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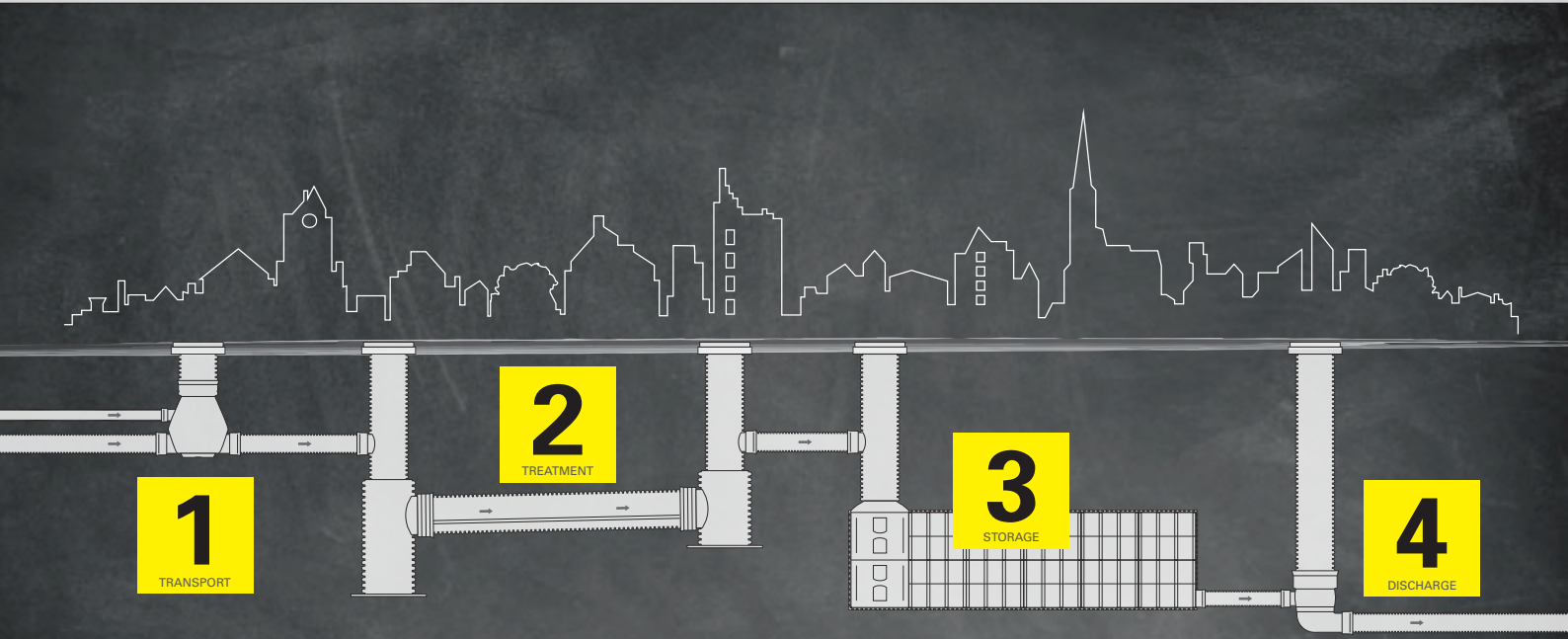
Competence brochure

Storing stormwater



4 CHALLENGES – 1 SOLUTION

STORMWATER IS OUR COMPETENCE

www.fraenkische.com

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Storing stormwater – an active contribution to environmental protection

Water is far too valuable to be wasted through the gully ...

The topic of decentralised stormwater management is gaining more and more importance in constructional engineering in federal states and municipalities.

Due to increased environmental awareness and rising costs for the construction and modernisation of sewers, demands are not to discharge stormwater in wastewater sewers but either store it as process water, e.g., for irrigation, car wash or use in toilets, and/or infiltrate it on the spot and thus return it to the groundwater. This way, new sewers to be built in the future can be dimensioned smaller and hence more inexpensively.

