visually appealing façade drainage with channel elements, branch channels and roof gullies. Function and design are combined in a harmonious image. Any water that accumulates can therefore flow off safely at the interface between the façade and the open space.

askACO

www.galabau.aco/fassadenentwaesserung

ACO Green roof drainage



Extensive greenery

Extensive greenery and planting on roofs can generally be created with little effort. These are near-natural vegetation forms with special adaptation to extreme site conditions. This is where gravity drainage is used e.g. with an ACO retention discharge gully.



Intensive greenery

Intensive green roofs include the planting of perennials, woody plants, lawns and also flowers that require a regular water supply. Sufficient drainage in the soil and free level drainage are required here e.g. with the ACO Spin flat roof gully.

askACO

www.aco.com/en/products-and-services/ask.aco



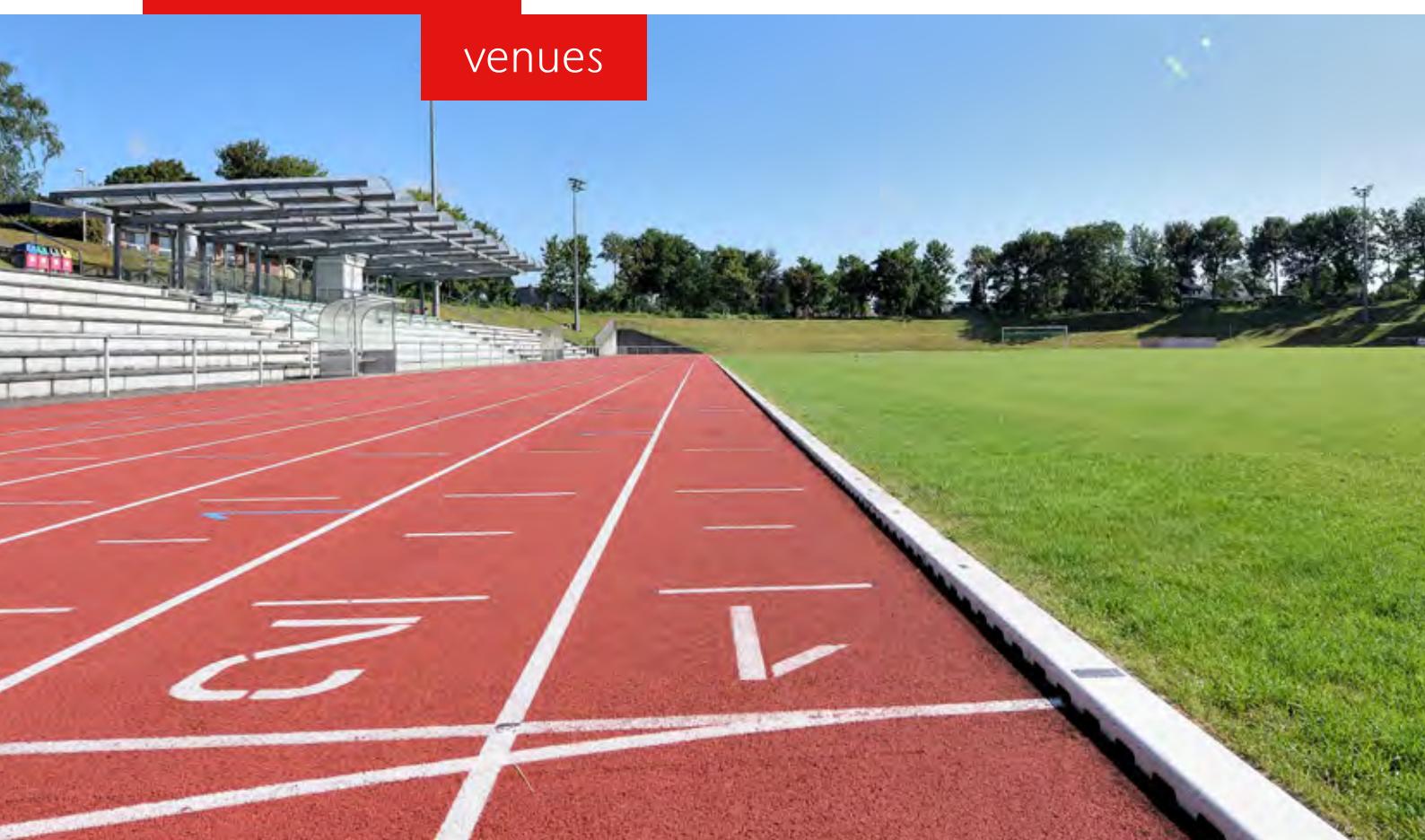
Drainage

of sports facilities

The drainage of sports facilities includes a variety of areas and surfaces:

Running tracks, playing fields or stands, like here in the Olympic Stadium in Kiev.





