

Launch of the EU funded project THOTH2: new methodologies to test measurement devices in the gas transmission and distribution system for future transport of hydrogen.

Press release – for immediate release

Brussels, 30/05/23 - The THOTH2 consortium has been established with the aim of providing energy measurement value chain and instruments' ability to accurately measure the physical parameters of hydrogen and natural gas mixtures (H₂NG) with increasing hydrogen (H₂) percentages, up to 100%.

THOTH2 is funded by the European Union with almost 2 million euro over two and a half years.

THOTH2 vision will lead to an acceleration towards the H₂ economy, contributing to REPowerEU and NextGeneration EU objectives. The project impact potential includes the establishment of a R&D Hub center, which can include THOTH2 partners and Advisory Board members, to translate into value the results achieved by the project, aiming to the development/update of international standards, foster innovation in the field of H₂NG blending measuring devices, and supporting H₂ value chain development leveraging on the EU gas infrastructure.

To maximize hydrogen blending potential in natural gas (NG) networks, a systemic and multi-disciplinary approach to make NG infrastructure resilient to the challenges of tomorrow is needed, together with industrial and research players' competences. In this framework, including gas Transmission System Operators (TSOs), Distribution System Operators (DSOs), metrological and research institutes and academia, THOTH2 consortium has all competences and skills to reach the goals of:

- Develop and experimentally validate methodologies and protocols to evaluate the metrological performances of measuring devices at different H₂ blending rates (up to 100%);
- Provide recommendations to cover gaps in existing normative framework;
- Establish a long-term cooperation between the industrial and research communities.

The European Union is strongly committed to the implementation of its energy strategy to achieve the goal of a continent with net zero emissions by 2050. In this context, where the transition to green energy represents a crucial element in the European decarbonization plan, hydrogen can play a key role.

Partners of the project:



ENEA
Agenzia nazionale per le nuove tecnologie,
l'energia e lo sviluppo economico sostenibile



INRIM
ISTITUTO NAZIONALE DI RICERCA METROLOGICA

INRETE
DISTRIBUZIONE ENERGIA

METAS





CESAME

CESAME is a French Laboratory Associated with Gas Flow Measurement. It is associated with LNE (Designated Institute) for medium and high gas flows. The objective of CESAME is to hold, maintain and develop national standards within this targeted field of metrology. The traceability chain for compressed air calibration put into place by CESAME is made up of a primary test rig pVTt for nozzle calibration and two secondary rigs for meter calibration, on which sonic nozzles (CFVNs) are used as the transfer standard, whereas the hydrogen traceability for high pressure measurements is made up of a gravimetric standard. CESAME has a strong background and knowledge with CFVNs for 35 years as they are used as transfer standards on a daily basis for flow meter calibrations. CESAME is also involved in many hydrogen projects and has an important interest in developing standards and techniques to measure the accuracy of gas meters after exposure to renewable gases.



ENAGÁS

Enagás is Spain's TSO (Transmission System Operator) and Technical Manager of the Spanish gas system, with 50 years' experience in the development, operation and maintenance of energy infrastructures. It has more than 12,000 kilometres of gas pipelines, three strategic storage facilities, eight regasification plants and operates in seven countries: Spain, the United States, Mexico, Peru, Albania, Greece and Italy. In accordance with its commitment to the energy transition, Enagás has announced that it is bringing forward its goal of becoming carbon neutral to 2040. The company is committed to the development of renewable gases (such as biomethane or green hydrogen), sustainable mobility and energy efficiency, among other areas. The company is a world leader in its sector in the main sustainability indices, as the Dow Jones Sustainability Index World, is included in the CDP Climate Change A List 2021, and has obtained the highest ESG rating in its sector in the FTSE4Good sustainability index.



ENEA

ENEA is the Italian National Agency for New Technologies, Energy and Sustainable Economic Development, a public body aimed at research, technological innovation and the provision of advanced services in the sectors of energy, the environment and sustainable economic development. ENEA is involved in the Hydrogen Technology Collaboration Programme (TCP), in the Research Consulting Strategy (RCS) group and in the realization of a Hydrogen Valley in its research center at La Casaccia (Rome, Italy). ENEA is also involved in the analysis of the existing legislative and regulatory context to update the authorization processes with a view to replicability and safety.



