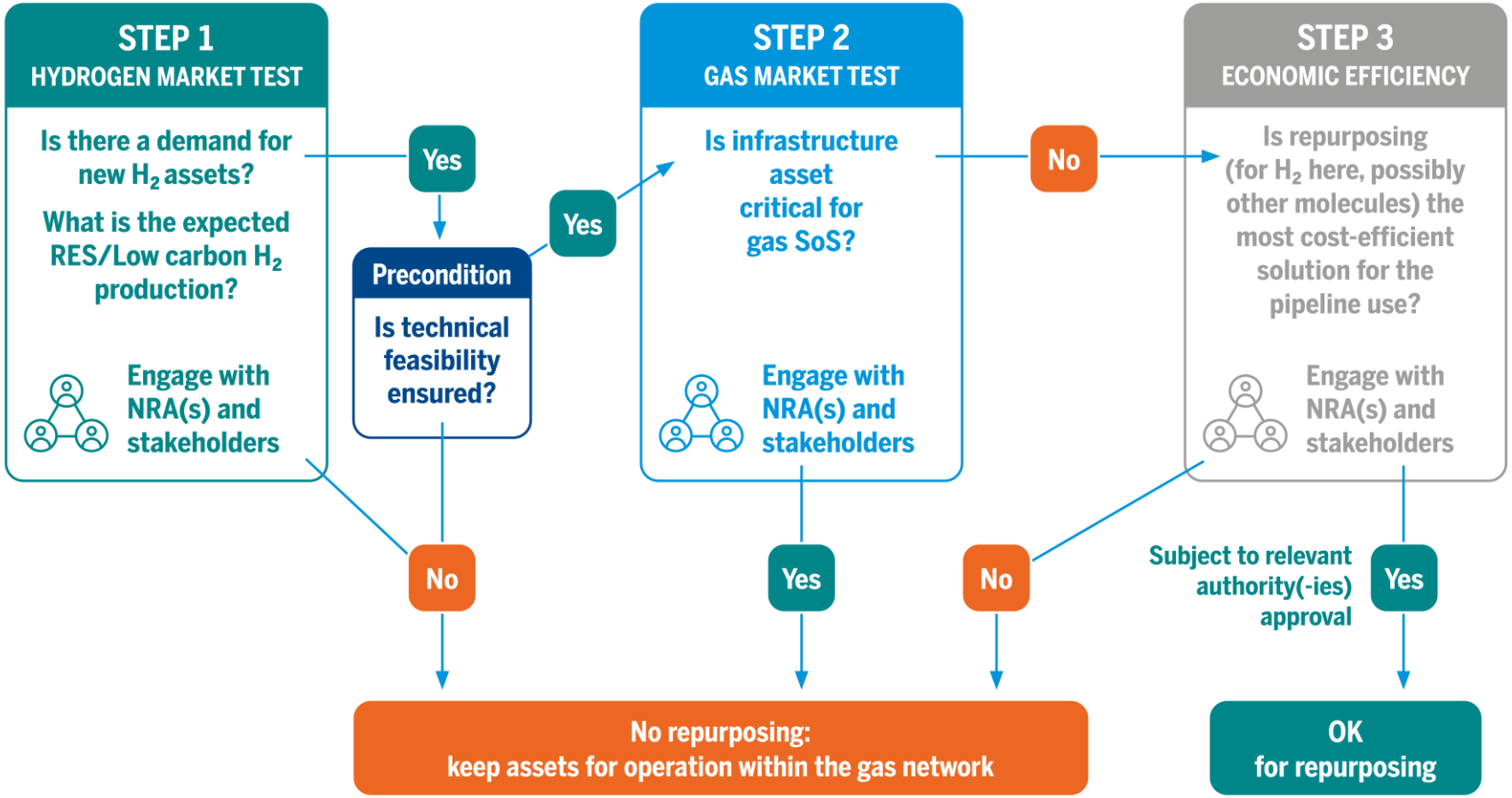
ENTSOG Gas Quality Workshop 2025

Repurposing report and first practical feedback from repurposing projects

Repurposing Report

by ENNOH and ENTSOG

Repurposing Report:
Assessment Process



Repurposing Report:
Challanges and Solutions

- **Embrittlement**: Steel pipelines may suffer from reduced ductility and faster defect propagation.
  - Enhanced monitoring
  - Pressure Control Systems
- **Leakage**: Smaller molecules increase emission risks.
  - Highest standards for equipment
  - Change of outdated instruments
- **Ignition**: Hydrogen ignites more easily than natural gas.
  - Updated safety protocols
  - Equipment replacements (turbine meter, gas chromatographs)