Draining running tracks and playing

70

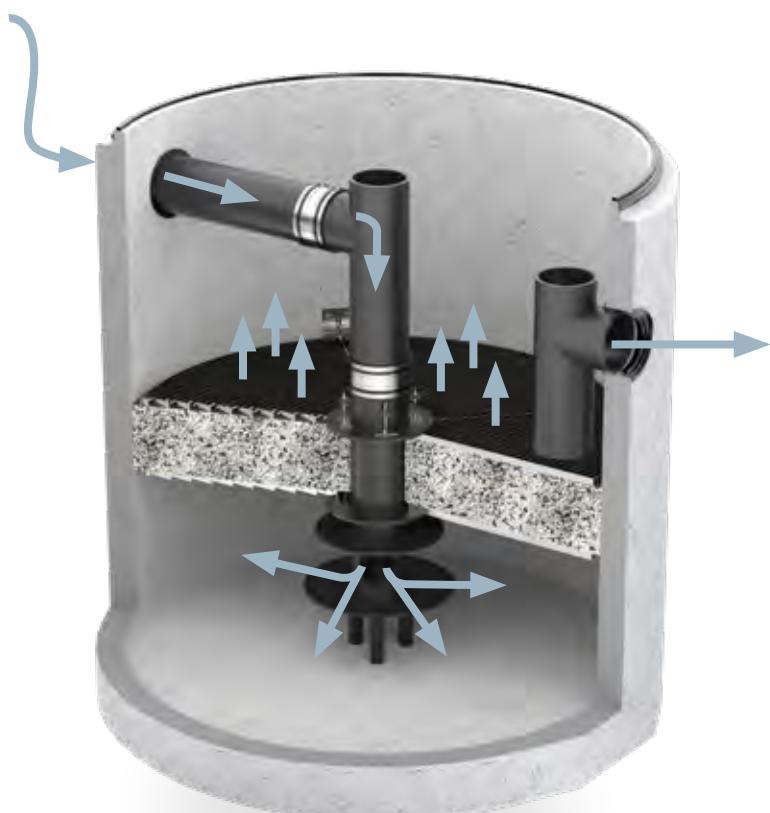
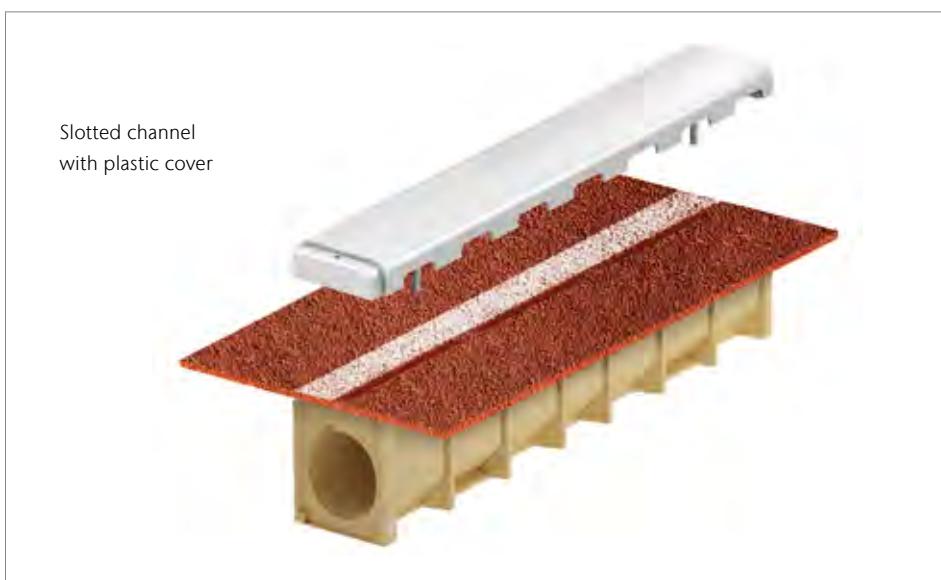
ACO SPORT® provides drainage systems and construction elements for sports, play and recreational facilities, therefore helping to keep the facilities open all year round.

ACO SPORT® running track drainage systems usefully combine drainage along the boundary of the track. The 5 cm high stationary or mobile covers comply with IAAF rules and meet national standards for inner track edging. The channel sections are arranged on the inside of the running track to follow the surface gradient, absorb rainwater and, with the raised cover, separate the circular track from the playing field and the sector surfaces.

Inside and outside stadiums, ACO DRAIN® drainage systems make sure games can be played safely. In sports facilities for ball or skating sports, channels drain off rainwater in a targeted manner. For synthetic hockey pitches, they are installed with a clamping mechanism to fix the turf. Regardless of the cover which is selected, they have proven themselves for many years at World Cup facilities



Playing surfaces and sports areas must be available for use by athletes as quickly as possible during or after a rainstorm. Well-designed drainage ensures that the sports facility can be used and maintained over the long term.

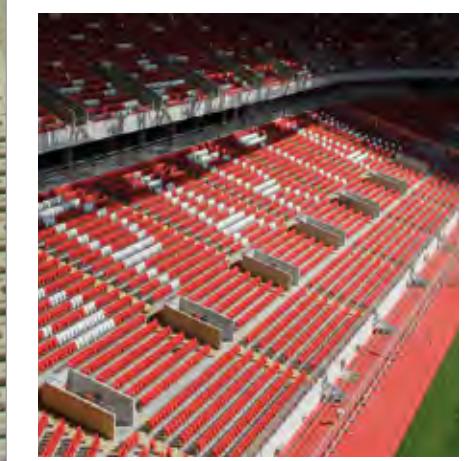
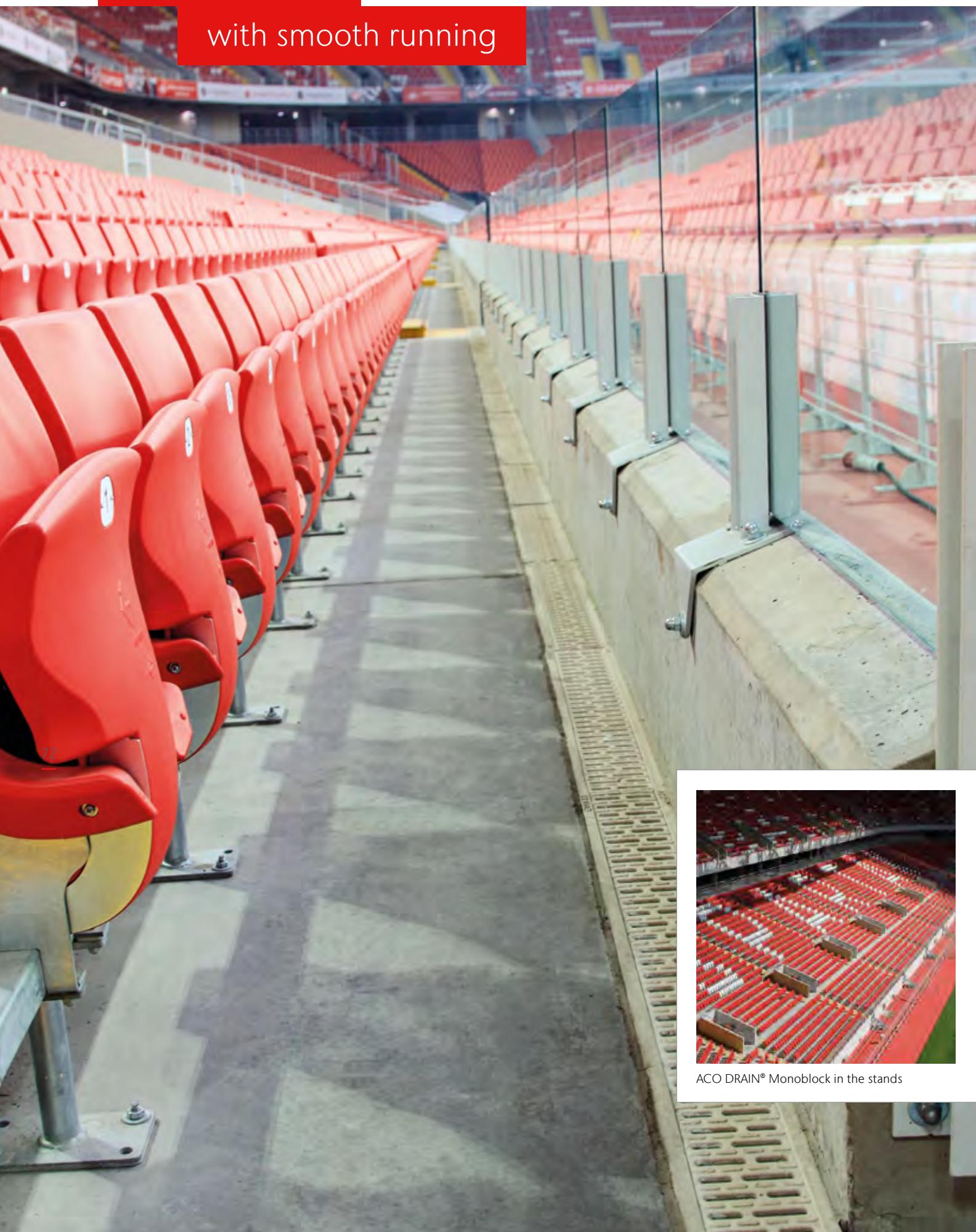


