

# **AQUA-Selekt** made it possible



*the condition inspection and leakage identification **and***



*sewer rehabilitation programmes to reduce exfiltration and infiltration*

for public sewers and house connections (private sewers) with max. **20%** CCTV inspection sample with a respectable precision of **95 %**.

Expert office for  
sewer rehabilitation

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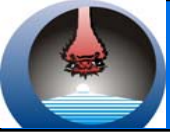
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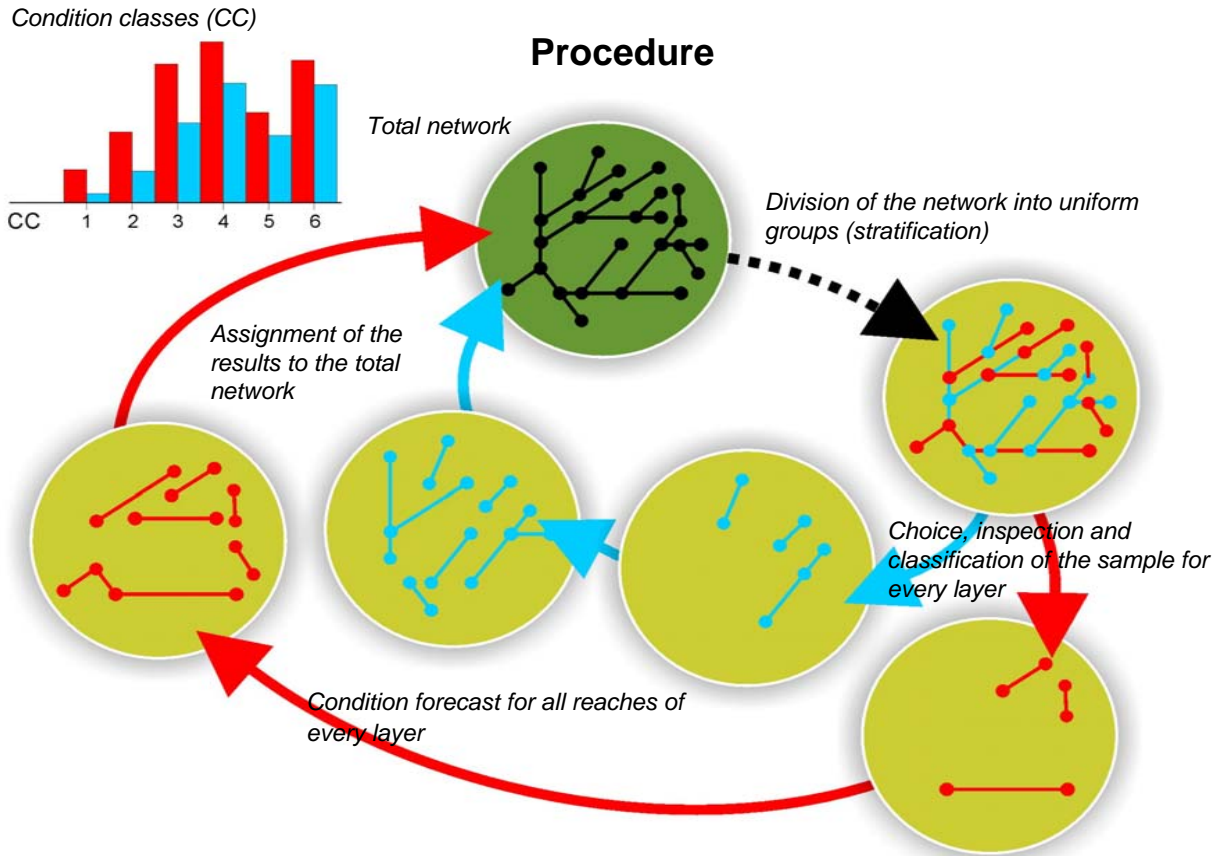
[kj@forecast-model.com](mailto:kj@forecast-model.com)  
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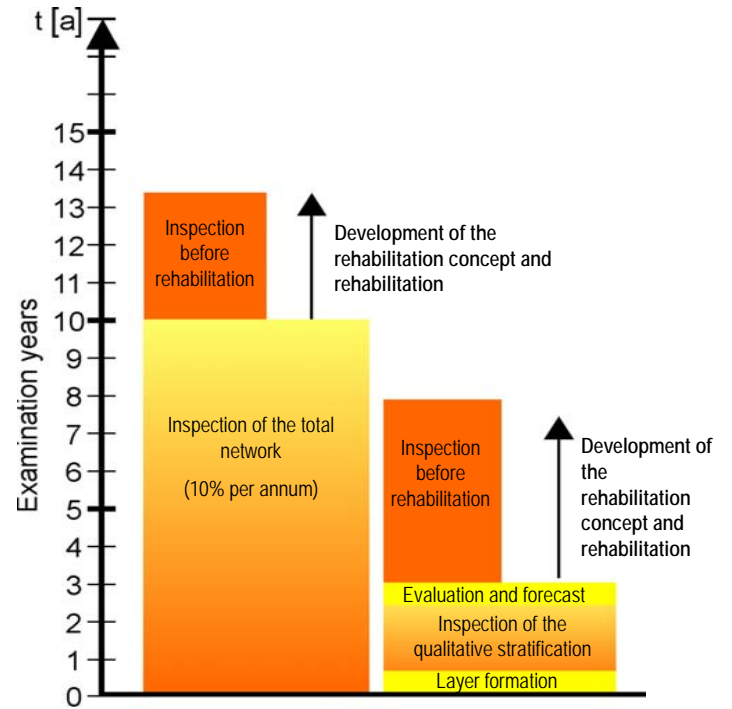
Program for the condition inspection and leakage identification of sewer systems with max. **20%** CCTV inspection sample with a respectable precision of **95%**.

