

Metrology for decarbonising the gas grid



Universidad de Valladolid



RUHR UNIVERSITÄT BOCHUM

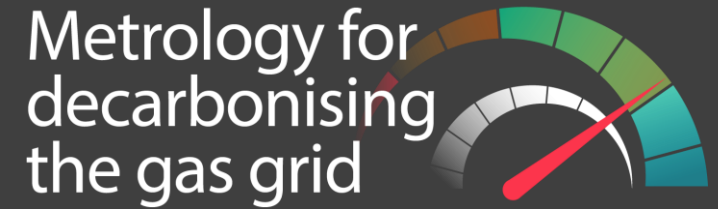


Starting on 1st June 2021...



The EMPIR initiative is co-funded by the European Union's Horizon 2020 research and innovation programme and the EMPIR Participating States

The Project



Aim: To provide the primary standards, test facilities, validated methods and good practice that gas industry need to perform key measurements required to decarbonise the gas grid

Work packages:

- WP1: Flow metering
- WP2: Gas composition
- WP3: Physical properties
- WP4: Leak monitoring

Timeline: June 2021 – May 2024

Co-ordinators (NPL):

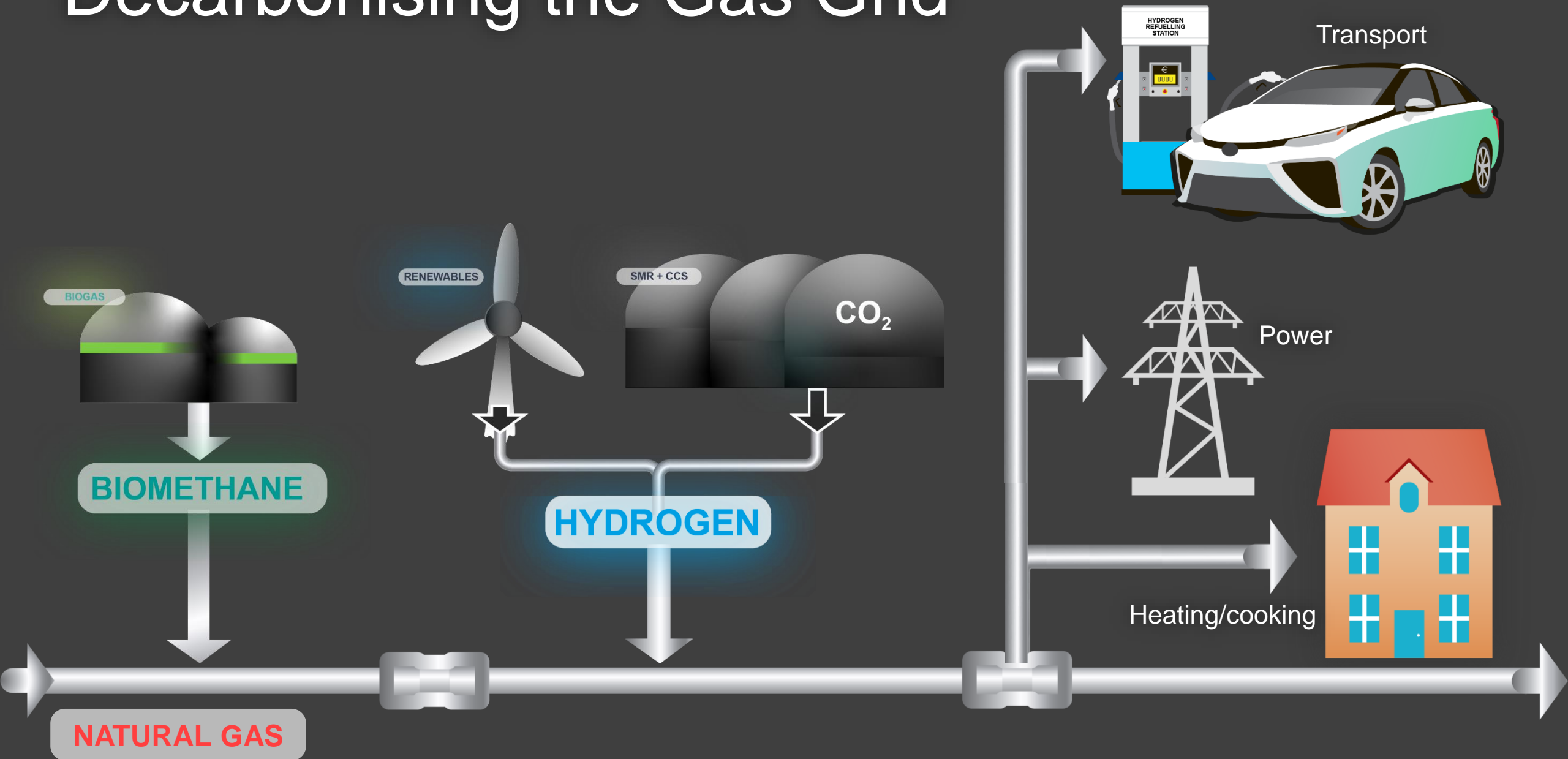


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(Technical Lead)



