Linnaeus ECO-TECH 2022
Kalmar, Sweden, November 21-23, 2022

PIPEOPSY- A NOVEL METHOD TO ASSESS STATUS OF PRE-INSULATED DISTRICT HEATING (DH) PIPES IN OPERATION

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Abstract
Techno-economical aspects of assets in energy sector are crucial for sustainability of many sectors and there is an interest to have control and good technical assessment for continuing to use existing pre-insulated DH pipes. Old pre-insulated pipelines need to be maintained in a cost-effective way through a planned and selective replacement.

A field test method named “RISE plug method” has been developed to assess the status of pre-insulated DH pipes in operation. The method measures the adhesion strength (shear strength) between insulation and service pipes. The field method has been supplemented with a chemical analysis of removed insulation in the laboratory. A restoration method where removed insulation is replaced, and the casing is sealed after testing has also been developed. The RISE Plug method, the chemical analysis and the restoration method form a complete method called PipeOpsy. The method's robustness and reliability have been verified with many measurements in the field as well as by supplementary tests in the laboratory. The effect of testing during operation has also been investigated.

A calculation method to compare service time at a selected reference temperature for differ¬ent pre-insulated DH- pipes after use has been presented. The DH pipes analysed, generally had, with a few exceptions, a suffi¬ciently good status for continued operation. The DH pipes age was lower than installation age due to exposure to lower operating tem¬pera¬tures during service life than reference temperature.

ISBN: 978-91-89460-85-0