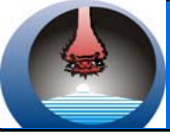


# The basic idea of selective CCTV-Inspection



## Temporal course at the conventional and the selective primary inspection





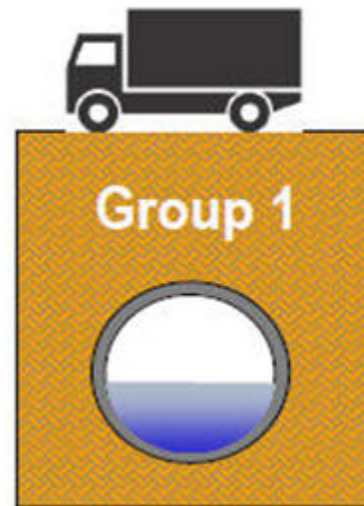
# Sewer Aging is not (only) a matter of time...

## Method:

**Sewers under similar environment and working conditions are calculated to have equal life expectation**

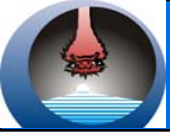
parameter (e.g.)	influence
age, year	very strong
diameter	strong
wastewater quality	
pipe material	
depth	
traffic load	weak

Constructed  
1940



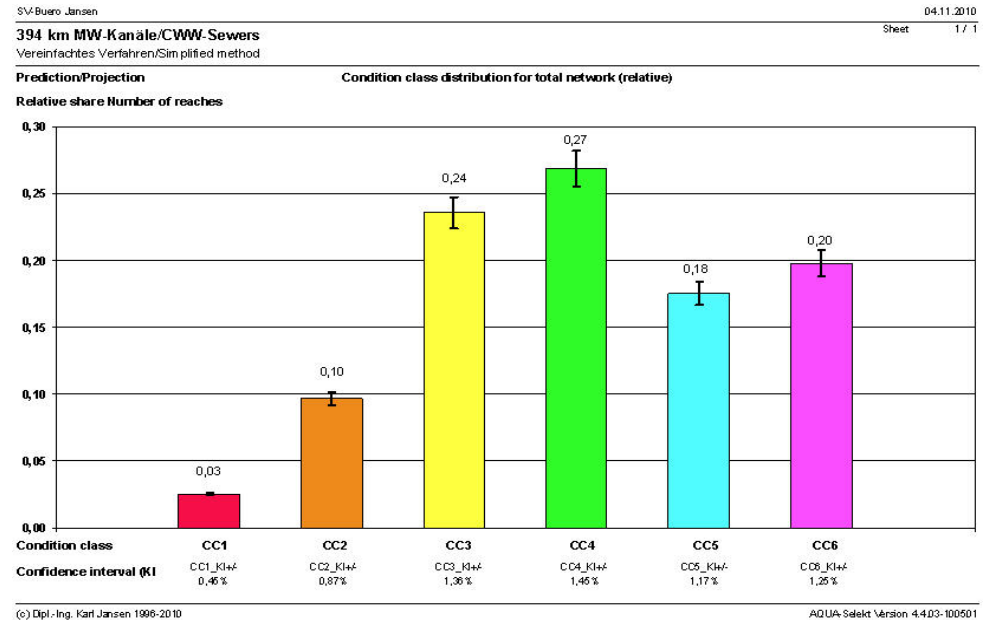
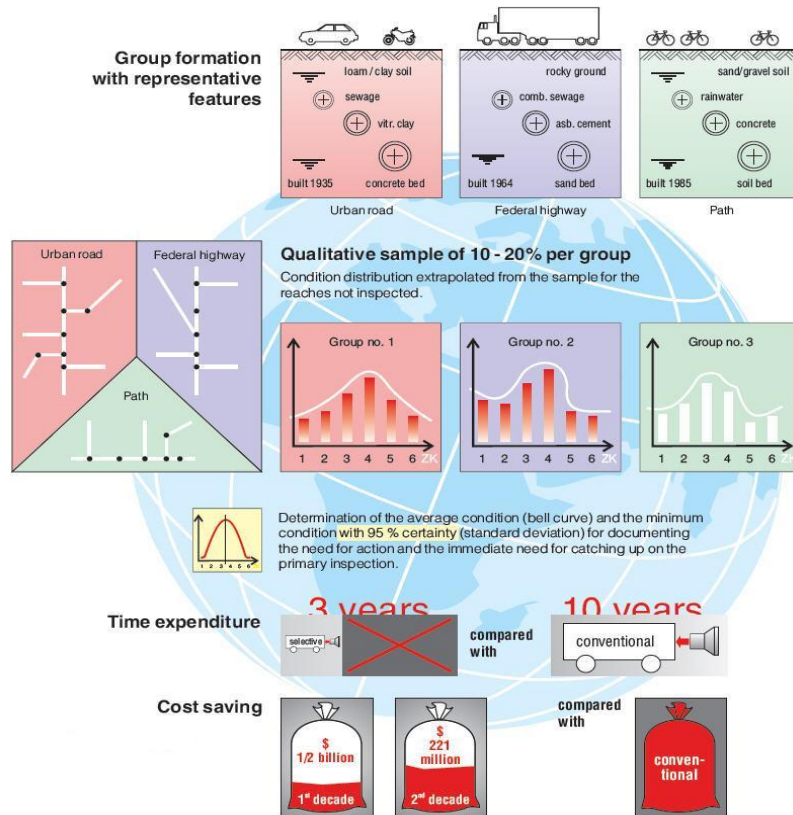
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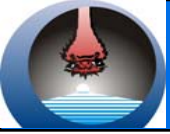


