

How can we consolidate materials research in the energy transition?

EIP033

28 February 2023

Background

- Research into hydrogen, its affect on materials and how we transition our assets to work in these new environments is constantly growing
- Transmission owners and operators globally are carrying out their own research alongside our own portfolio of projects
- We need a way of consolidating all of this research and findings to assist in our decision making strategies.
- Duplication wastes time and money
- Ideally we would like a method of assessing how our particular network and assets could be transitioned to hydrogen based on all of the completed research.



Current Materials Projects



UNDERSTAND

What is the impact of hydrogen on NTS materials?

- ▼ [NIA] NTS Materials Testing to Enable Hydrogen Injection in High Pressure Pipelines
- ▼ [NIA] Hydrogen Impact on NTS CP & External Coatings Performance
- ▼ [NIA] Impact of Hydrogen on NTS Polymer/ Elastomer Materials – Phase 1
- ▼ [NIA] Assessment of Legacy Gas Pipeline Steels to Hydrogen Embrittlement Effects
- ▼ [NIA] EPRG 231 - Fatigue and Fracture related Small Scale Testing Programme in H₂ Environment – Phase 1
- ▼ [NIA] EPRG 232 - Full Scale Fatigue Crack Growth Test under Hydrogen Atmosphere
- ▼ [NIA] HyNTS Defect Fatigue Behaviour
- ▼ [OTHER] Effects of Hydrogen on Mechanical Behaviour of Steels
- ▼ [NIA] Impact of Hydrogen on NTS Oils & Greases – Phase 1*
- ▼ [SIF] *Discovery 2022 (Rd 2) - Supply Chain Resilience in the Transition**



MITIGATE

What changes need to be made to the NTS?

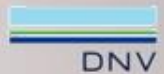
- ▼ [NIA] Inhibition of Hydrogen Embrittlement Effects in Pipeline Steels
- ▼ [OTHER] PIPELHYNE - Hydrogen Impact on New Pipeline Steels
- ▼ [SIF] *Discovery 2021 (Rd 1) - Hydrogen Barrier Coatings for Gas Network Assets*
- ▼ [SIF] *Alpha 2022 (Rd 1) - HyNTS Protection*



IMPROVE

How can we improve performance of NTS in a hydrogen future?

- ▼ [NIA] Multifunctional Graphene Coatings for Pipeline Protection (G-COAT)
- ▼ [SIF] *Discovery 2022 (Rd2) - Composite Pipelines for Hydrogen Transportation**



* Pending funding approval

Involvement and Implementation

- Beneficiaries would be all pipeline operators
 - Onshore transmission and distribution companies
 - Gas terminals
 - Offshore pipeline operators
- Target Market size – Globally, Large
- Target Implementation Date – As the gas network transitions to net zero

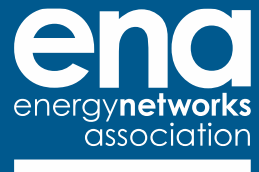
Energy Innovation Basecamp

28 February 2023
ICC Birmingham

#Basecamp28
Participant joining code
Slido.com

Can material technologies assist the hydrogen transition?





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