GERG

The European Gas Research Group (GERG) is an association established to represent R&D interests and to coordinate corresponding efforts of its members on a European level. As such, it is ideally placed to ensure appropriate and targeted dissemination of project objectives and results. GERG has experience leading communication and dissemination work packages of European projects such as THyGA. GERG membership includes major European operators of transport grids, several operators of distribution grids, major natural gas suppliers, and companies using natural gas as energy carrier and as feedstock on a large scale. The large gas TSOs and DSOs are of key relevance as they negotiate technical solutions and business cases with all other stakeholder groups. GERG also has close links with the European Committee for Standardization (CEN) and Marcogaz as well as international standardisation organisations.



FBK

Fondazione Bruno Kessler (FBK) is a public research institution based in Trento (Italy), operating in a variety of scientific fields and disciplines. FBK's mission is to advance scientific excellence in basic and applied research and to positively impact on society. FBK promotes interdisciplinary and

international research through eleven research centres dedicated to technology and innovation and to humanities and social sciences. Two different centres of FBK will be involved in the project: the Centre for Sustainable Energy (SE), which promotes R&I on new energy solutions, for the production, distribution and storage of energy in order to minimize environmental impact and contribute to the deep decarbonization of our society, targeting technology transfer in collaboration with industrial and territorial partners, and the Centre for Sensor and Device (SD), the centre of reference for the development of novel concepts in sensors and devices for Big Science and for industrial and technical applications.



GRTGAZ

GRTgaz is Europe's second-largest gas carrier, with 32,618 km of pipes and 640 TWh of gas transported. The company has 3330 employees and generated nearly €2.1 billion in turnover in 2022. GRTgaz has a mission statement: "Together, we enable an energy future that is safe, affordable and climate neutral". GRTgaz is an innovative company undergoing a major transformation to adapt its network to new ecological and digital challenges. It is committed to a 100% carbon-neutral French gas mix by 2050. It supports the hydrogen and renewable gas sectors (biomethane and gas from solid and liquid waste). GRTgaz carries out public service missions to guarantee the safety of gas transmission for its 879 clients (shippers, distributors, industrial companies, biomethane plants and producers). With its subsidiaries Elengy, the European leader in LNG terminal services, and GRTgaz Deutschland, operator of the MEGAL transmission network in Germany, GRTgaz plays a key role on the European gas infrastructure scene. The company exports its expertise internationally, in particular services developed by its research centre, RICE. Find us at <https://www.grtgaz.com/>, or on Twitter, LinkedIn, Instagram and Facebook.



GAZ-SYSTEM

Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A. is a Polish NG Transmission Operator, a strategic company for Poland's economy and energy security. GAZ-SYSTEM manage the following infrastructure: over 11 000 km of transmission network, 864 gas stations, and 14 compressor stations. The company implements infrastructure investments to ensure that the gas market in Poland and in neighboring countries benefit from secure, diversified, and competitive supplies of natural gas. Specifically, to measure, GAZ-SYSTEM commissioned in 2017 a high-pressure facility for gas pressure calibration (The Gas Meter Calibration Laboratory in Hołowczyce). Nevertheless, the company has also a strong interest in supporting research and innovations, which will allow new ways of gas assets' exploitation.



INIG-PIB

The Oil and Gas Institute - National Research Institute (INIG-PIB) - is a Polish research institute that closely cooperates with the gas industry, including gas network operators, metering device producers, and renewable fuel producers. INIG-PIB has been conducting R&D work related to the injection of hydrogen into gas networks and the safety of using H₂NG mixtures for several years. The INIG-PIB test stands, whether owned or planned to be built, enable the preparation and testing of the stability of pressure mixtures of H₂NG with the addition of a selected gas odorant. A test stand for testing process gas chromatographs used to determine H₂NG mixture composition will also be realized. INIG-PIB has created its own gas mixing plant that allows for the creation of gas mixtures with up to 7 components. Moreover, the Institute has several test benches for the calibration and testing of gas meters at low pressure, based on volumetric standards (drum and rotary gas meters) and turbine standards with traceability for air. INIG-PIB also conducts activities aimed at developing conformity assessment programs for products used in the hydrogen economy.



