Blue Green Dream

Technische Universität Berlin

KOMPETENZ IN SACHEN REGENWASSER
INGENIEURGESELLSCHAFT PROF. DR. SIEKER MBH

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Content

TU Berlin

- Urban Farming
- Inclined Green Roofs
- Case Studies
- Database /Evaluation Matrix
- Tree pit Design

Sieker

- Flood prediction software for the River Panke
- Intelligent Cistern
- Urban run-off water quality assessment project

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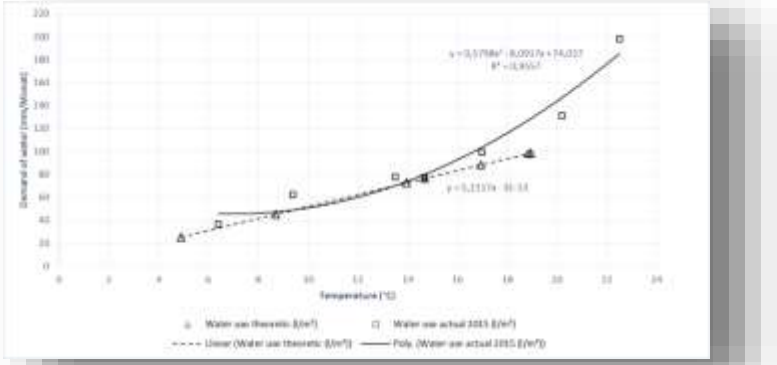
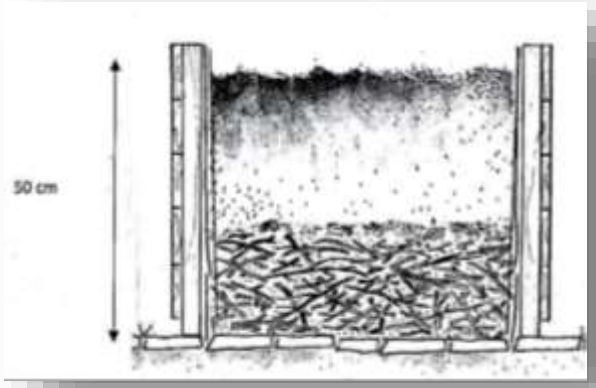
Urban Farming

- Measurements = water balance
- Water concept for urban planers
  - Measurement of an urban farming area in Berlin
  - 125 raised beds (ca. 125 m²)
  - Drinking water demand: 58 m³ (Mar-Sept)
  - Solution: rainwater harvesting
  - Tool: Calculation of the required catchment area by average monthly temperature and amount of precipitation
    - E.g. Berlin 1 m² raised bed => 2.55 m² catchment area





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Inclined Green Roofs

- Are there any disadvantages compared to flat green roofs
- Measurements:
  - Inclined roofs
  - Size: 2 m X 0.8 m
  - With an angle of 30° and 45°
  - It is planted with different Sedum plants
  - The soil layer is 10 cm
- Results
  - The run off performance is similar to flat green roofs
  - In Germany: The costs of green roofs & pebble roofs are nearly the same (over 50 years)