71

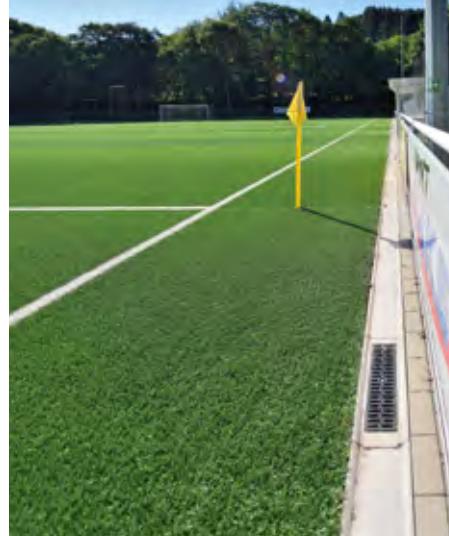
Traffic and sports areas can be sources of precipitation and water pollution from washed-out rubber granules, tire and metal abrasion, fine dust or organic contamination. The ACO SPORT® filtration chamber effectively cleans water from precipitation or sprinkler systems of these contaminants before it is discharged into the sewer system or infiltration systems.

askACOwww.aco.com/en/products-and-services/ask.aco

Sporting event
with smooth running



ACO DRAIN® Monoblock in the stands



The symmetrically worked trough channel is a high-quality, trafficable edging for sports surfaces with turf, especially artificial turf filled with mixed granule



ACO SPORT® trough channel for football stadiums

Draining stadiums and stands

Equipping the Olympic Stadium in 1972 was the start of the joint venture between ACO and the Olympic Games. Since then, ACO products have enabled the smooth running of a wide variety of competitions.

Systems for football stadiums and large playing fields with natural or plastic turf quickly drain the water off and ensure that the sports facility can be used again quickly. The ACO SPORT® drainage systems can be utilised for all types of competition arenas such as A, B and C as well as for large playing areas and multi-functional systems with Type D. In the stands, two aspects need to be considered: drainage and security against vandalism. The ACO DRAIN® Monoblock drainage channel fulfils both requirements as it is made from a single casting. Alternatively,

the ACO DRAIN® Multiline Civicline can be utilised in combination with attractive Drainlock gratings with locking, stop mechanism.

askACO A properly designed hydraulic performance calculation guarantees optimal sports conditions. ACO SPORT® offers a calculation that takes into account the specific conditions of the planned premises.



Rainwater must be drained off immediately in stadiums to protect spectators and to maintain the entire facility. ACO drainage solutions are precisely matched to the building or structure.



ACO DRAIN® Civicline circulating around the stadium

askACO

www.aco.com/en/products-and-services/ask.aco

Sporty and safe

in all weathers





Elastic kerbs delimit areas



Draining all-weather pitches and recreational sports facilities

ACO SPORT® drainage systems secure and protect sports, play and recreational sports facilities and therefore also the players and participants.

Stainless steel gullies have proven themselves for decades on many sports facilities. As a compact component, firmly anchored to the substructure, the trough is safe, self-cleaning and therefore low-maintenance. It offers no surface for vandalism and surface water is quickly drained away from small playing fields such as tennis courts or volleyball courts.

An edge closure to adjacent vegetation or paved areas by means of sports edging slabs or kerbs with claw groove ensures the long-term maintenance of sports surfaces with synthetic surfacing.
Elastic edging stones guarantee safety and reduce the risk of accidents when used as edging on playgrounds and adjacent sports facilities.