## Prospective Sewer Conditions Assessment

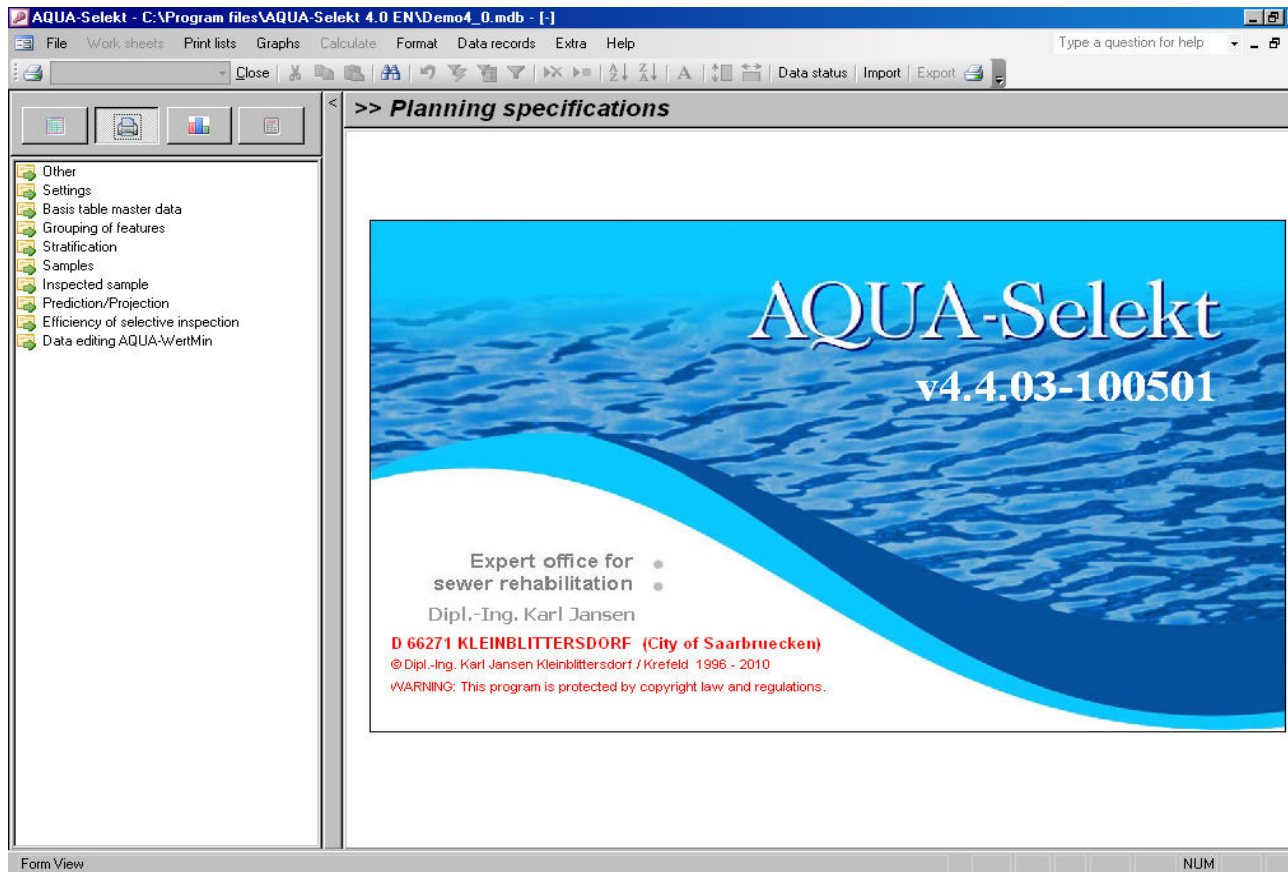
### Representative sewer condition samples – Extrapolation for the whole sewer network



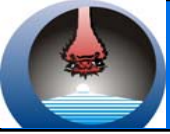
Program for the condition inspection and leakage identification of sewer systems with max. **20%** CCTV inspection sample with a respectable precision of **95%**.



## The Software for the Sewer Highway to...



Program for the condition inspection and leakage identification of sewer systems with max. **20%** CCTV inspection sample with a respectable precision of **95%**.