Run off coefficient	
Inclined green roof	Flat green roof
0,4	0,3

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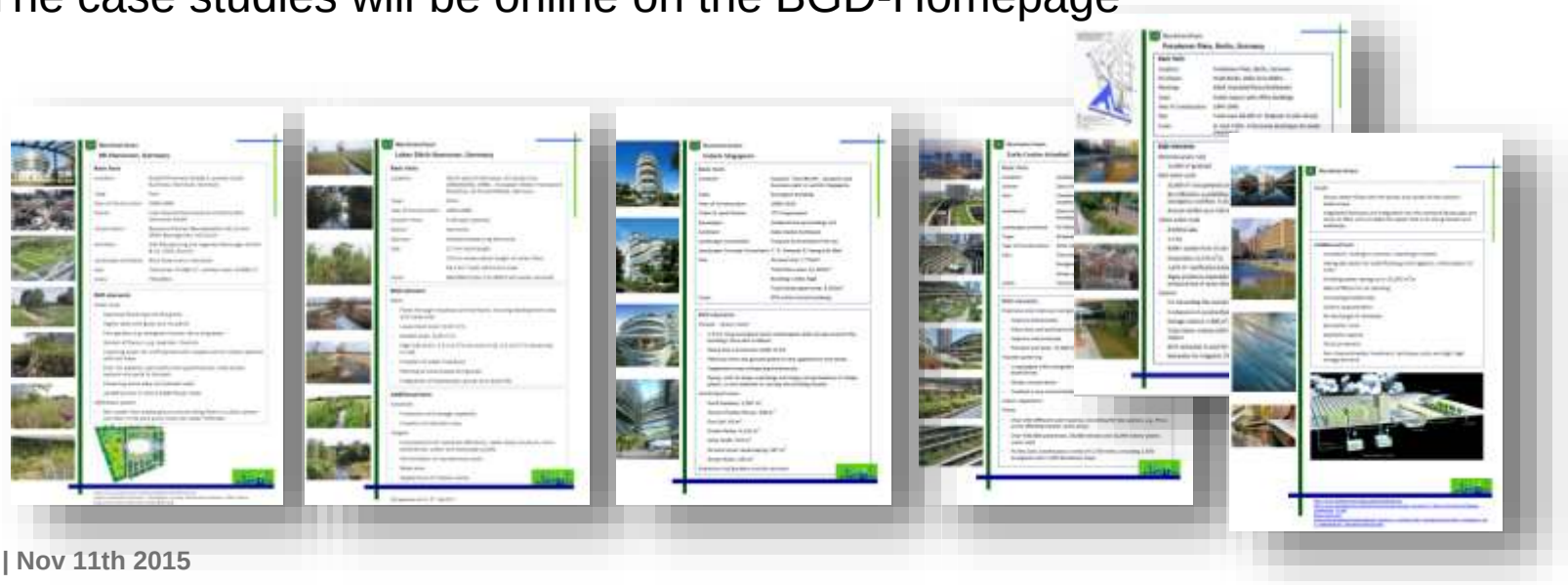
Case Studies

- **Blue Green** technologies are integrated into an overall concept of sustainable stormwater management combining the benefits of each technology
- Combination, dimensions and design of BG technologies vary between the projects
- There is a collection with approx. 40 case studies about different **Blue Green** Solutions in Italy, Germany, Turkey, Switzerland, Singapore, USA etc.
- The case studies will be online on the BGD-Homepage



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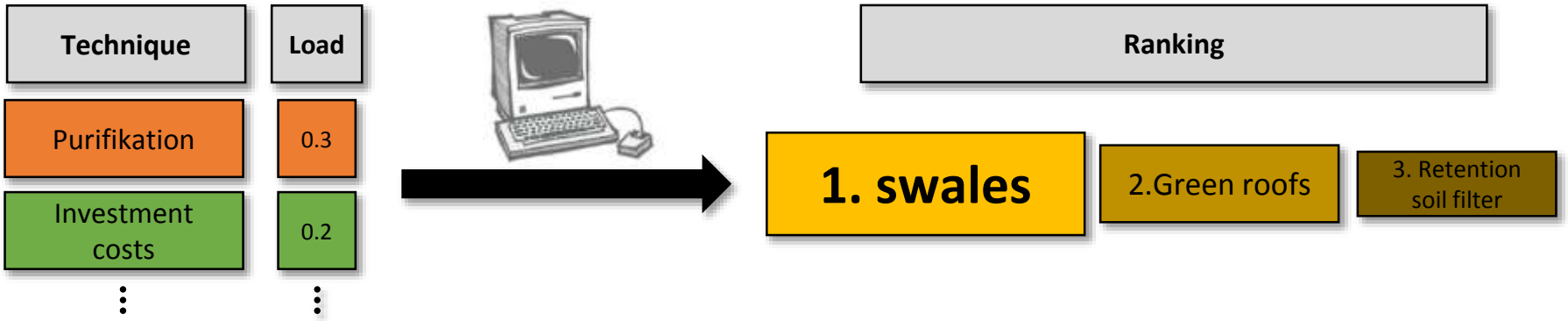
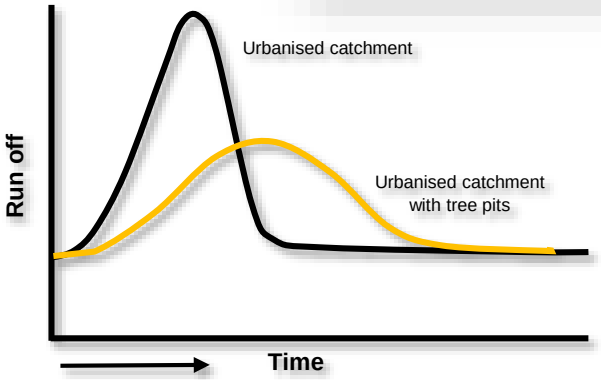
Data Base / Evaluation Matrix