No loss of speed due to covers without resistance

For the drainage of hard sports surfaces, robust stainless steel gullies are recommended with a lockable cover that prevents injury and offers excellent roll-over properties.

askACO

www.aco.com/en/products-and-services/ask.aco

Sustainable

Rainwater Management





Where surface
water manage-
ment and water
protection begins

Achieving the
right water
quality

Reducing surface
runoff to a
natural level

Control discharge
rate to the
required level



- ACO surface drainage**
- Drainage channels
 - Road gullies and yard gullies
 - Gully tops
 - Manhole covers



- ACO cleaning systems**
- Separators
 - Sedimentation and filter systems



- ACO retention and storage systems**
- Emergency systems
 - Infiltration and attenuation systems
 - Surface water retention basin



- ACO control systems**
- Flow control systems
 - Pump stations

Sustainable Rainwater management is our responsibility for the future

Heavy rainfall events caused by climate change: a challenge for all of humanity. Climate change sets us a challenge to react effectively with innovative solutions to new environmental conditions. With its integrated approach, ACO provides systems for professional surface water drainage, efficient cleaning, and the controlled discharge or reuse of water.

Back into the natural water cycle

The Hydrological Cycle is the natural cycle of water from rainfall to evaporation. The ACO System Chain provides products that collect water from impervious surfaces,

which is transmitted to products which help clean solids and liquids from this collected surface water. “Hold” and “Release” require systems that can hold and return this water back to nature in a controlled manner, which can be used in conjunction with water reuse programs.

Combined with ACO surface drainage systems, ACO treatment products and ACO flow control systems the ACO Stormbrixx product family offers a flexible, reliable and sustainable system for the detention, retention, reuse and infiltration of stormwater.



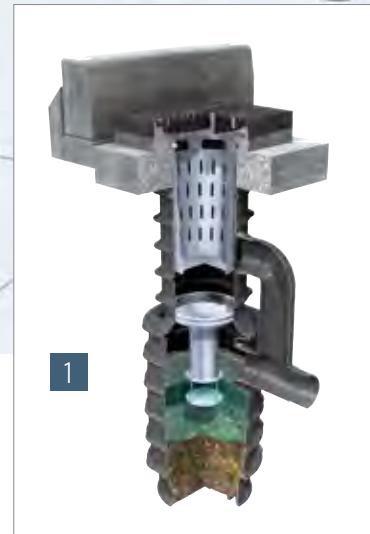
The **ACO system chain** creates the drainage solutions for the environmental conditions of tomorrow.

In keeping
with nature





Surface water from heavily trafficked roads should be cleaned before being discharged into a waterway. ACO has found a solution for this whereby the pollutants are retained in the road gully.



1

Environmentally conscious handling of water as a natural resource

2



In many places, rainwater treatment systems are indispensable before rainwater is discharged into the ground or into the sewer system

3



Collected surface water from traffic areas, car parks and uncoated metal roofs or façades contains substances that must not be discharged directly into the receiving water (outfall) or the groundwater. Different sedimentation and rainwater treatment systems are available and their implementation depends on the degree of contamination of the collected rainwater.

3 | ACO Sedised-C is a container made of concrete which is available in the load class D 400.

4



1 | The ACO Separation Road Gully (SRG) minimises the solids content input into the sewer network. By using a flow restrictor to reduce turbulence, sedimentation and the discharge of sedimented solids is improved compared to conventional road gullies with a wet sludge collection chamber. The surface area to be drained via the SRG is approx. 500 m² at approx. 8 l/s - in heavy rain even up to 20 l/s for a short time.

4 | The optimised ACO Sedismart-C sedimentation plant is equipped with an internal body which the rainwater to be purified must flow around and through. This causes the water in the sludge trap to rotate. The sedimentation of the solids is improved.

5



2 | ACO Sedised-P is a tank made of plastic. Its low weight is a clear advantage compared to concrete containers.

5 | The Adsorpmax is a multi-stage rainwater treatment system with tangential inflow for hydrodynamic separation. The calming zones prevent contaminants from redepositing, while the substrate filter stage adsorbs dissolved contaminants connection areas up to 1,600 m², DIBt approval no. Z-84.2-26.

Relieving the pressure on public sewers



ACO Stormbrixx



The special design of the ACO Stormbrixx enables inspection and maintenance by camera and flushing in all directions.



Infiltration, retention and reuse of rain water

Groundwater recharging as well as the retention and controlled discharge of rainwater into the receiving water are two central topics for rainwater management. An infiltration and attenuation system is the optimal solution.

ACO Stormbrixx is a modular infiltration drain system made of plastic that functions underground as an intermediate reservoir for rainwater. The water can gradually soak away into the soil when a geotextile is wrapped around the block infiltration ditch. If a waterproofing membrane is used, an underground tank is created from which the water is released to the receiving water with a time delay using flow restrictors. This relieves the receiving flow. Two systems are available depending on the application: ACO Stormbrixx SD is ideal under green spaces, pedestrian areas, car access roads and parking areas with temporary use by e.g. fire brigade, refuse or tanker vehicles. Tested by the Institute for Materials Research and Testing for Civil Engineering in Leipzig (MFPA).



ACO Stormbrixx modular basic elements, heights 900 and 600

ACO Stormbrixx HD can also be used under parking areas and adjacent facilities of traffic routes that are not constantly used by heavy traffic. Certified by the Deutsche Institut für Bautechnik (DIBt)

askACO

www.aco.com/en/products-and-services/ask.aco

Stable and firm installation of basic elements with interlocking bond



Economy and ecology – a win-win combination

Ecological surface drainage is politically desired, and rainwater infiltration is emphasised in the state water laws. It provides economic advantages – by reducing wastewater discharges on the one hand and by reducing wastewater volumes on the other. Last but not least, the environment benefits from this: the groundwater table, which is constantly falling due to urbanisation and the associated sealing of surfaces, can regenerate.



84

Using water ditches and springs for infiltration

The Dutch Veluwe landscape is famous for its streams and ditches, through which crystal clear water flows. The historical excavated ditches are unique in Europe. They were designed and installed to supply water to the water mills. Driven in this way, the mills were used to process grain and produce paper or copper. Today, the streams and ditches are of national cultural and historical significance. In the centre of Arnhem, they are part of the cityscape, as for example in the Presikhaaf Park. Sometimes the streams cross places where roads are planned. Here, the water could be channelled inconspicuously under the road through a pipe - but in the case of Presikhaaf Park, the decision was made to highlight the stream by using a channel.