First Practical Feedback

400 km Pipeline by GASCADE

The Project:
Repurposing parts of OPAL and JAGAL

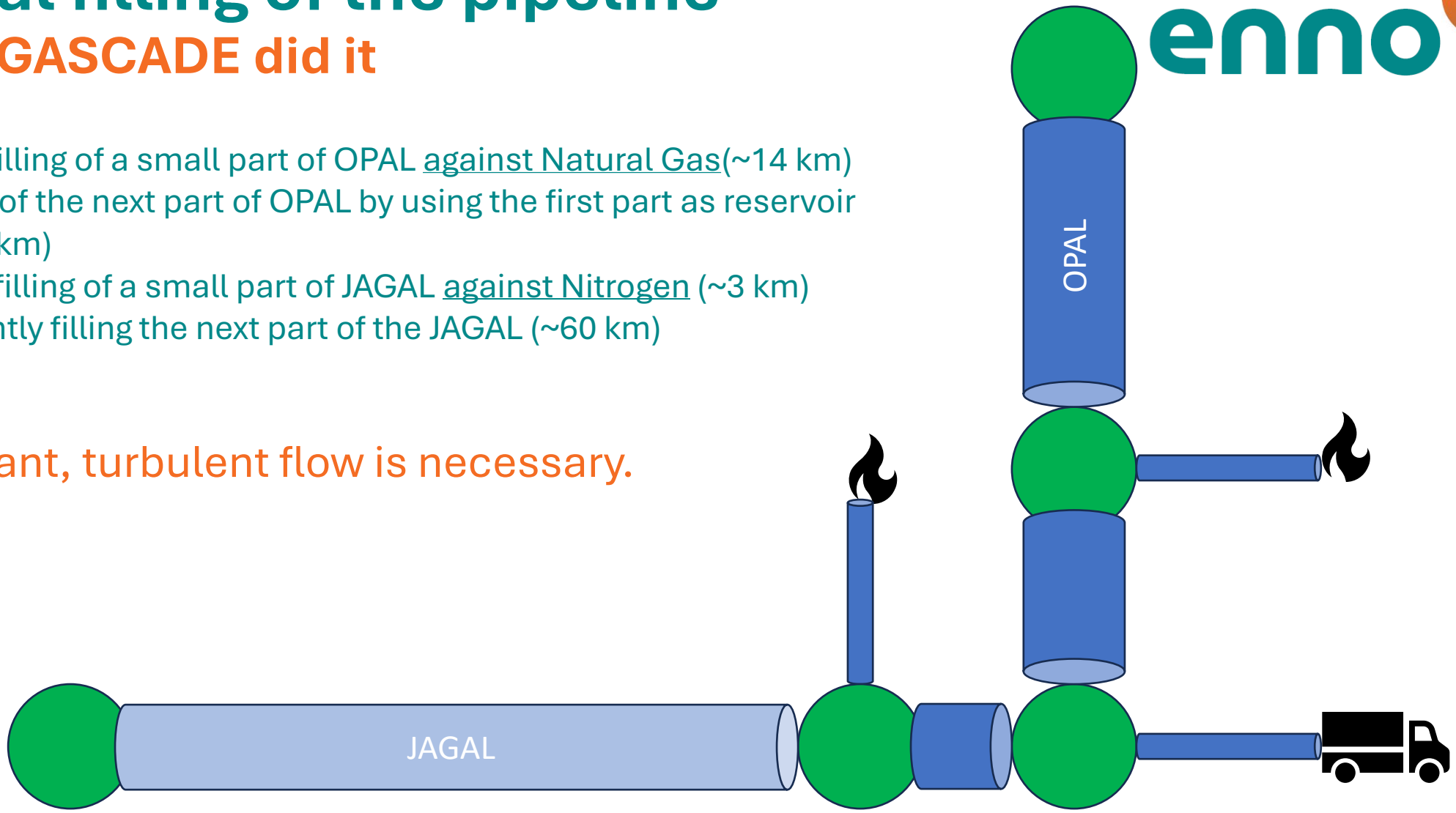
Project FLOW – making hydrogen happen, first step

- OPAL (dark blue)
  - 280 km DN 1400
  - MOP 100 bar
  - Built in 2011
- JAGAL (green)
  - 130 km DN 1200
  - MOP 100 bar
  - Built in 1996

Initial filling of the pipeline
How GASCADE did it

- Inital filling of a small part of OPAL against Natural Gas(~14 km)
- Filling of the next part of OPAL by using the first part as reservoir (~125 km)
- Initial filling of a small part of JAGAL against Nitrogen (~3 km)
- Currently filling the next part of the JAGAL (~60 km)

Important, turbulent flow is necessary.



Filling of the pipeline:
Impressions from the filling process

Lessons Learned

Repurposing parts of OPAL and JAGAL

- Involve authorities early and often
- Involve every department necessary early and often
- Have a culture of learning
- Prepare as much as possible
- Repurpose small parts of the pipeline at first (if no reservoir is available)
- 400 km can be done in one year
- Very high hydrogen qualities are attainable

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Nils Melcher