



REGIONAL  
GAS COMPANY

# Hydrogen and gas distribution system in Ukraine

September, 2020



# Gas distribution networks: RGC and the major European DSOs

DSO	Country	Country Profile		
		Length of network	Number of customers	Distribution volume
 REGIONAL GAS COMPANY RGC	 Ukraine	<b>250</b> thousand km	<b>8,1</b> million	<b>14,6</b> billion m <sup>3</sup>
 E.On	 Germany	<b>61</b> thousand km	<b>6</b> million	<b>10,9</b> billion m <sup>3</sup>
 Naturgy	 Spain	<b>49</b> thousand km	<b>5,3</b> million	<b>16,1</b> billion m <sup>3</sup>
 ITALGAS Italgas	 Italy	<b>71,8</b> thousand km	<b>7,7</b> million	<b>8,9</b> billion m <sup>3</sup>
<b>GasNet</b> GasNet	 Czech republic	<b>46,5</b> thousand km	<b>2,3</b> million	<b>6,7</b> billion m <sup>3</sup>







# RGC hydrogen project

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## Studying the impact of hydrogen on gas distribution networks



- **Duration**

from 8 January 2020 through 30 June 2022

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- **Stages**

Preparation

08.01.2020 – 30.06.2020

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Static testing

06.08.2020 – 30.06.2021

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Dynamic testing

01.07.2021 – 30.06.2022

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# RGC hydrogen project

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- **Participants**

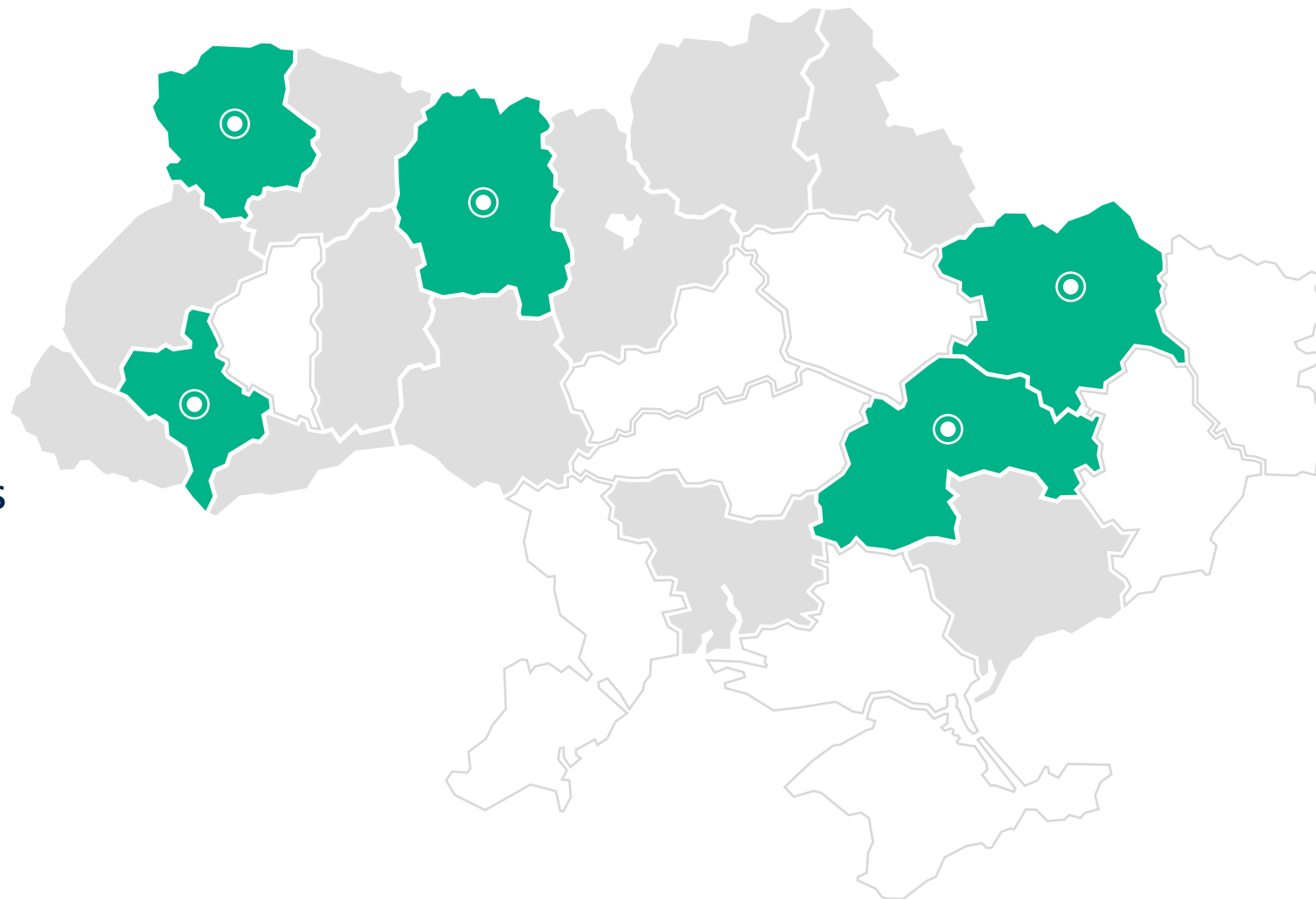
DSO  
Ivanofrankivskgas

DSO  
Volyngas

DSO  
Dnipropetrovskgas

DSO  
Zhitomirgas

DSO  
Kharkivgas

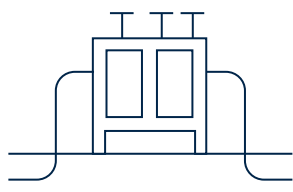


# Road map of RGC hydrogen project

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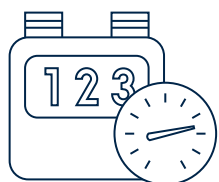
## Study subjects

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### Distribution