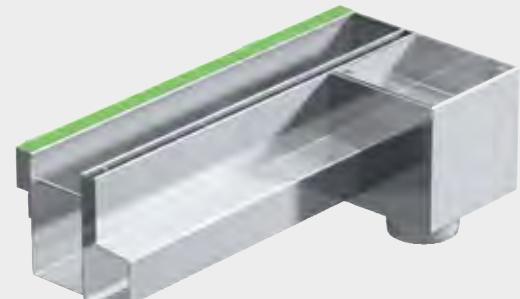
The water flows through a wide, 11 m long Multiline V 500 G channel. It is covered with a Corten steel cladding designed by the Arnhem landscape architect Wim Borghuis. Borghuis' design was implemented in 3D by ACO designers. The many holes of different sizes make it look as if there are drops of water all over the cover grating. Since Corten steel is oxidised in a controlled manner, a decorative brownish rust layer forms, which protects the underlying material from additional oxidation. Artistic design and the special material combine to create an unmistakable design element.



Making near-surface drainage attractive



Drainage channels close to the surface discharge precipitation and rainwater quickly and easily into the infiltration troughs.



For the façade area: Inotec slotted channel with welded-on planter box and light line

Especially in rural structured areas, infiltration is the method of choice. Waste water disposal resulting from larger rainfall volumes is often problematic here, not just from an economical point of view but also for ecological reasons. This is because the distances to the nearest sewage treatment plant are usually longer. In order to ensure secure and safe drainage of the wastewater, large-sized mixed and/or rainwater channels or storage devices are required. And sewers are also expensive. They account for 70 to 80 % of expenditure for wastewater treatment. If the precipitation or rainwater can be seeped away on site, then only the wastewater has to be drained off into the sewage treatment plant. This enables considerable cost savings in the field of pipework and sewer construction.

It is beneficial to guide the water as close to the surface as possible from the area to be drained to the infiltration system or the upstream sedimentation system. ACO DRAIN® provides a wide range of drainage products that quickly absorb and transfer on the rainwater which is hereby generated. Especially in larger and extended catchment areas e. g. residential areas, the expensive installation of deep-lying line pipework can be reduced in this way.

Various design variants are available for the infiltration of uncontaminated rainwater in urban areas. The selection of the type of infiltration depends primarily on the size and location of the property.

Drainage and planting in a small space

Plants on balconies, patios or terraces and at the entrances and perimeters of residential complexes raise the quality of life values and increase our well-being. The plants create an oasis in the urban space that has a balancing effect on the climate. The Inotec slotted channel model i no 660 SR with welded-on plant pot provides a particularly space-saving and low-maintenance option for greenery and planting. It is simple to assemble and absorbs rainwater directly from the façade. Accumulating backwater or seepage water is specifically discharged from the plant container. With additionally processed profile rails, the channel-plant pot combination also provides for lighting - with light lines or other lighting effects.



Drainage channels absorb the rainwater safely and direct it away close to the surface into the adjacent green area. There it can gradually seep away - and the plants and greenery are irrigated in a targeted manner.



Accumulating rainwater is collected and routed to a trough near the surface



Permeable surface area coverings enable precipitation and rainwater to seep away directly from where it accumulates. During heavy rainfall and ground frost, precipitation and rainwater can be safely discharged through drainage channels

Grey becomes green and blue!

Water-sensitive design for urban and open spaces with blue-green infrastructure

The consequences of increasing land sealing in cities, and the effects of climate change, present cities and municipalities with new challenges. In Summer 2016, the media reported severe storms almost daily. Heavy rain caused devastating damage in many regions of Germany.

During heavy rainfall, water collects in depressions and other low points such as underpasses, underground entrances, underground car parks or basements and floods them. Rivers overflow their banks. Sensitive areas will be damaged. This concerns technical installations and facilities for electricity supply, underground transport systems and cultural assets as well as ecosystems worth protecting. Utilisation is no longer possible in the short term. Even human lives can be endangered. Flood prevention is therefore an urgently necessary task for local authorities, building owners and planners. This precaution will result in whether urban areas are permanently resilient and worth living in.

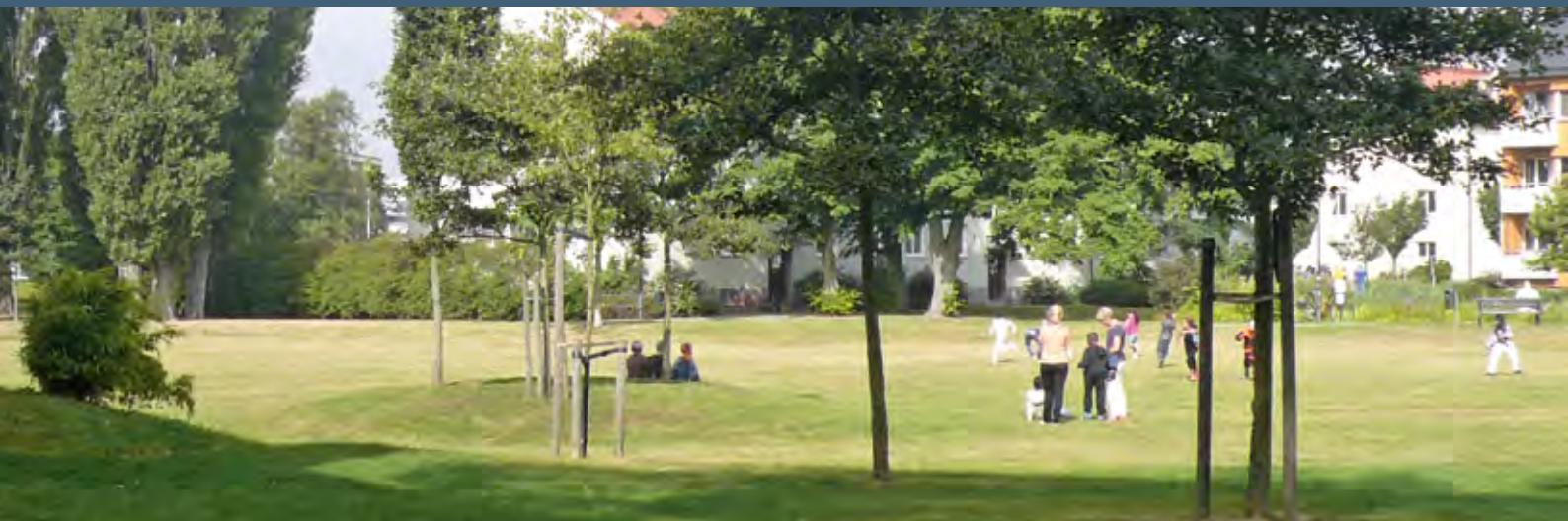
In order to implement water-sensitive urban and open space development, water economists must work closely with urban, open space and transport planners. This therefore means that green or blue-green infrastructure is in demand here! It is not without reason that the Federal Ministry for the Environment, Nature Conservation, Construction and Nuclear Safety will in future focus its urban development policy on urban green projects with the Green Paper and White Paper as the core process. And it is

