

Loss Prevention and Maintenance Modelling for Hydrogen-based Industry

Description

This Ph.D. is part of the H2GLASS project (<https://h2-glass.eu/>).

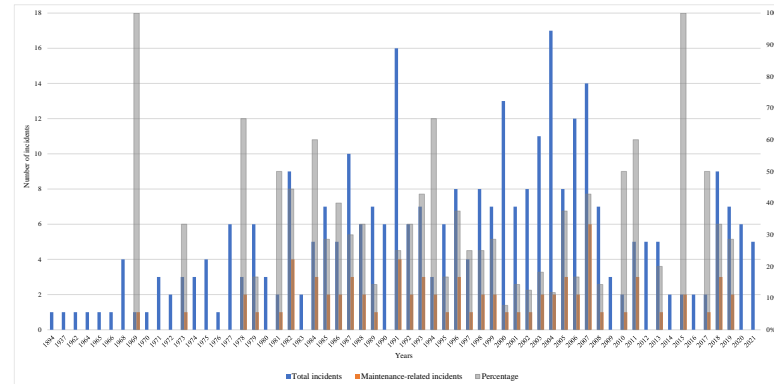
The glass industry will have to be completely decarbonised to reach net-zero emissions by 2050. This project aims to create the technology stack that glass manufacturers need to realise 100% H₂ combustion in their production facilities, ensure the required product quality, and manage this safely.

Primary objective

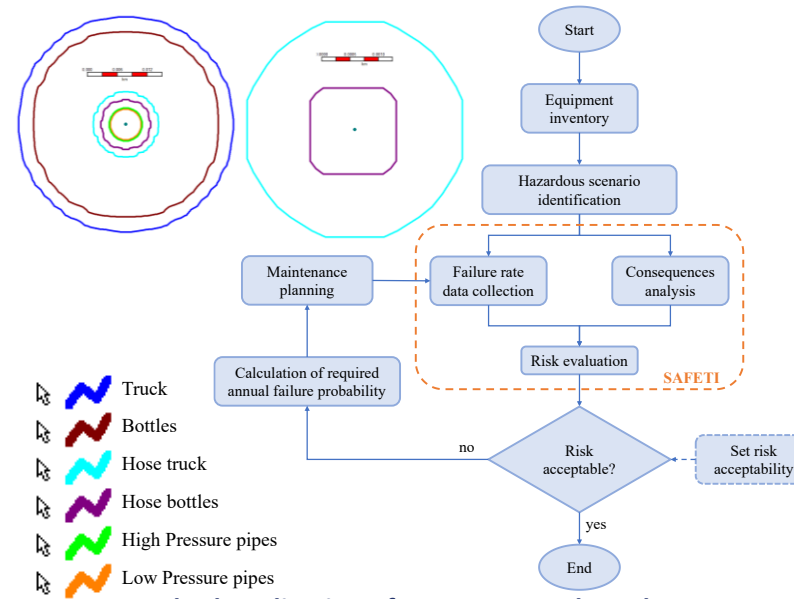
Guarantee safe operability of emerging hydrogen-based industry

Secondary objectives

- Loss of integrity analysis: models and sensors for H₂ applications
- Risk-based inspection and maintenance model development



Criticality of maintenance operations



Standard application of RBM to a H₂ glass plant

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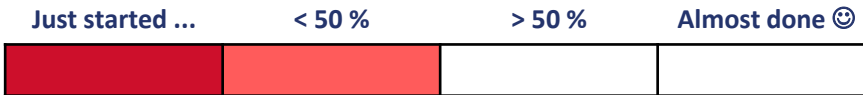
PhD candidate at NTNU – Norwegian University of Science and Technology

H2GLASS - advancing Hydrogen (H₂) technologies and smart production systems TO decarbonise the GLASS and Aluminium SectorS

- Master's degree in Chemical and Process Engineering – University of Bologna (2020-2023)
- Bachelor's degree in Chemical and Biochemical Engineering – University of Bologna (2017-2020)



Estimated progress of the PhD project:



Publications

- Collina, G. et al., (2023). Fragments generated during liquid hydrogen tank explosions. *Chem. Eng. Trans.*
- Collina, G. et al. (2023). Risk-Based Maintenance models for hydrogen systems: a review for the glass and aluminium industry. *Hazards33, IChemE.*
- Collina, G. et al. (2023). Lesson learned from H₂-related incidents: criticality of maintenance operations. *Hazards33. IChemE.*



TA4 – Applications
TA5 – Safety

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