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Decarbonising the Gas Grid



Measurement needs

Metrology for
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the gas grid



	Flow metering	Gas composition	Physical properties	Leak monitoring
Biomethane	-	Proficiency testing schemes for EN 16723-1	-	-
Hydrogen enriched natural gas	Ability to measure flow 20% H ₂ in natural gas	Process GC modifications and new online methods to monitoring blending	Determining physical properties (e.g. calorific value) from gas composition	New portable monitors to distinguish between H ₂ and natural gas leaks
100% hydrogen grids	Ability to measure 100% H ₂ in new gas grids	Purity analysis to meet ISO 14687 Grade A	-	Validation of leak detectors for hydrogen at pipelines
CCUS	Ability to measure CO ₂ in CCS processes	Purity analysis of CO ₂ in CCS processes	Determining phase changes (affecting compressibility and flow metering)	Monitoring CO ₂ plumes above CCS underground storage sites

WP1: Flow metering



Task 1.1: Understanding operating conditions for decarbonised gas grids

Task 1.2: Traceable flow facilities for the decarbonised gas grid

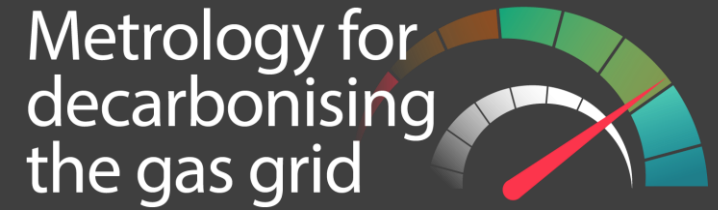
Task 1.3: Accuracy testing for hydrogen blending in natural gas

Task 1.4: Test Programme for carbon dioxide and CCS



Marc McDonald

WP2: Gas composition



Task 2.1: Primary Reference Materials for decarbonised gas grids

Task 2.2: Offline gas analysis methods

Task 2.3: Online gas analysers and analysis methods

Task 2.4: Comparisons of commercial laboratories and instruments

Task 2.5: Gas sampling for carbon capture and storage



Janneke van Wijk

WP3: Physical properties

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Task 3.1: Density, speed of sound and energy content of hydrogen and alkane binary mixtures

Task 3.2: Vapour-liquid equilibrium of hydrogen and alkane binary mixtures

Task 3.3: Accurate physical property models for new energy gases

Task 3.4: Internet of Things for physical property measurements



P. Alberto Giuliano Albo

WP4: Leak detection



Task 4.1: Hydrogen leak detection

Task 4.2: Carbon dioxide leak detection from CCS infrastructure

Task 4.3: Metrology of pipeline monitoring



Rod Robinson

WP5: Impact

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Task 5.1: Knowledge transfer

Task 5.2: Training

Task 5.3: Update and exploitation



Lennart de Waart

How you can get involved

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Stakeholder Advisory Board

- 10 - 15 external experts with relevant backgrounds
- Providing steer and feedback to ensure project remains relevant for European gas industry



Laboratories / instrument manufacturers

- Share your products/capabilities
- Join project funded testing campaigns and comparisons
- Collaboration opportunities to join research activities



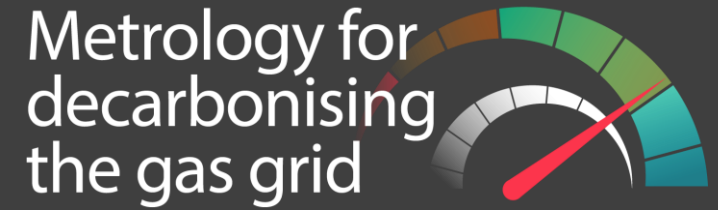
Gas industry

- New products, methods, models and standards
- Guidance, training and workshop on measurements
- Technical reports and papers



Lennart de Waart

Contact details



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