

# THYGA

## TESTING HYDROGEN ADMIXTURE FOR GAS APPLICATIONS



Project ID	874983
PRR 2024	Pillar 5 – Cross-cutting
Call topic	FCH-04-3-2019: Hydrogen admixtures in natural gas domestic and commercial end uses
Project total costs	EUR 2 468 826.25
Clean H <sub>2</sub> JU max. contribution	EUR 2 468 826.25
Project period	1.1.2020–31.3.2023
Coordinator	Engie, France
Beneficiaries	BDR Thermea Group BV, Commissariat à l'énergie atomique et aux énergies alternatives, Dansk Gasteknisk Center A/S, Deutscher Verein des Gas- und Wasserfaches – Technisch-wissenschaftlicher Verein EV, Electrolux Italia SpA, Gas.be, Gaswärme-Institut Essen EV, Groupe Européen de Recherches Gazières

<https://thyga-project.eu/>

### PROJECT TARGETS

Target source	Parameter	Achieved to date by the project	Target achieved?	SOA result achieved to date (by others)	Year for reported SOA result
Project's own objectives	Understanding of the actual, theoretical and experimental knowledge regarding the impact of H <sub>2</sub> NG blends on combustion	12 public deliverables		Several studies and test reports	2020
	Understanding of the actual, theoretical and experimental knowledge regarding the impact of H <sub>2</sub> NG blends on materials	Theoretical and practical reviews released		Several studies and test reports	2020
	Segmentation of the types of appliances	Segmentation validated with stakeholders (Advisory Panel Group)		Similar approaches on segmentation	2020
	Tests of appliances	100 % of tests done	✓	Similar evaluations for national projects (GRHYD, Hydelta, Hydelta)	2020, 2021, 2022, 2023
	Establishing how the existing certification will be modified to allow higher concentrations, including the related additional costs and the required changes to common gas burners	SOA reports (deliverables 4.1 and 4.2)		CEN/TCs' activities and other projects (Hydelta)	2020, 2021, 2022
AWP 2018	Recommendations for revision of European or ISO standards or drafting of new standards based on PNR results and a review of the existing testing methods	Public deliverable 4.3 published, which includes recommendations, based on test gases, if the current framework is to be kept and provides insights on the risks to be assessed with H <sub>2</sub> NG blends		CEN/TCs' activities and other projects (Hydelta)	2022, 2023

### PROJECT AND GENERAL OBJECTIVES

The THYGA project investigated the amount of hydrogen that can be injected without compromising the safety, emissions and efficiency of existing and new applications. It focused on the end-user perspective, specifically domestic and commercial gas appliances (space heating, hot water, cooking and catering), which account for > 40 % of the EU's gas consumption. The objectives were to close knowledge gaps on the impact blends of H<sub>2</sub> and natural gas (NG), support standardisation activities and identify potential mitigation opportunities.

### NON-QUANTITATIVE OBJECTIVES

- THYGA aimed to involve external partners in the project. Some laboratories and manufacturers expressed their wish to use the THYGA protocol to create their own tests and contribute to the analysis.
- The project aimed to have an international reach. THYGA's test protocol has been requested for use as a test reference by international partners (in Canada, Chile and the United States).

### PROGRESS AND MAIN ACHIEVEMENTS

- THYGA tested around 100 appliances, including as part of the preparation of reports for work packages 4 (standardisation) and 5 (mitiga-

tion).

- Eighteen public deliverables/newsletters were created and distributed, and seven public workshops organised.
- The project completed its test campaign objectives, with more than 100 appliances (burners) tested, by March 2023.
- THYGA gained support regarding standardisation from stakeholders: European Committee for Standardization technical committees (CEN/TCs), manufacturer associations, notified bodies and national/European technical associations.
- The project identified technical issues linked to H<sub>2</sub> injection into natural gas at different rates and proposed several mitigation methodologies to improve the rate of H<sub>2</sub> injection with which appliances can deal (in terms of safety, efficiency, power, etc.).
- Results were disclosed during the final workshop on 24 March 2023. All results are published on the THYGA website, the results have been disseminated to CEN/TCs and the THYGA experts will be available for further enquiries on the topic.

### FUTURE STEPS AND PLANS

The project has finished.