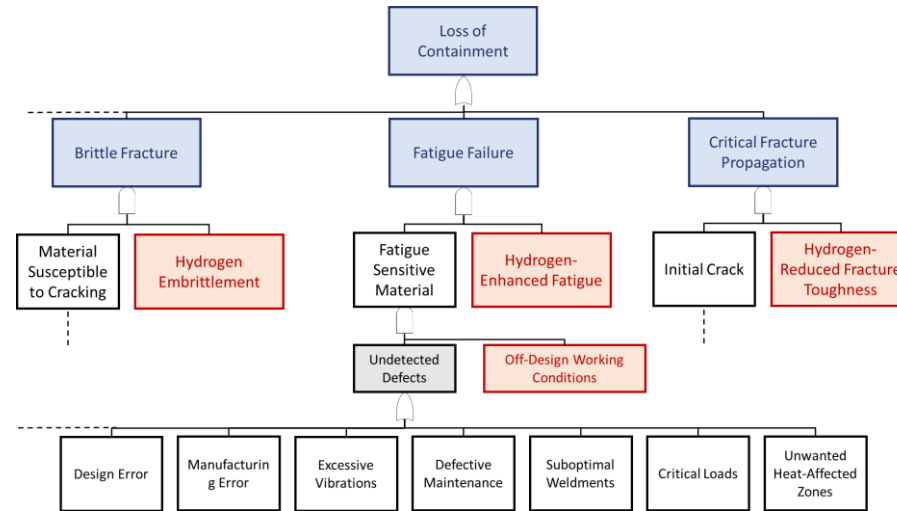


Risk-Based Inspection and Maintenance for Safe Handling and Use of Hydrogen

Introduction: My project focuses on development and optimization of inspection procedures for hydrogen systems – Risk-Based Inspection (RBI) – with particular attention paid to metal-hydrogen interactions and the degradation of equipment working in high-pressure gaseous hydrogen environments.

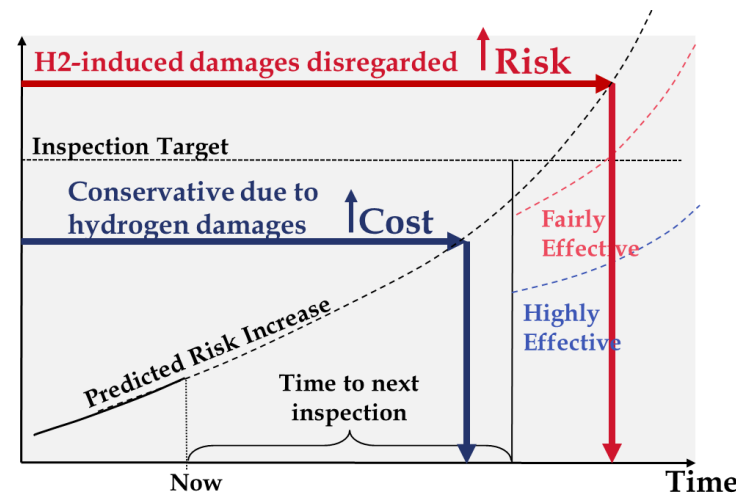


Primary objective:

- Provide insight to support optimal inspection planning for hydrogen systems considering material integrity.

Secondary objectives:

- Optimizing inspection programs through cost-effectiveness analysis.
- Investigating hydrogen-enhanced fatigue in pipeline steels.



Leonardo Giannini

Affiliation = NTNU

Related projects: SH2IFT-2

Leonardo Giannini holds a master's degree in Energy Engineering, obtained at the University of Bologna in March 2022. His background includes the design of energy systems, power plants and hydrogen technologies. Concerning the latter, he worked on a master's thesis focused on the consequence analysis of accidental hydrogen releases at NTNU, where he is now enrolled in this PhD program.



Estimated progress of the PhD project:



Publications:

- Embrittlement, Degradation and Loss Prevention of Hydrogen Pipelines, MRS Bulletin, 2024.
- Peer-Reviewed Conference Papers: see 