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Condition monitoring of excavated CIPP-liners to ensure lifespan

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Condition monitoring of excavated CIPP-liners to ensure lifespan

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ABSTRACT: In Sweden there is a lack of knowledge on the expected service life of installed CIPP-liners and a general aim to request CIPP-liners with a 100-year lifespan. In cooperation with Swedish water utilities a national project has been launched for condition monitoring of used CIPP-liners. A large number of CIPP-liners installed in sewage pipes will be excavated and analyzed in order to evaluate material degradation and estimating remaining service life. The CIPP-liners are all between 5-35 years old.

The material performance of the CIPP-liners are either compared with the reference data provided from the installation, or in some case compared to pieces of corresponding CIPP-liners that have been stored on the shelf. This becomes especially valuable when looking at possible changes in mechanical properties that may have occurred during the time in use. The materials will be assessed by e.g. bending modulus to investigate material integrity and e.g. FT-IR for chemical stability in the environment of the sewage system. In total the results will give a valuable tool in assessing the expected lifetime of the installed CIPP-liners. The knowledge acquired will help Swedish water utilities to predict service life of installed CIPP-liners and to set sufficient quality demands on new installations for pipe renovation. At an initial stage two excavated CIPP-liners that have been in use for 12 and 16 years have been analyzed and compared with reference data from the time of installation.