# **AQUA-Wertmin** made it possible



*the ageing and condition forecast  
and*



*cost-optimised individual  
rehabilitation strategies*

for sewer networks to **DWA-M 143:2005-11.**

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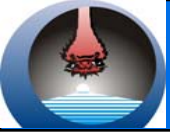
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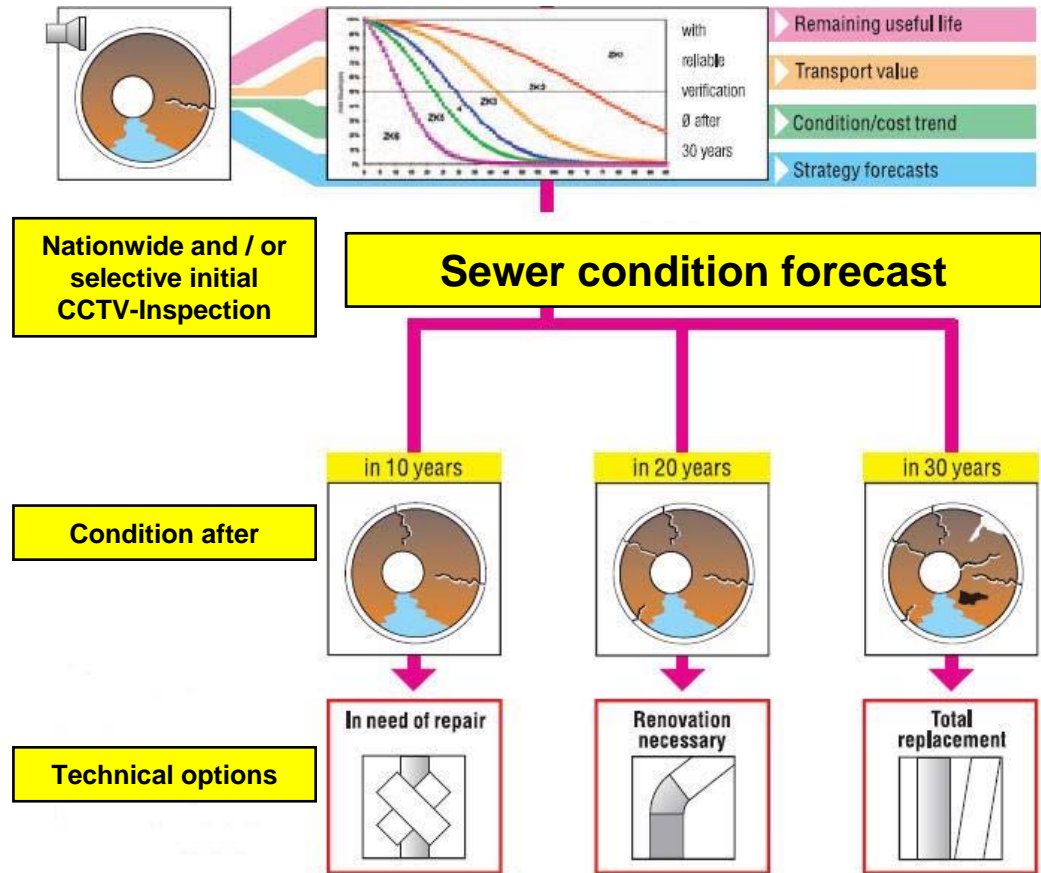
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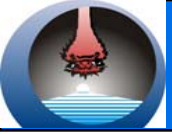


Program for the ageing and condition forecast with cost-optimised individual rehabilitation strategies for sewer networks to **DWA-M 143-14:2005-11.**



