Cured-in-place-Pipe (CIPP)

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„Possibilities and restrictions of district heating pipe renovations – with Cured-in-place pipe (CIPP) systems“ – *FW-Liner*

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Timeframe: 01.06.2017 – 28.02.2021

Supported by:

Project partner:
Motivation

» Many district heating networks in Germany getting close to the end of the expected lifetime (built in 50th & 60th)
» The oldest network parts are the heart of the system and buried in the area of the city centre
» Increasing number of renovations at the German district heating networks expected
» Short-term fixing options are limited
» Replacement of pipe systems is cost and time intensive (especially unplanned)
Composition example

- Inner coating with styrene barrier
- Glass fibre reinforced plastic (GRP)
  - Support external & internal loads
- Outer foil with styrene barrier
- Reinforced light protection foil
General information of the CIPP technology: Step 1

- Identify the imperfect part of the pipe
- Create access to the effected area
- Pull in the flexible tube of fiberglass plastic

Source: SAERTEX multiCom®
General information of the CIPP technology: Step 2

1. Zugang zu der undichten Leitung wird hergestellt.
2. Der SAERTEX-LINER® H₂O wird eingezogen.

» Pressurise the flexible tube
» Harden the system with ultra violet light

Source: SAERTEX multiCom®
General information of the CIPP technology: Step 2

Source: SAERTEX multiCom®
General information of the CIPP technology: Step 3


» Leak test
» The restored pipe will be reconnected to the grid
» And enter into service

Source: SAERTEX multiCom®
DH CIPP – renovations

Expected benefits

» Well known, reliable technology for buried pipe systems (e.g. gas pipelines, fresh and sewage water)
» Timesaving alternative in case of short term issues
» Low impact on the effected area (e.g. streets, buildings)
» Cost efficient
» Eco friendly
Challenges and limitations for the DH use

» Just some cases of damage can be fixed (leakage)
Challenges, requirements and limitations for the DH use

» Just some cases of damage can be fixed (leakage)
» Many expansion bends of DH grids (L- and U-expansions)
» High level of temperature (up to 130°C-150°C) and pressure (up to 16 bar)
» Many connections with high variation of nominal diameters
» Limited minimum of diameter (size of the UV-Light)
» Reduction of diameter (T-pieces)
» Tube will influence the pressure drop and flow rate
Influence on the effort of development

» Short- or long-term solutions
» Temperature level
» Diameter of DH-pipes
» Length on straight uninterrupted pipes

» Number of relevant error situations
» Potential market and business cases
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