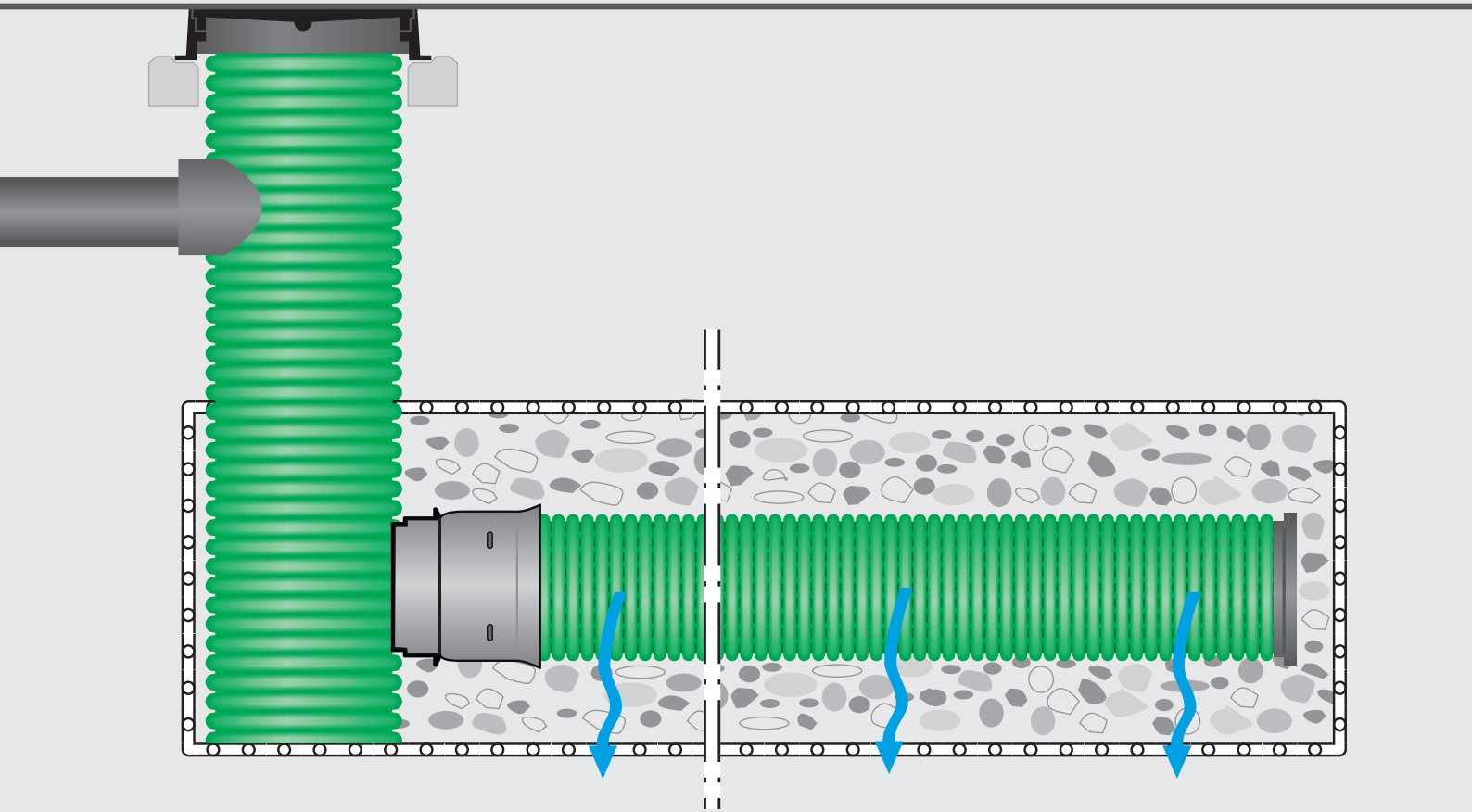
Retention of stormwater with subsequent infiltration or through controlled discharge benefits flood control and prevents flooding.

The high ecological efficiency of storage/infiltration systems is undisputed. According to the effective Federal Water Act *(Wasserhaushaltsgesetz),* nearby stormwater management has priority.

