



DEVELOPMENTS IN EU LEGISLATION IN THE FIELD OF HYDROGEN

10th HIPS-NET Workshop



15. Juni 2023 Brussels Eva Hennig, Head of Brussels Office



THÜGA IS THE LARGEST MUNICIPAL ALLIANCE OF LOCAL ENERGY & WATER UTILITIES IN GERMANY

- Around 100 municipal companies ensure a reliable, affordable and environmentally friendly energy and water supply
- Thüga partner companies are present **nationwide**: from Sylt to Freiburg, from Homburg to Görlitz
- Investment 1,6 Bio. €/a, 122 TWh/a in gas and 59 TWh/a in electricity and 10 TWh/a in district heating
- Big and small: from 18 GWh to 14 TWh annual electricity sales, from 7 Mio. € to €6,000 Mio. € in annual sales, from 3 to more than 3,000 employees
- Diverse infrastructure: Thüga Group operates more than 90.000 km of gas distribution, 170.000 km electricity network and 30.000 km of water pipes, 100.000 district heating customers
- Hydrogen is on the agenda for quite long. First electrolysers in 2013 blending hydrogen into the city grid of Frankfurt.



Status Gas-Hydrogen-Package

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ONLY DETAILED BOTTOM-UP PLANNING DELIVERS THE RIGHT NUMBERS TO BUILD INFRASTRUCTURE IN CITIES®IONS& COUNTRIES

Niedrige

Temperatur

Proposal of the Parliament for the Gasdirective very important. Only with a joint planning that takes into account the local specificities a sound and stable plan can be delivered, on which the TSO's in gas, hydrogen and electricity can build their own plans.

Stadt

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Land

Dimension I

Which energy sources are available?

- Renewable electricty, waste heat, H2, Biomethane, low carbon gases, geothermal
- Local natural storages



Dimension III

Which infrastructures exist?

- District heating grid
- Gas grid, hydrogen grid
- Electricity grid

Source: Thüga adaption of a picture from VKU



A barrier for possible decommissioning of gas infrastructure

The conversion of industrial gas consumers to electricity, where technically possible, would pose considerable challenges for the electricity grids

DSOs deliver 50% of gas in energy consumed by industrial users - Industry consumes 31% of all gas consumed in the EU (final energy consumption)

	Share of gas in industry	DSO	TSO
Netherlands	60%	25%	75%
Czech Rep.	58%	90%	10%
Denmark	53%	100%	0%
Germany	50%	62%	38%
Spain	47%	99%	1%
Austria	40%	100%	0%
France	37%	46%	54%
Belgium	37%	35%	65%
Italy	33%	36%	93%
Switzerland	26%	85%	15%

Source: member data and Frontier 2019

Capacity bottlenecks and congestion management are already a reality today – accelerated electrification of end-uses would aggravate these issues



Source: Netbeheernederland.nl

THE READY4H₂ ALLIANCE IS COMMITTED TO SUPPORT NET ZERO FOR EUROPE

97 European gas distribution companies from 22 countries joint forces , in all regions, sizes and ownership forms



DSOs form the bridge between TSOs and end customers.

In many countries the absolute majority of the industrial, commercial and CHP end users are connected to the DSO

Gas DSO enable the connection of onshore renewable and lowcarbon gas **production** sites to bring their product to the market

Blending hydrogen is a first step and offers market and the system flexibility

Investigation into the grid ability to distribute 100 % of hydrogen is far advanced. Appr. **1,1 Mio. km** of pipes have already been cleared.