- tightness of pipeline network for mixtures with hydrogen concentration from 100% to 2%
  - stability of gas-hydrogen mixtures at low and very limited consumption volumes
  - influence of gas-hydrogen mixtures on gas distribution stations and cabinets, other gas equipment
  - impact of gas hydrogen mixtures on sealants of various materials, the whole network and on corrosion
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### Metrology

- influence of gas-hydrogen mixtures on the accuracy of meters of all types and purposes
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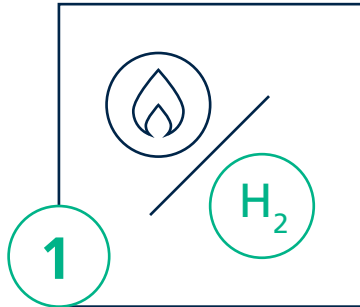


### Gas devices

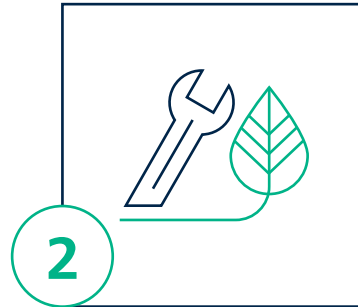
- influence of gas-hydrogen mixtures on the operation of gas devices, including household gas devices, changes in their energy efficiency
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# Objectives of RGC hydrogen project

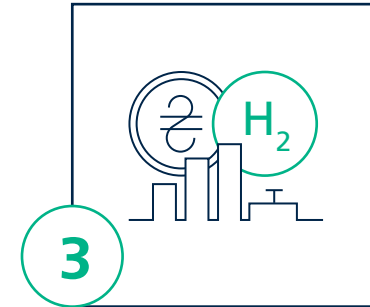
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Study the effect of hydrogen on gas networks for mixtures with natural gas in the proportions of:  
100%, 50%, 20%,  
10%, 5%, 2%



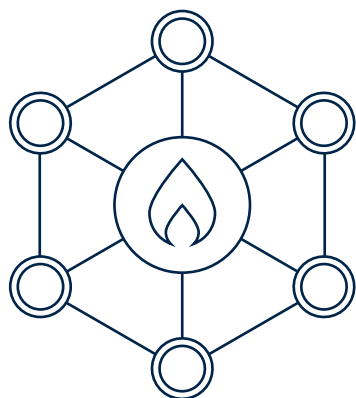
Identify the required technological changes to ensure safe distribution of gas-hydrogen mixtures



Determine the optimal strategy and required investments to redesign gas networks for the distribution of hydrogen mixtures

# Research partners of RGC hydrogen project

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Gas Institute, The National Academy of Sciences of Ukraine

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E.O. Paton Institute of electric welding, The National

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Academy of Sciences of Ukraine Coal Energy Technology