The objective of legislation and standards is to maintain the natural water cycle as much as possible in surface drainage in the future. This should be achieved with decentralised methods of stormwater management.

STORAGE VARIANTS

Pipe swale		**SickuPipe® system**
Underdrained swale system		**MuriPipe® system**
Storage/infiltration system		**Rigofill® inspect system**
Waterproof storage/infiltration system		**Rigo®Collect system**



SickuPipe® – pipe swale infiltration

3

The ecological pipe system for the decentralised infiltration of stormwater and surface water

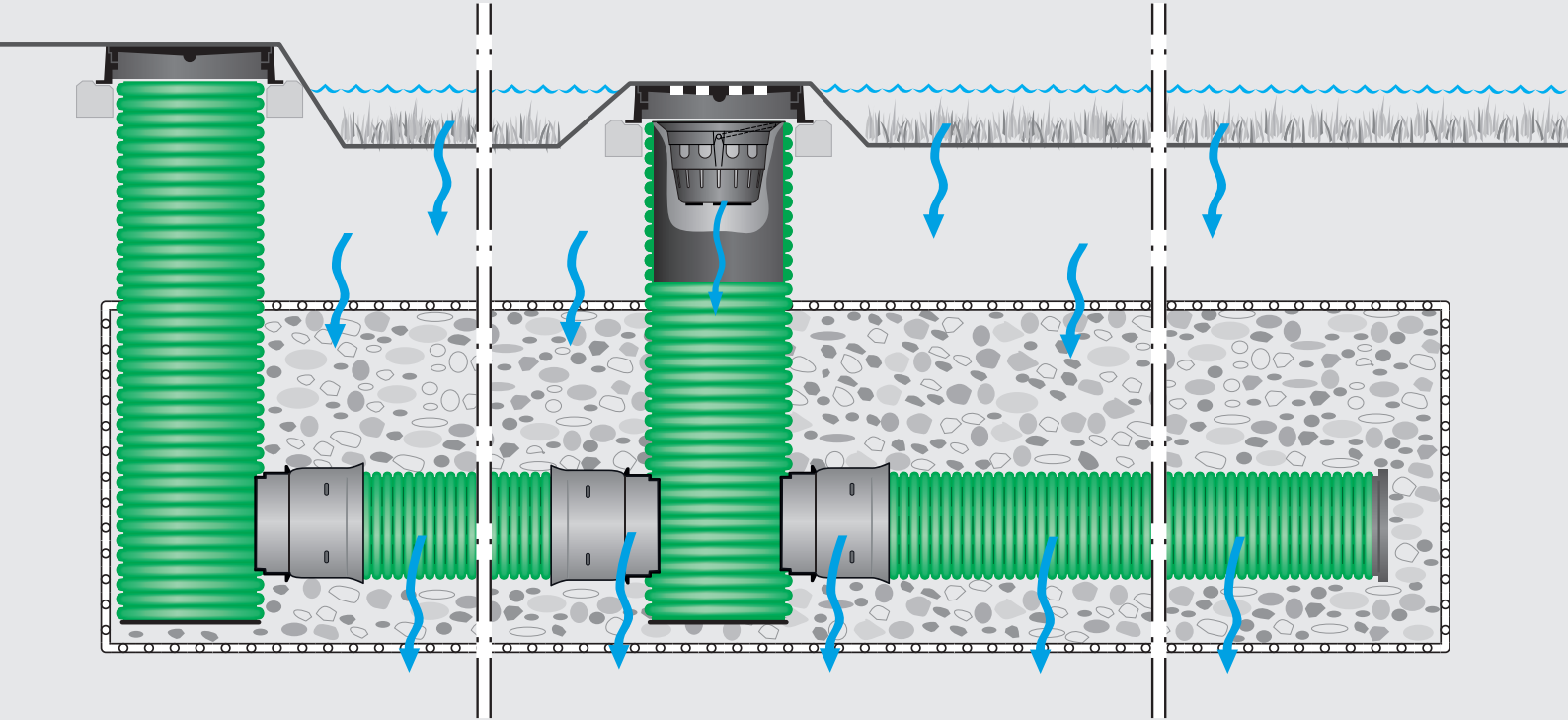
The German Association for Wastewater *(Abwassertechnische Vereinigung – ATV)* stipulated the regulations for "Planning, Construction and Operation of Facilities for the Percolation of Precipitation Water" *(Bau und Bemessung von Anlagen zur dezentralen Versickerung von nicht schädlich verunreinigtem Niederschlagswasser)* in DWA-A 138. It recommends spread infiltration.