- The aim of the data base (1,000 values) or evaluation matrix is to support urban planners like a pre-selection tool
  - the user enters their load of criteria e.g. retention and costs
  - based on the values from the data base and the chosen loading of the criteria the matrix generates a ranking of the techniques
- Therefore the user gets the techniques that meets his needs most
- The Database and the EM will be online



Tree pit Design

- Cooperation between TUB and Berding Beton
- The tree pits should storage rain water while precipitation events and provide water in dry seasons
- They could be connected in series
- The advantages are:
  - reduction of run off
  - buffering rainwater peaks (**retention**)
  - providing of water in dry seasons (storage capacity)
  - generating of more **evapotranspiration** (cooling effects)



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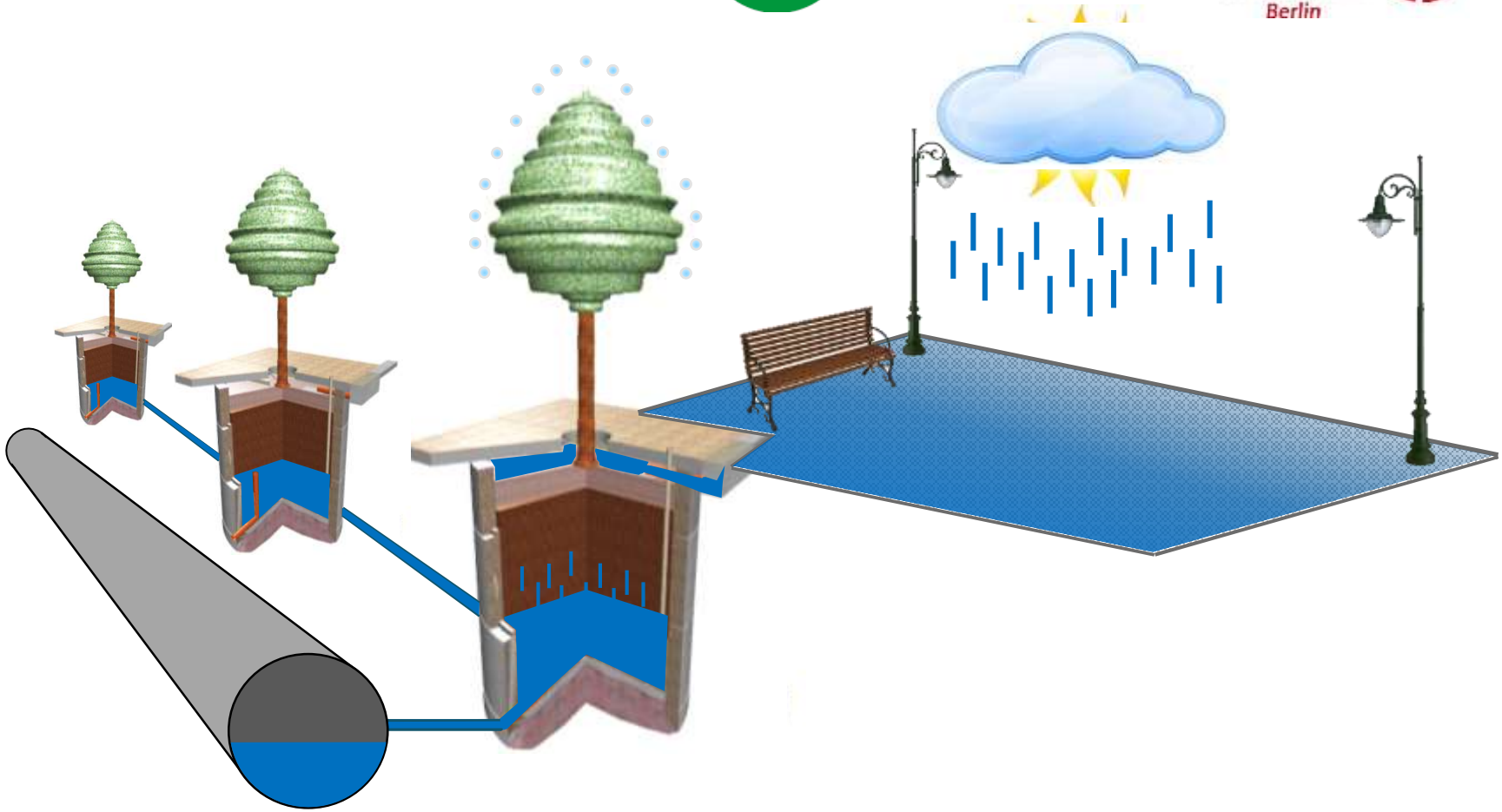
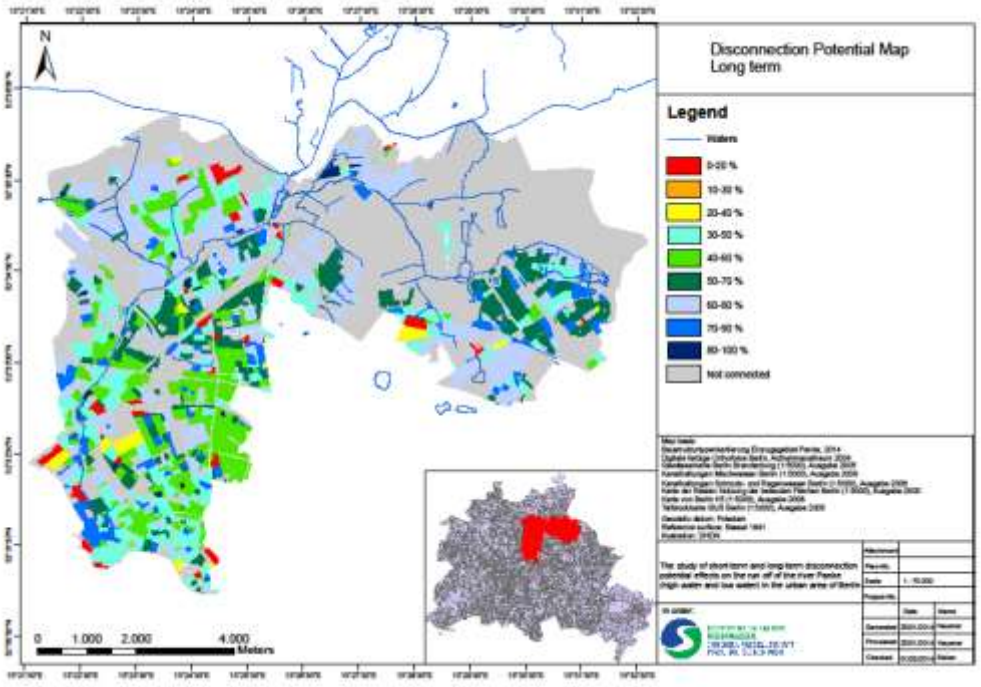


Catchment of river Panke (Berlin) – Output

- Improved storm water management for urban area of Panke catchment in Berlin

- Disconnection potential maps (short-/longterm):



Effects:

- ► Disconnection shows big effects on flood mitigation, less hydraulic stress
- ► Improvement of urban water cycle (evapotranspiration, groundwater recharge)
- ► Reduction of pollutant loads in combined sewer system