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Institute, The National Academy of Sciences of Ukraine

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Ivano-Frankivsk National Technical University of Oil and Gas

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Karpenko Physico-Mechanical Institute, The National Academy of Sciences of Ukraine

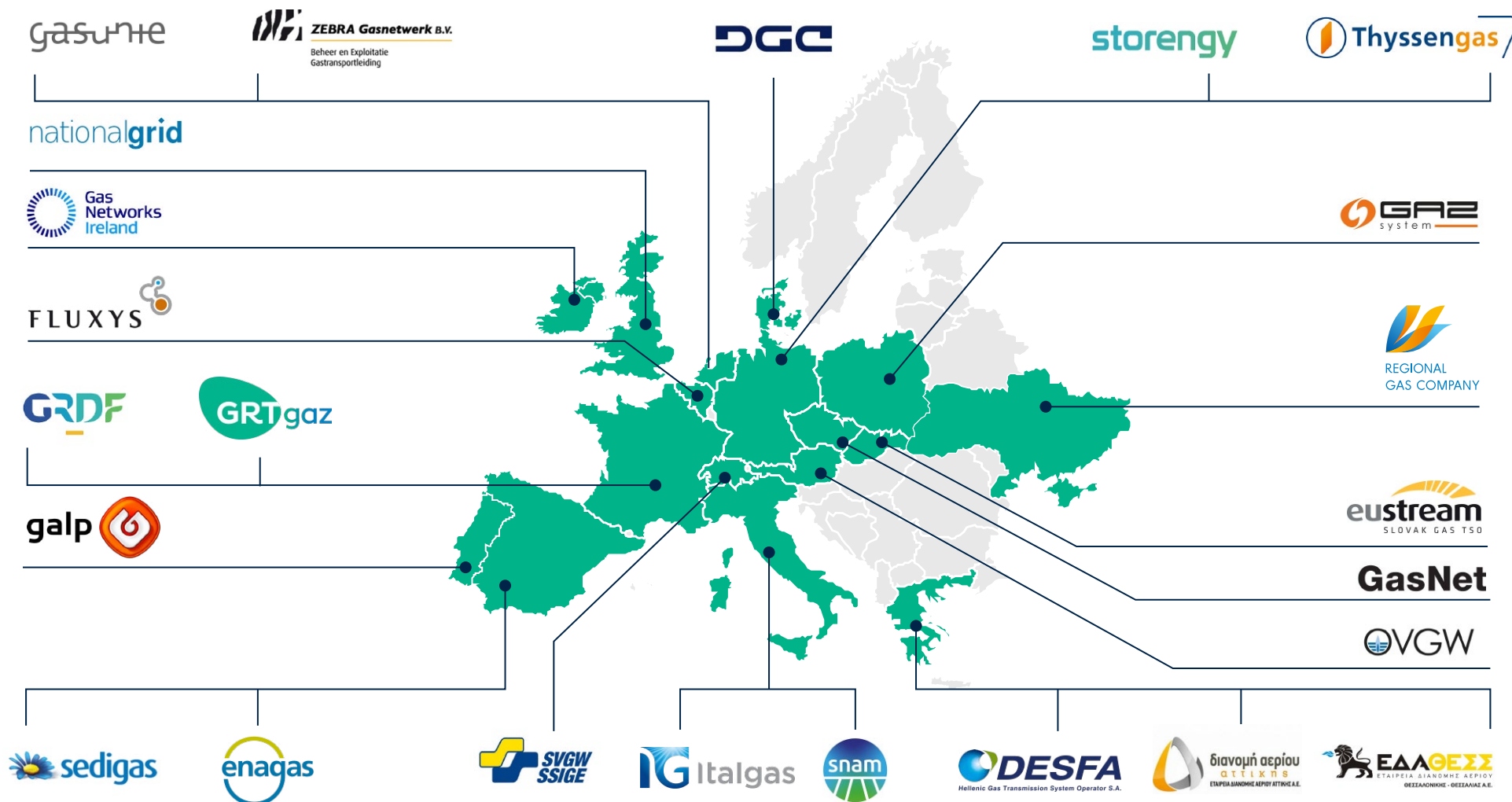
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Ivano-Frankivsk Research and Production Center for Standardization, Metrology and Certification



# Participants of European hydrogen project within the framework of Marcogaz

27 companies from 14 EU countries, Great Britain and Switzerland



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**THANK YOU!**

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