time that we implemented this subject consistently! The US Environmental Protection Agency (EPA) defines "green infrastructure" as a cost-effective, resilient (i.e. less susceptible to disruption) approach to managing rainwater. Decentralised measures for infiltration, retention and controlled discharge of precipitation and rainwater are important building blocks that can be utilised both in new construction and in the conversion of existing buildings. This should also be done at all costs.

According to the EPA, green infrastructure generates many additional positive synergies compared to grey infrastructure i.e. the conventional underground drainage system. It is also profitable economically when the urban rain run-off is not simply derived as fast as possible from the built-up environment: In many municipalities, rainwater charges can be saved as a result. The blue-green infrastructure measures must be planned technically, flawlessly and function permanently. They can then enhance the quality of both residential areas and workplaces, improve their image, evaporate rainwater and thereby improve the urban climate, and provide important habitats for flora and fauna. There are many positive national and international examples that illustrate this added value and can serve as inspiration.

Dr.-Ing. Elke Kruse

is a freelance landscape architect and has been doing research at HafenCity University Hamburg in the field of "Environmentally Friendly Urban and Infrastructure Planning" since 2009.





At the top:

City planners and architects from all over the world come to Stockholm in order to visit the new Hammarby Sjöstad urban district.

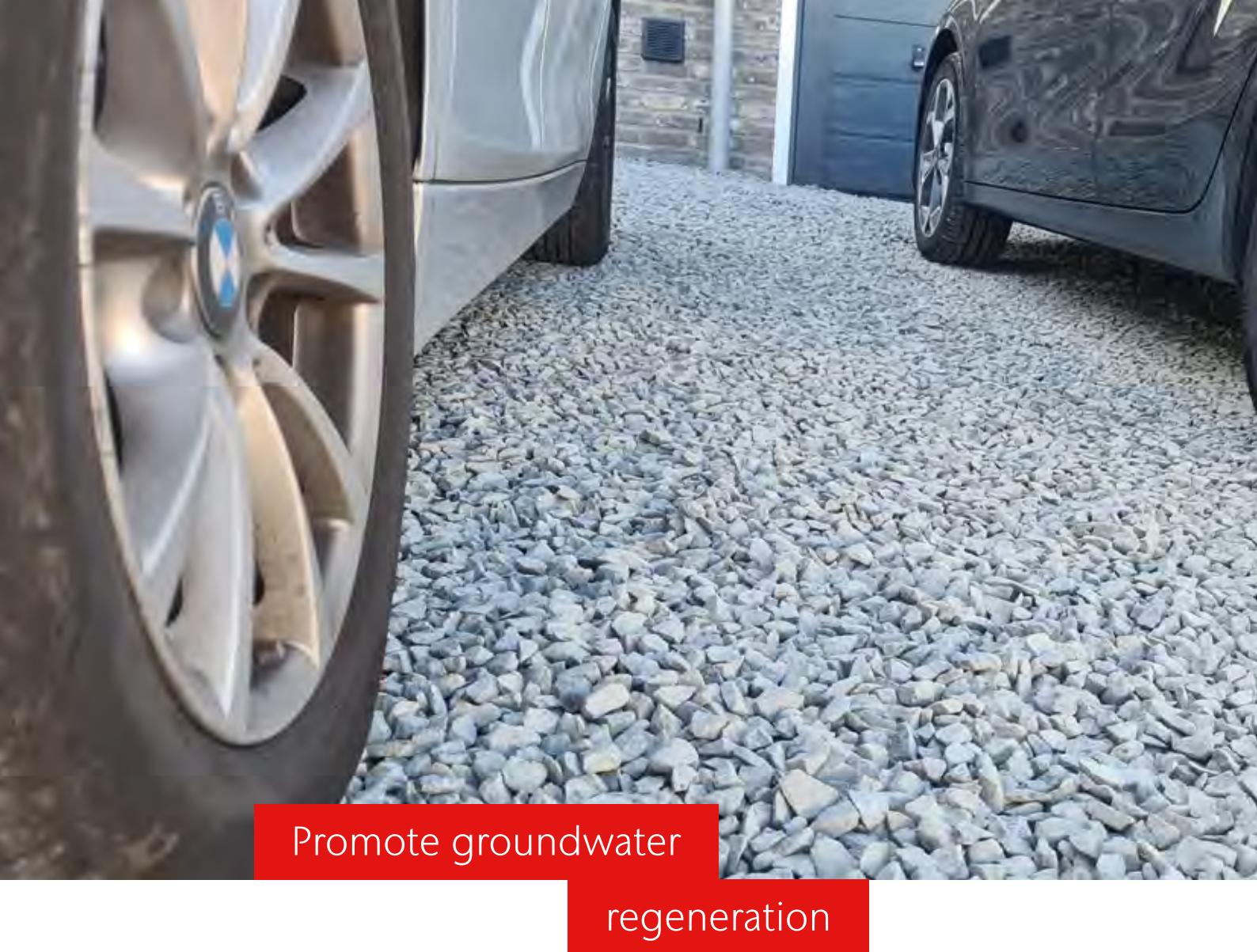
left:

The existing green spaces in the Ecocity Augustenborg in Malmö were subsequently modelled in such a way that they temporarily store the water during heavy rainfall and thereby protect the surrounding urban quarter from flooding.

right:

New York is relying on Green Streets throughout the city - areas for direct infiltration of rainwater in the streets





Stormwater infiltrates locally

88

Holistic rainwater management has many facets.