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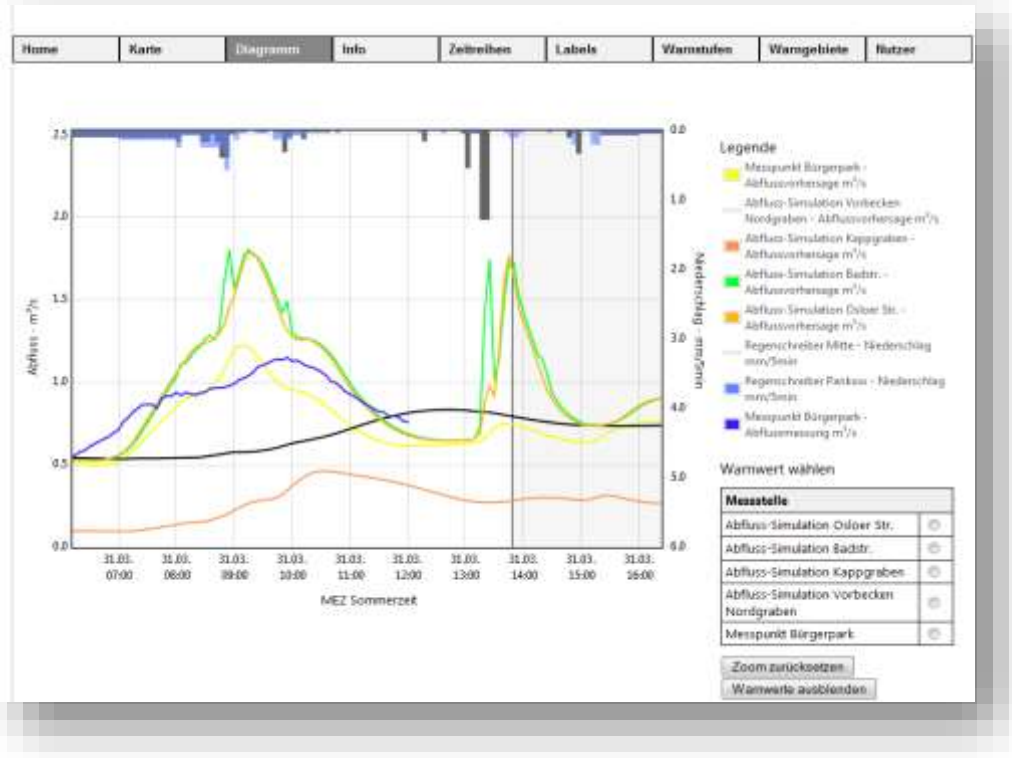
River Panke (Berlin) - Output

- Run off prediction and flood warning system
  - Rainfall run off model STORM
    - radar-based rainfall data including a forecast for at least 2 hrs
    - Flood forecast
  - Interface HydroWebView: shows runoff, water level etc.
  - Warning system

- System commissioned by senate of Berlin
  - ►Berliner Wasserbetriebe (Berlin water company) for 1 year