INRIM

INRIM is a public research centre and is Italy's national metrology institute (NMI). INRIM realizes, maintains, and develops the national reference standards of the measurement units of the International System (SI). INRIM's research spans many other areas such as materials science, nanoscience, quantum optics, studies on the fundamental constants of physics. Basic and applied research and the development of new measurement technologies and instruments enhance the metrology activity.



INRETE

INRETE Distribuzione Energia is part of Hera Group, which is one of Italy's largest multi-utility companies, with more than 9000 employees and a rapidly growing business plan in gas, energy and water distribution and in waste treatment. INRETE is a gas and electric Distribution System Operator. INRETE operates mainly in the Emilia-Romagna region (in the north of Italy). INRETE manages gas distribution networks in 138 municipalities and more of 1,1 million of gas customers and more than 14.000 km of pipelines, more than 1,2 million of gas meters and more than 30.000 gas volume conversion devices.



METAS

METAS is the Swiss national metrology institute and one of its laboratories is responsible for Gas Flow Measurement. The objective of METAS is to hold, maintain and develop national standards within this targeted field of metrology. METAS offers a wide spectrum of measurement services encompassing the most diverse areas of metrology. The laboratory develops, maintains and improves measurement facilities with the highest degree of accuracy, internationally recognized to verify, calibrate and perform type approvals for measurement instruments in the fields of liquid and gas flow, measurements of volumes and anemometry. The laboratory's quality system is based on the ISO/IEC 17025 standard and its certificates are internationally accepted and recognized.



Snam

Snam is Europe's leading natural gas transport operator with a network of about 38,000 km in Italy and abroad. The company also operates in storage, for which it holds 17.1% of capacity at European level, and in regasification, with 6.5 billion cubic metres of gas, which will rise to 16.6 billion cubic metres by 2024 with the commissioning of the Piombino and Ravenna regasifiers. It is among the top Italian listed companies by market capitalisation.

With its 80 years of experience in the development and management of infrastructure, Snam guarantees security of supply and promotes energy transition with investments in green gas (biomethane and hydrogen), energy efficiency and CCS (Carbon Capture and Storage) technology. It also creates new green areas through a benefit company focused on urban forestation projects. Snam is one of the first companies in the energy sector to have committed to achieving zero net greenhouse gas emissions (Scope 1 and Scope 2 emissions) by 2040. Starting in 2021, the company set itself a Scope 3 reduction target on indirect emissions by 2030 compared to its subsidiaries and suppliers. Its corporate business model is based on sustainable growth, transparency, the development of talent and diversity and the protection and social development of local communities.



UNIBO

Unibo is an Italian university. The Department of Industrial Engineering (Din) will be involved in the project. Unibo has scientific expertise in instrumentation and components for industrial plants and natural gas sector. Unibo has also experience in the design of test benches, in natural gas and hydrogen measurement devices and it has been involved as partner and as external contractor in several national and European projects about renewable energy and hydrogen.

About the Clean Hydrogen Partnership. The Clean Hydrogen Partnership is supporting research and innovation (R&I) activities in hydrogen technologies in Europe. It aims to accelerate the development of advanced clean hydrogen applications ready for market, across end-use sectors such as energy, transport, building and industry, while strengthening the competitiveness of the clean hydrogen value chain. The members of the partnership are the European Commission, fuel cell and hydrogen industries represented by Hydrogen Europe and the research community represented by Hydrogen Europe Research.

The THOTH2 project has received funding from the Clean Hydrogen Partnership under grant agreement No. 101101540.

Supported by:



THOTH2 Press Release ends.

For further information about THOTH2 and interviews, please contact:

Matteo Robino, by email matteo.robino@snam.it or phone +39 342 1411675.