The infiltration of precipitation and rainwater into the soil is an important process that significantly supports groundwater recharge.



The unsealing of surfaces is currently being discussed on many levels. With ACO gravel stabilisation, unsealed surfaces can be created to meet individual requirements.



ACO Gravel stabilisation



www.blauer-engel.de/uz30a



ACO Self® honeycomb mesh grass paver

89

The Blaue Engel (Blue Angel) is the German government's environmental label. It sets standards for environmentally friendly services and products and stands for sustainable purchasing.

Both ACO Gravel stabilisation eco and the ACO Self® Gravel Grid in sizes S and M have been awarded the Blue Angel, due to the environmentally friendly production of the honeycombs from 100 % recycled plastic (PP). ACO is therefore establishing a milestone in terms of sustainability and is making a significant contribution to reducing plastic waste and limiting pollutants.

Infiltration can already be favoured at the surface. ACO Self® honeycomb grass pavers unseal car parks, driveways, terraces, patios, walkways, parking places, emergency access roads and shore reinforcements. The surfaces are green and still highly resilient. A good root growth for the grass promotes the infiltration capability of the surface area.

ACO gravel stabilisation is suitable for securing surfaces made of gravel and chippings. The honeycomb structure holds the gravel securely in place. This creates unsealed surfaces with a stable and water-permeable surface that can be walked on and driven over without ruts forming. A customised design is possible with high-grade chippings or decorative gravel.



Use
your rain

Save up to 50 % drinking water with Rain4me

90

Sunny, hot days without rain: flowers in the garden quickly hang their heads under such conditions and require water from rainwater harvesting!

Utilising rainwater in the house and garden is a sensible and environmentally friendly way of relieving the burden on groundwater resources and takes account of the increasing demand for drinking water. Rainwater is a valuable commodity for garden irrigation and also for use in WC flushes or washing machines.

The ACO Rain4me system provides components for both applications.

askACO ACO technical service helps you find the best solution.
www.rain4me.aco/kontakt. Or use the configurator at www.rain4me.aco/konfigurator



Comfort solution for rainwater harvesting in the garden with the Rain4me cistern



Rainwater is best for flowers, trees and lawns because it contains little lime and has an optimal degree of hardness.

The ACO Rain4me cisterns are available in three sizes: 3,300, 4,700 and 6,500 litres. Stiffening ribs ensure maximum structural strength so that the built-in tanks have a high groundwater stability.

ACO Rain4me flat tanks are installed underground. Due to the flat shape, only a small excavation is required. When ordering, the volume can be optimally configured for the utilisation required and the available space by combining several rainwater tanks of 2,000 litres. The modular system is easy to transport to the construction site.

The ACO Rain4me cellar tanks in sizes 350, 500, 1,000 and 4,000 litres are suitable for installation in the cellar, garage or shed. They are ideal for retrofitting existing buildings or in situations where underground tanks cannot be installed.



Professional use of rainwater in the house and garden with the Rain4me flat tank

askACO

www.aco.com/en/products-and-services/ask.aco

The ACO Architects' and Planners' Day: Interface_knowledge_practice

Normally, ACO architectural consultants are located where they are needed: in the planning office and on the construction site. You can however see them annually at the ACO Architects' and Planners' Day. Architects and planners accept the invitation and jointly experience inspiration and information regarding exciting subjects.





What started as an alternative to the face-to-face events, *beyond.aco* is developing into a fixed series of events in ACO's outreach to architects and planners.

Since 2012, ACO, the world's leading specialist in drainage technology, has invited architects and planners to its headquarters in Büdelsdorf, North Germany, once a year for the Architects' and Planners' Day. AIT-Dialog and ACO have designed the lecture format together and integrated the art exhibition "NordArt" into the programme.

The focus is on topics such as "(Re)Activate - New Impulses in Existing Structures" or "(Re)Mixing - Architecture and City in a New Context", which will be presented by world-renowned speakers working in the fields of architecture, engineering, construction and landscape architecture.

(Re)Mixing - Architecture and City in a New Context
Designing cities worth living in during times of migration and promoting the strengthening of urban life for all generations is becoming an increasingly central task for architects and urban planners. New forms of housing and

living for a heterogeneous society, a proximity to culture, work, education, shopping and recreation - all in a small space - are essential for the successful mixture and quality of entire urban quarters. Flexible usage options and overlapping utilisations within buildings and a new definition for private and public space provides potential in all benchmarks - in new construction and the transformation of existing buildings.

Participatory planning processes are just as much a part of the current debate as the integration of sustainable innovations for an energetic and infrastructural nature.

