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Advanced inline inspection techniques as a vital element to manage safely the transition of storage infrastructure to a hydrogen economy

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Large-scale safe underground storage of hydrogen is an essential part of the energy transition. Casings and tubes have been essential components of storage infrastructures.
The paper reviews the current industry understanding, knowledge of applicable integrity threats of existing storage metallic casing and tubes to hydrogen service in line with published data and industry experience. Gaps and key challenges are highlighted.

In line with the threats posed by the storage of hydrogen, a holistic integrity framework approach is then presented to manage the transition of casing and tubes for the safe storage of hydrogen.
As part of this, the paper will describe the inspection solutions available to address the applicable integrity threats.
This will include and describe the framework, considering material expertise, threat assessment, measurement technology selection, data gathering and data evaluation.
The gathered inspection data will be analyzed and used for FFP and integrity management and give the benefit to the storage operator to estimate the remaining lifetime for his asset.