A roadmap for gas distribution networks to help achieve REPowerEU ambitions and net zero

Societal drive to decarbonise: European and national net zero targets

Now

We have various starting points:

- Over 2 500 DSOs in Europe supplying a variety of customer groups
- Different gas demand profiles
 in different countries
- Varying future biomethane availability in different countries

But we share common values:

- Trustworthy and reliable supply, with very few interruptions
- Flexible hubs connecting distributed supply and demand
- Providing seasonal scale to deliver winter heating
- Innovation and digitisation to connect biomethane and prepare for hydrogen





THE HEATED DEBATE ON GAS/H2 HEATING IS FUELLED BY A LOT OF FAKE **NEWS AND NARROW-MINDED FUTURE PROJECTIONS**

Table 1. Proposed Ecodesign minimum efficiency limits for space & water heating of (combi) heaters (etas in % Gross Calorific Value GCV) at various Conversion Coefficients

Heater technology	minimum space heating efficiency etas				minimum water heating efficiency per load profile & technology						
MT =Medium Temperature LT= Low Temperature		proposed	1st tier	2 nd tier 1.9.2029 proposed now at CC=1.9	from 1.9.2025						
	etas now (26.9.2017) at CC=2.5	at CF 27.9.2021 at CC=2.1	1.9.2025 proposed now at CC=1.9		s	м	L	XL	XXL	3XL	4XL
B1 Fuel boiler ≤10 kW & combi ≤30 kW	75	77	76	115	61	66	72	77	83	80	80
Fuel boiler \leq 70 kW	86	88 (etas)	87	phased out	50	65	70	80	88	88	88
Fuel boiler > 70 kW \leq 1 MW (P_1/P_4)	86/94		87/95	alone							
Electric (combi) boiler	36	43	48	product	42	48	49	49	50	8	
Electric heat pump, MT	110	130	145	145	66	88	99	99	127	130	130
Electric heat pump, LT	125	155	170	170							
Cogeneration space heaters <50 kWel	100	100	115	115	50	62	75	86	111	105	105
Hybrid heat pump / Solar hybrid	1.00	110	125	125	50	65	70	80	88	88	88
Thermally Driven (TD) heat pump, MT	110	115	120	120	56	67	79	90	97	100	100
Thermally Driven (TD) heat pump, LT			125	125							
Limits now (at $CC=2.5) \rightarrow$					-32	36	37	38	60	64	64





Debrief of the technical meeting on the standalone boiler ban





We are still at the beginning, every week new inventions are announced



The Coollest way to heat

The Coell SuperHybrid combines the energy gain of a host pump with the reliability of a certral hosting appliance, without extra electricity consumption. This creates an efficient hosting solution that can be easily integrated into almost all homes. The SuperHybrid runs on natural gas, LNG, bloges and hydrogen.

Product description

Basic appliance with internal outdoor air exchanger
 10 KW heating power
 Device in of comestic houter and peak power
 Dimensions: 50 × 60 × 120 cm (depth x width x height)
 Required air ducts for connection to outside: 50 × 40 cm
 (depth x width)

Advantages

Silent, compact on comfortable
 Hoplocoment within a day
 Annual awings of at least 30 %
 Suitable for standard industors (high temperature)
 Aba versite at two outside temperatures well below zero
 Natural refrigerant without CWP (Clobal Warming Potential)
 The same ease of usend comfort as you are used to from
 your central hosting below

Options

 The SuperHybrid heats buffer tank for efficient domestic ho water preparation Combination with solar theirman buffer tank
 Heat recovery from ventilation air for improved efficiency Water/water heatpump variants for use with external heat source liand based source VP(1)

How Hysata's Capillary-Fed Electrolysis (CFE) cell works



Quelle: <u>COOLL, Bosch, H2Pro, NEL</u>, <u>Hysata, Solhyd, RWE</u>

Solhyd makes green hydrogen accessible to everyone.





E-TAC is a revolutionary method for producing green hydrogen by splitting water that is over 95% efficient, safe and cost-competitive with fossil-fuel hydrogen.



2 - Sunlight

5 - Oxygen







DON'T PICK THE WINNER TODAY. DO PROJECTS TO LEARN. EXPAND RESEARCH. MOVE FROM DISCUSSIONS TO IMPLEMENTATION.

WE NEED A CONSTRUCTIVE AND FUTURE PROOF LEGISLATION IN EUROPE AND THE MEMBER STATES THAT ALLOWS FLEXIBILITY AND ACCELERATES THE PROCESS.

