Wir sind das Netz der
westenergie

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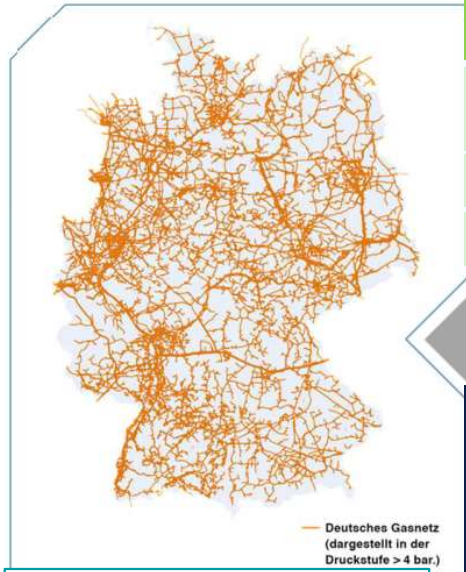
Hydrogen at Westnetz
Project „H2HoWi“

Žilina, Slowakei, 15.06.2023

Westnetz GmbH · Carsten Stabenau· 15.06.2023

Gas distribution networks: the foundation of the energy transition

Gas distribution networks - the backbone of industry, the domestic heating market and, increasingly, of electricity supply



Length:

Transport grid: 40 000 km

Distribution grid: 470 000 km

	Transport grid	Distribution grid
Industrial and commercial end consumers	497	1.772.134
Gas power plants > 10MW	48	165
Feed-out	183,3 TWh	752,4 TWh (of which 485 TWh in industry and electricity)

Quelle: Monitoringbericht der BNetzA (2018)

- Supply 50% of German households with heat
- High degree of meshing, available nationwide
- Development and expansion in the last 3 decades
- Modern technologies and high-quality materials
- Most consumers are connected to the distribution grids (up to 25 bar)

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Conversion of Germany's first public natural gas supply pipeline to hydrogen

Motivation

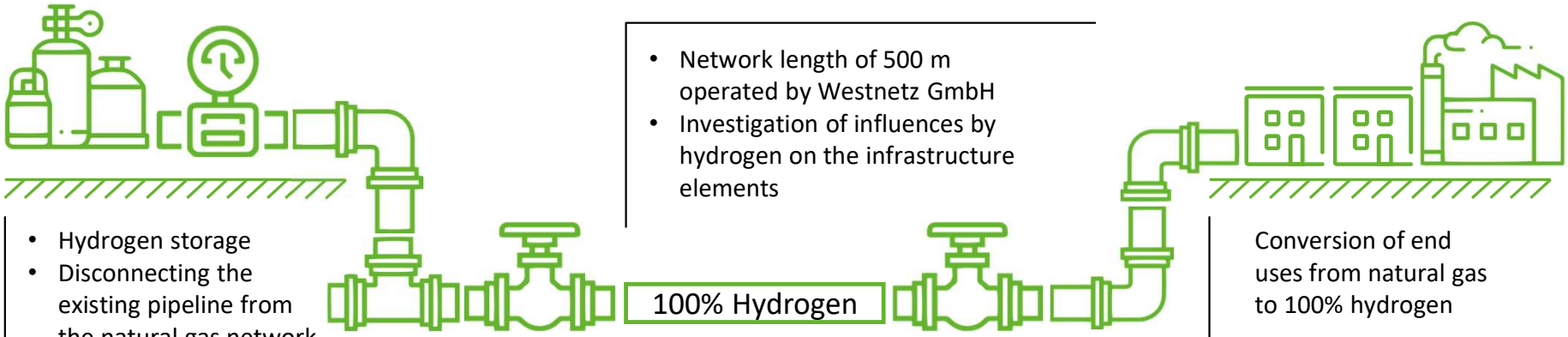
Demonstration of the suitability of the MD natural gas infrastructure for the transport of 100% hydrogen in the future.