# Cost-Optimised Rehabilitation and Inspection-Strategy

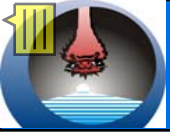




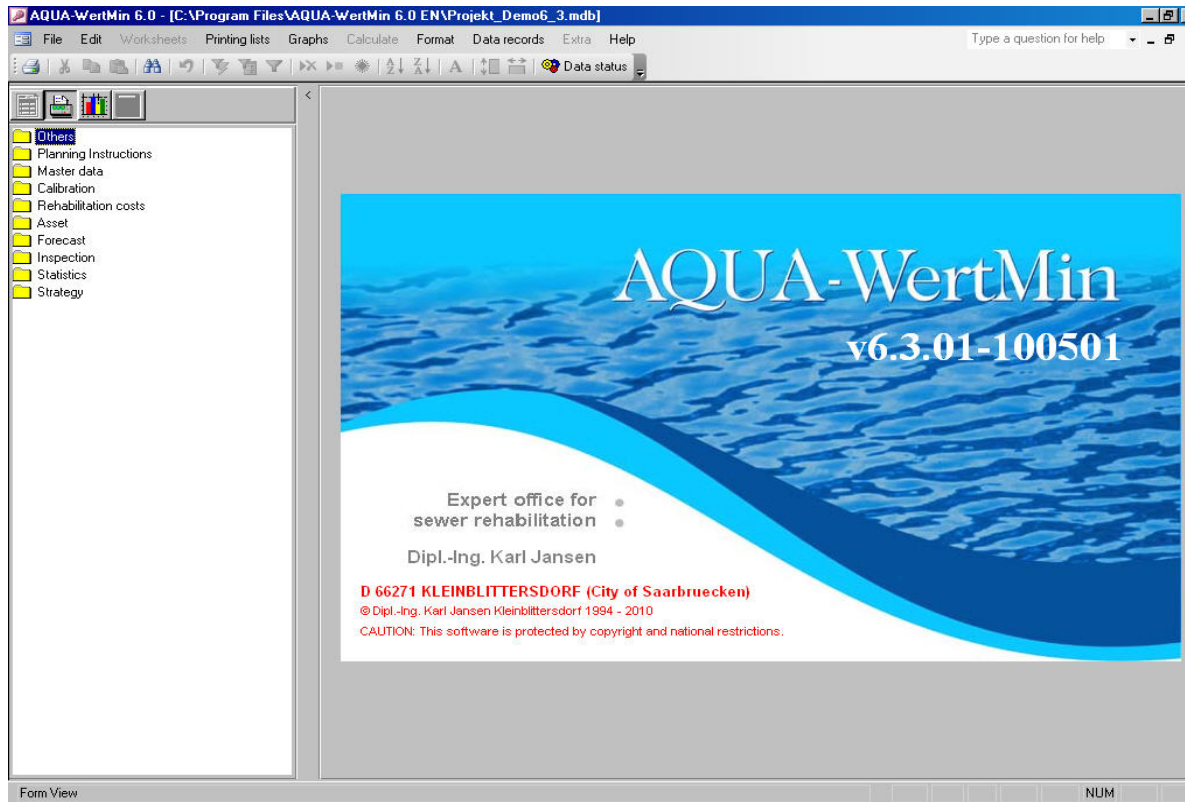
## *Prognostic sewer rehabilitation strategy*

- Periodic evaluation of condition improvement and effectiveness of measures.
  - Network-specific speed of deterioration
  - Effectiveness of rehabilitation rates (replacement/renovation/repair)
  - Long-term rehabilitation development
  - Long-term effects of rehabilitation measures
  - Long-term development of assets (sewage fees)
- 





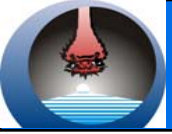
## The Software for the Sewer Highway to...



Program for an ageing and condition forecast model for the development of rehabilitation strategies for a cost-optimised maintenance of sewer networks.



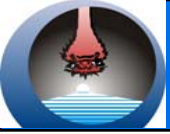
Program for the ageing and condition forecast with cost-optimised individual rehabilitation strategies for sewer networks to **DWA-M 143-14:2005-11.**



## **Sewer Age Assessment and Rehab Planning**

- Precondition for successful Rehab Planning is a sufficient knowledge about sewer conditions to the time, when rehabilitation construction works are undertaken.
  - Inspections to be repeated every decade (or so)
  - Classification to be verified every decade (or so)
  - Base design of Rehab to be renewed continuously
  - Hydraulic network modelling to be updated, as well
  - Rehabilitation strategy to be updated, as well
- 





# On the Sewer Highway to >>> Success