Pipe swales consist of a perforated pipe or pipe system and a gravel bedding around the pipe. The runoff is channelled underground into the pipe system and infiltrates through the pipe system into the gravel swale.
Practical experience has shown that nominal diameters of 300 mm are ideal for the pipe system. Infiltration pipes and swales must be installed such that filter stability is ensured.

- High storage volume
- Ideal perforation area
- Economic installation
- Light weight

SickuPipe
perforated swale infiltration pipe

- Totally perforated pipe (TP)
- DN/ID 300
- Total perforation area ≥ 180 cm^2/m



MuriPipe® – underdrained swale infiltration

3

The underdrained swale system for time-lagged discharge of stormwater

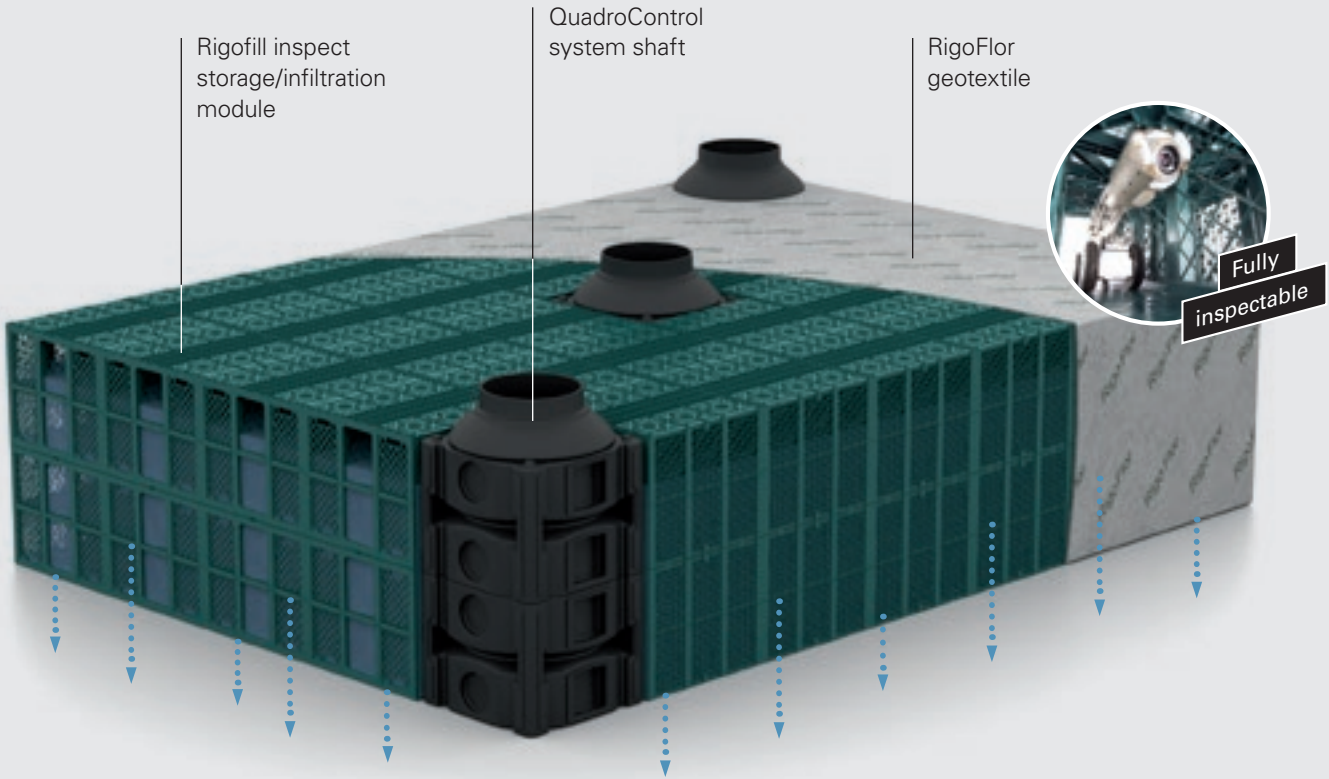
Simple principle, convincing effect.
The core component of an underdrained swale infiltration is a vegetated infiltration swale and a gravel swale underneath with a distribution/transport pipe.