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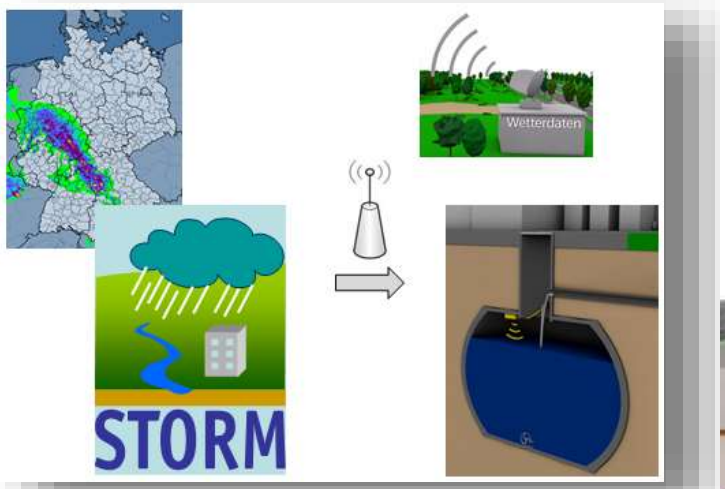
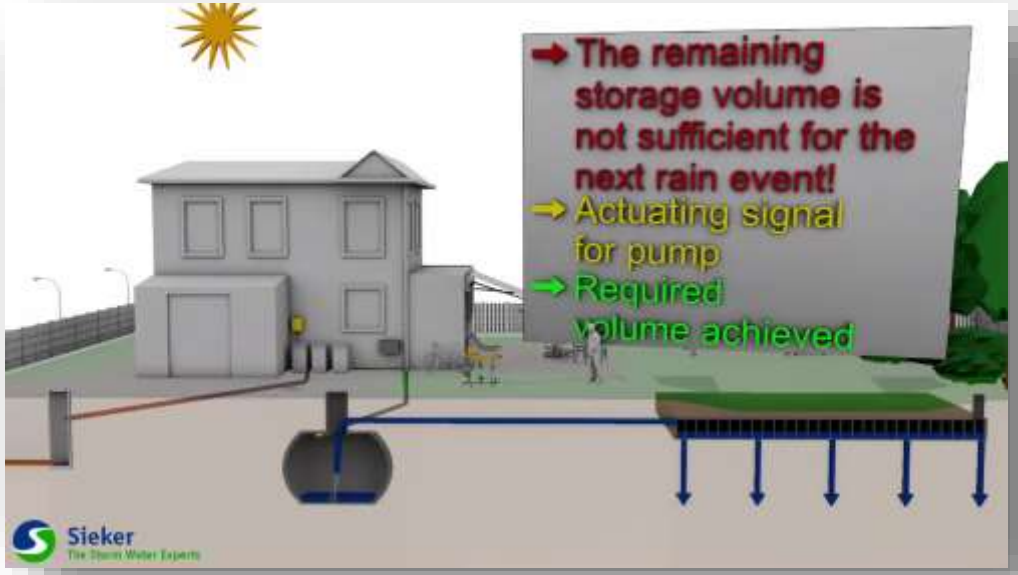
Intelligent Cistern

- Implementation of a test side on the area of the SuZ in Berlin





- Product allows the discharge of cisterns prior to forecast intense rain events
- Target market: Potential customers include landowners or companies

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Decentralised treatment of rainwater runoff from streets

- Catchment Pücklerteich:
  - Area 142 ha, sealed 41 ha
    - Streets 68%, high/heavy traffic 27%
  - Research project testing in street „Clayallee“:
    - Different inlet systems
    - Street sweeping
  - ► Measurement of street run off
  - ► Study of pollutants in street run off
- Leaflet of products which are already on market

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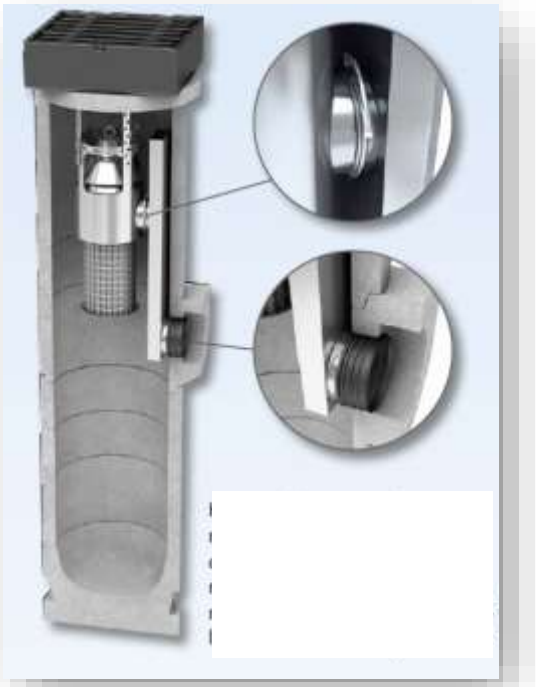
Decentralised treatment of rainwater runoff from streets

Systems: INNOLET-G



BUDAVINCI Typ-N

ACO SSA

- Good reduction of pollutants by using these systems and enforce sales
- Show big potential for new products for street runoff cleaning
- Test track “Clayallee” allows manufacturer to modify and test new systems

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Thank you for your attention!

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