Be a guest and experience new concepts at the interface of architecture and water. The eventful day will be rounded off with an exclusive visit to the NordArt International Art Exhibition.

www.architekten-planertag.aco
www.beyond.aco



Prof. Enrique Sobejano
Nieto Sobejano Arquitectos, Madrid



Visitors to the Architects' and Planners' Day at the ACO Academy in Büdelsdorf



NordArt International Art Exhibition

KUNSTWERK CARLSHÜTTE

Kunstwerk Carlshütte, a non-profit initiative of the ACO Group and the cities of Büdelsdorf and Rendsburg, organises the NordArt International from June to the beginning of October. NordArt is one of the largest exhibitions of contemporary art in Europe and presents around 200 selected artists from all over the world annually. Its stage is the historic foundry halls of the Carlshütte (22,000 m²), the ACO Wagenremise (400 m²) and an 80,000 m² sculpture park as well as public squares in the city areas

94

With its commitment to art and architecture, ACO documents an aesthetic claim that can also be found wherever ACO products are visible in public spaces and buildings.

www.kunstwerk-carlshuette.de
www.nordart.de



NordArt 2015: the sculpture park
Richard Brixel "Balance on a Tight Rope"



NordArt 2019: Hall 1 in the Carlshütte



NordArt 2022
sculpture park
Jan Dostál (Czech Republic)
„Creature“, steel, h: 12 m



NordArt 2022, Carlshütte, hall III
Sylwester Ambroziak (Poland) „Kneeling“

ACO.

we care for water

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/Büdelsdorf, 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



Headquarters of the ACO Group
in Rendsburg/Büdelsdorf

5.200

employees in more than 46 countries (Europe, North and South America, Asia, Australia, Africa)



1 billion

Euro Sales in 2021

36

production sites in 18 countries



ACO Academy
for practical training

Holder
Iver and Hans-Julius Ahlmann



Quality starts with the material

When designing building elements, selecting the correct, suitable material determines the aesthetics and functionality. The materials used by ACO are characterised by their strength, their ageing resistance and their resistance to aggressive media, frost, heat and sunlight. Due to their long service life and recyclability, they are both sustainable and environmentally friendly and are utilised for their intended purpose.

With 30 production locations worldwide, we consistently implement our ideas for product quality, economy and deliver reliability for our customers. Each of our factories has a special materials expertise, from which the entire ACO Group benefits. The fact that we are constantly updating our production technology and ecology to the latest state of the art is an integral part of our claim to act responsibly as a company and to be a global leader.



Polymer concrete

One step ahead

The special material composition and state-of-the-art production technologies provide ACO polymer concrete with its outstanding property profile. The ACO polymer concrete products have high strength values and a lower weight. ACO polymer concrete is impermeable to water. Water dries off quickly. Frost damage is not possible. The smooth surface area of ACO polymer concrete enables water and dirt particles to flow off quickly and is easy to clean. In addition, polymer concrete is resistant to aggressive media even without additional coatings and is also versatile and durable even under extreme conditions.



Steel/stainless steel

Sophisticated components



Cast iron

Quality for all requirements

Both the processing of steel as well as stainless steel is a core competence of ACO in the various production facilities of the ACO Group worldwide. High investment sums ensure that our production facilities are always state of the art. The high qualification of the skilled workers ensures high product quality. Our own systems for surface protection and surface refinement are used, for example, in the production of ACO Drainlock gratings.

The types of cast iron used in the ACO Guss factories in Kaiserslautern and Aarbergen are adapted to the constantly increasing requirements through intensive innovation and development processes: both cast iron with flake graphite (grey cast iron GJL) and cast iron with spheroidal graphite (spheroidal graphite cast iron GJS) have proven themselves as materials for use in channel casting due to their high corrosion resistance. ACO Guss provides the optimum solution for the respective application, independent of the material used.



Concrete

Durable and secure



Plastic

Innovative and flexible

In the field of tank construction for separation and drainage technology, concrete still plays a decisive role. ACO containers for drainage technology are made of high water impermeable concrete and have a very high resistance and stability. The containers can be used as separators, pumping stations, emergency systems or special shafts, and given an additional plastic coating or lining if required. ACO concrete tanks are therefore a durable solution for drainage and treating water.

Plastic components provide the highest-possible design freedom in mould shape and function. We use this potential to prevent complex material combinations and joining processes and to develop intelligent solutions "from a single source" instead. The plastics utilised by ACO are characterised by their high breaking strength as well as their excellent resistance to environmental influences. Simple machining options and the low weight are the reasons for the outstanding user-friendliness of our plastic solutions.

Can I get some help? ask ACO

In addition to personal consultation and training, ACO can also support you with a range of tools that will help you simplify the planning, installation and servicing or maintenance for drainage systems. We can present an overview of the performance, services and tools throughout the ACO service chain.



Our service offer

Each project is different and has its own specifications and challenges. Aside from our products, we can also offer you our know-how and services, so we can develop tailor-made solutions together – from planning to support after completion.



Information and Further Education

In the ACO Academy we share the know-how of the worldwide ACO Group with architects, planners, processors and traders, for whom quality is important. You are invited to share these benefits.



Planning and Optimisation

The specification and design of drainage solutions allows many variations. Yet which concept produces the most profitable and technically most reliable solution? We help you to find the right answer.



Construction consultation and support

To ensure that no unpleasant surprises occur between the planning and implementation of a drainage solution, we advise and assist you for a specific project on your construction site.



Inspection and Maintenance

ACO products are designed and produced for a long life. With our after-sales offers we ensure that ACO fulfils your high quality standards for many years.



ACO service chain

ACO is your first point of contact in all project phases.



102



Every ACO product supports
the ACO system chain



- Drainage channels
- Road and yard drains
- Gully tops
- Manhole covers
- Stormwater treatment
- Infiltration and attenuation
- Pump shafts
- Flow control systems
- Tree protection
- Amphibian protection



Partner of the Associations

Garden-, Landscape- and Sports Centre Construction

Schleswig-Holstein e.V., Hamburg e.V.,
Mecklenburg-Vorpommern e.V., Niedersachsen-Bremen e.V.,
Sachsen-Anhalt e.V., Berlin und Brandenburg e.V.,
Nordrhein-Westfalen e.V., Hessen-Thüringen e.V.;
Sachsen e.V., Rheinland Pfalz u. Saarland e.V.,
Baden-Württemberg e.V., Bayern e.V.



Ihre Experten für
Garten & Landschaft

ACO Ahlmann SE & Co. KG

P.O. Box 320
24755 Rendsburg
Am Ahlmannkai
24782 Büdelsdorf
Germany

info@aco-international.com
www.aco.com

ACO. we care for water