Stormwater is stored and filtered in the swale before it enters the underdrained swale system, where it distributes evenly through the MuriPipe system. The advantage is that the stormwater passes through a vegetation layer (the grass layer) and enters the groundwater thoroughly cleaned.
With little ground permeability, there is only partial infiltration – the remaining water accumulates and flows through the throttle shaft into the natural receiving waters.

- Ideal infiltration performance
- High treatment effect
- Simple design
- High safety coefficient

MuriPipe
perforated swale infiltration pipe

- Totally perforated pipe (TP)
- DN/ID 200
- Total perforation area ≥ 150 cm^2/m


Rigofill inspect
storage/infiltration
module
QuadroControl
system shaft
RigoFlor
geotextile
Fully
inspectable

Rigofill® inspect – storage/infiltration system

3

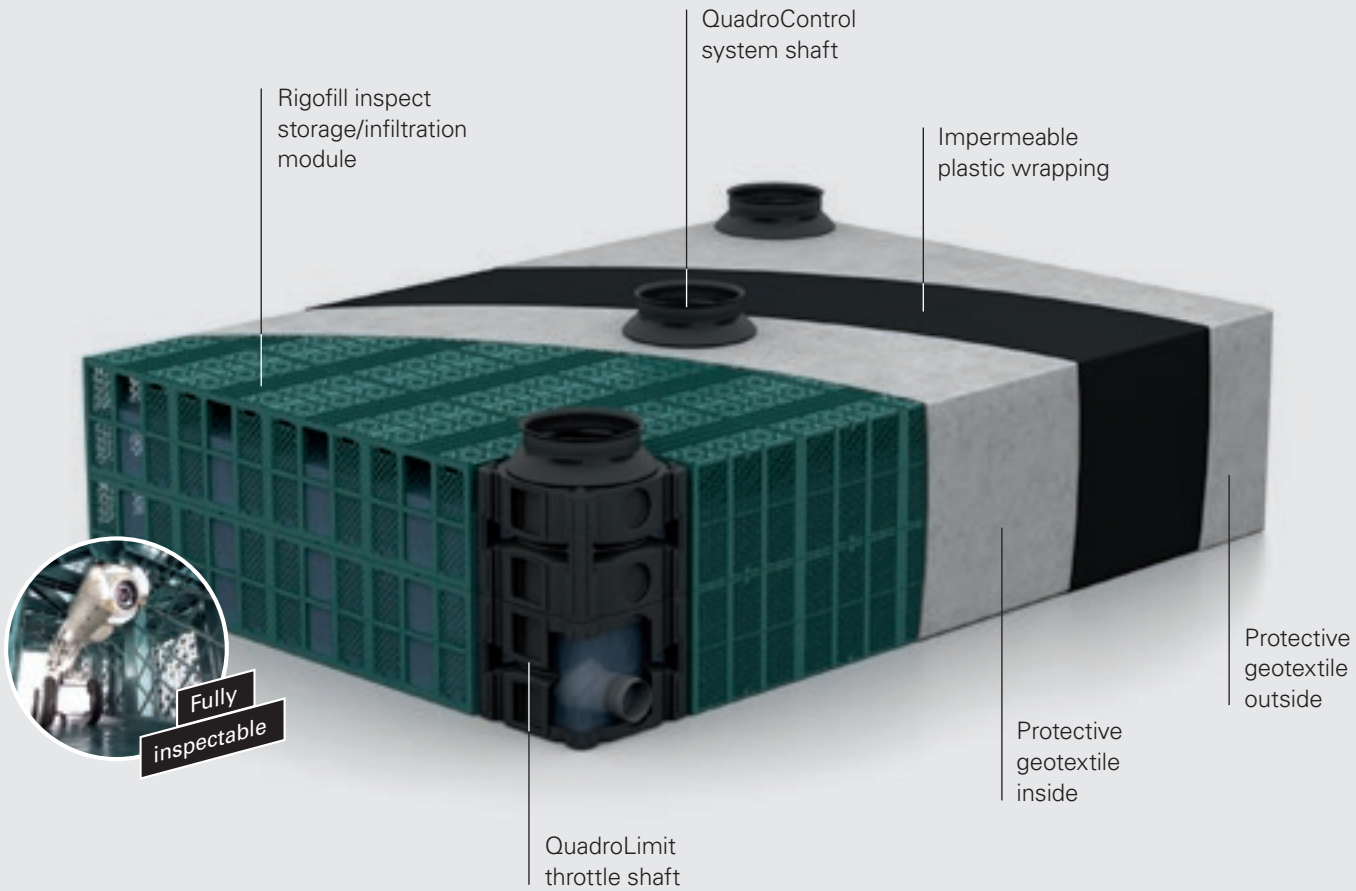
Highly efficient storage/infiltration module with inspection tunnel

