

## **“Guidelines for preparing natural gas networks for H<sub>2</sub> injection” (HYREADY)**

**Brief summary, version 06-12-2016**

In the framework of reducing CO<sub>2</sub> emissions and increasing the deployment of sustainable energy, gas system operators are motivated and under increasing pressure to accommodate renewable or sustainable gases in their systems. These include hydrogen from renewable power sources. The project proposed aims to support gas TSO's and DSO's in getting prepared for the accommodation of hydrogen in their natural gas system. It prepares a coherent set of engineering guidelines which are both concrete and generic and which include a methodological description of the steps and aspects to be considered to prepare specific existing natural gas transmission and distribution networks and their end user facilities for the accommodation of hydrogen added to natural gas with acceptable consequences.

The HYREADY Guidelines will support a uniform approach of preparing for hydrogen accommodation among TSO's and DSO's and will be prepared by the impartial organisations DNV GL and DBI, in strong connection with the project partners. The HYREADY Guidelines are intended to be converted into DNV GL Recommended Practices<sup>1</sup> (RP's) later on.

The HYREADY Guidelines will focus on the consequences of a certain hydrogen percentage in the grid selected, and on feasible counter measures to deal with these consequences in case the consequences are not acceptable for the stakeholders. The consequences considered in HYREADY concern the impact at:

- Component level: To which extent are performance and characteristics like leakage, permeation, integrity, accuracy and lifetime affected? To which extent are maintenance and repair procedures, maintenance tools, safety equipment, etc. affected?
- System level: To which extent are e.g. system issues like central caloric value determination and network capacity affected?
- Location level: To which extent are the installation requirements including safety zoning affected?

The HYREADY Guidelines will be prepared in Work Packages (WPs) dedicated, transmission networks, distribution grids, end user facilities and hydrogen injection facilities. As a part of the HYREADY Guidelines concerning end user facilities, a methodology will be described to check whether the properties of the mixtures of natural gas and the considered percentage of hydrogen that will be delivered to end

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<sup>1</sup> Recommended Practices lay down sound engineering practice and guidance and are formal DNV GL documents ([www.dnvgl.com/rules-standards/](http://www.dnvgl.com/rules-standards/)). They are widely used in industry.

users, match with the abilities of the end user appliances and the contractual gas specifications.

The Guidelines are confidential documents. The HYREADY Guidelines will be based on existing knowledge: no further R&D work is envisaged to be carried out in the framework of this project.

HYREADY is supported by both GERG and HIPS-NET.

DNV GL and DBI will be responsible for gathering, selecting and analyse existing literature, obtaining additional data by interviewing technology providers and parties experienced in handling hydrogen, mobilising relevant expertise within DNV GL, DBI and the project partners and for processing all information in draft recommendations. The Guidelines will be prepared in an iterative process of preparing modified drafts by DNV GL & DBI and discussions with project partners. At a later stage these HYREADY Guidelines are intended to be converted into a Recommended Practice.

A phased approach will be followed for the execution of HYREADY. The kick off meeting of the execution of the WPs on transmission and distribution grids is going to take place on 24<sup>th</sup> January 2017. The other WPs will be executed as soon as enough partners have subscribed. If all WPs are executed in parallel, the execution of HYREADY would be completed after 2 years.