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## **No-dig renovation of pressure pipelines, re-connection techniques and case studies**

Firmino Pires Barbosa, Civil Eng.<sup>1</sup>

<sup>1</sup> RELINE APTEC GmbH, a company of the RELINE UV Group, Rohrbach, Germany

**ABSTRACT:** The trenchless rehabilitation of pressure pipelines is nowadays possible with various systems based on different materials. Since the pressure pipeline network is not using manholes or shafts for connecting and diversion of the flow, the re-connection of relined pipelines are a big challenging demand for successfully conclusion of such no-dig renovation projects. Based on the GRP hose liner of RELINE APTEC, we will present various connection systems in detail.

The use of the re-connection techniques depend on the material and on the condition of the pressure lines to be renovated, as well as on the static design requirements for the lining system: independent and self-supporting liner or interactive and semi-static liner.

The application of GRP hose liner for renovation of pressure pipelines is increasing the choice of systems and the alternatives for optimization of the design and the cost effectiveness of a no-dig renovation project.

Liner end sealing with the so-called liner inner sleeves transmits the force stresses onto the existing old pipe. However, most of the cases, the decision for renovation of the existing pipelines is due to high corrosion and subsequence bursting issues. Therefore, this solution is very restricted in its application.

A more technically sensible solution is the re-connection of the liner with flanged GRP couplings. These GRP couplings either can use loose flanges or monolithically pre-produced flange adaptors. In some application, it can be necessary to strengthen the re-connection to the liner with additionally manually laminated glass fiber. The sealing of the liner edge to the flanged GRP coupling is the key role in this application. It is necessary to provide a vacuum resistant sealing of the liner end to the flanged GRP coupling, to avoid at any circumstance a peeling of the liner inner coating.

The application of the above-mentioned re-connecting techniques is described in detail as following with references to the job site respectively.