Storage/infiltration systems temporarily collect stormwater and discharge it later. In addition to infiltration using underdrained swale systems, pipe swales, and gravel swales common in the past, increasingly more storage/infiltration systems are being built today. The storage space of the storage/infiltration system consists of numerous Rigofill inspect modules which can be combined three-dimensionally to form large systems. The advantage of this method is that the void ratio is up to three times larger in these infiltration systems than in gravel swales which saves space and excavation work. Rigofill inspect is a modular system which is characterised by high flexibility, rapid installation and a high level of user-friendliness.

- Huge storage capacity
- Very little space required
- Weight and handling: light
- Strength: exceptional

Rigofill inspect
highly durable and hard-wearing storage/infiltration module

- DIBt approval: Z-42.1-473 with design approval for infiltration systems in accordance with the scope of DWA-A 138, as well as stormwater retention systems in accordance with the scope of DWA-A 117.
- Suited for HGV 60


QuadroControl system shaft
Rigofill inspect storage/infiltration module
Impermeable plastic wrapping
Fully inspectable
Protective geotextile outside
Protective geotextile inside
QuadroLimit throttle shaft

Rigo®Collect – retention, harvesting and fire water storage

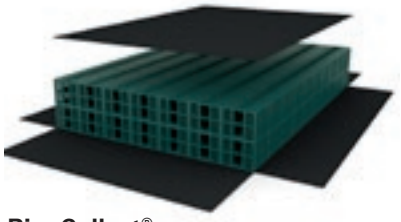
3

Waterproof systems with Rigofill® inspect storage/infiltration modules

RigoCollect offers the easiest way of building underground retention facilities. To achieve this, Rigofill inspect storage blocks are wrapped in impermeable plastic membrane by means of a special method. The result is an entirely tight underground structure. Compact, lightweight, economical and flexible in use.

Only the tried-and-tested materials are used to ensure high-quality, durable implementation. The 2.00-mm impermeable PE-HD membrane used here boasts DIBt approval and is protected by robust mixed-fibre geotextile.

With its team of certified expert welders, our partner FOLIEN LÜCKE – a specialist company working in compliance with the Federal Water Act (WHG) – ensures professional and efficient installation.



RigoCollect®
waterproof storage/infiltration module

- DIBt approval with design approval for waterproof stormwater retention systems
- Robust and durable impermeable plastic membrane
- Resilient protective geotextile inside and outside to protect the membrane

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