Goal

Conversion of a natural gas pipeline incl. all network components for the use of 100% hydrogen

Challenges

Technical, operational, licensing and regulatory challenges



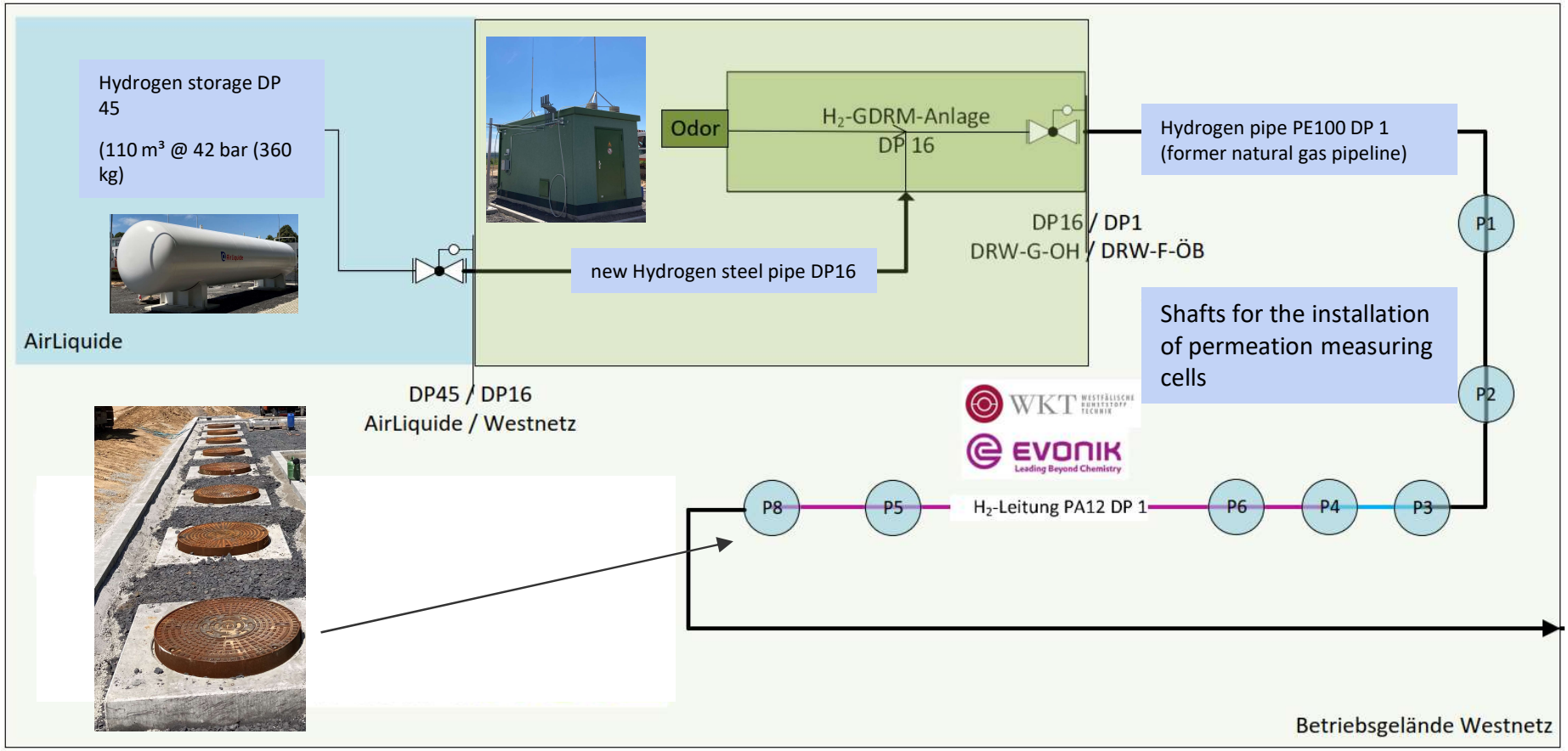
Conversion of a natural gas pipeline to hydrogen

Facts:

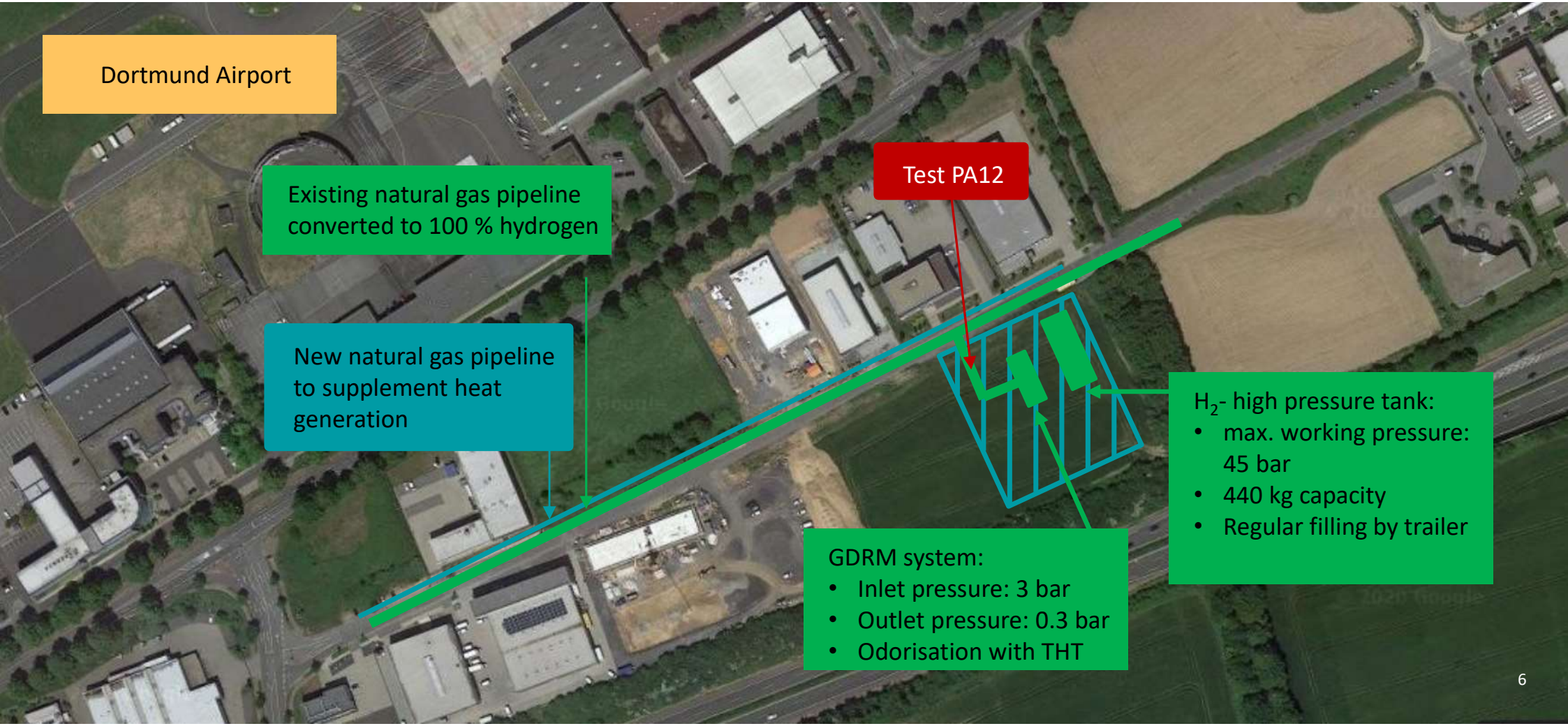
- Location: in the immediate vicinity of Dortmund Airport
- Length: 500 m, MOP 1, DN 150
- Additional new natural gas pipeline for securing supply and supplementing heating capacity
- High-pressure vessel: DP 45, 440 kg capacity
- Weekly filling of approx. 200 kg planned
- 4 commercial customers to be converted (heat supply)

Figure: Sketch of the existing and newly built pipeline at the location in Holzwickede

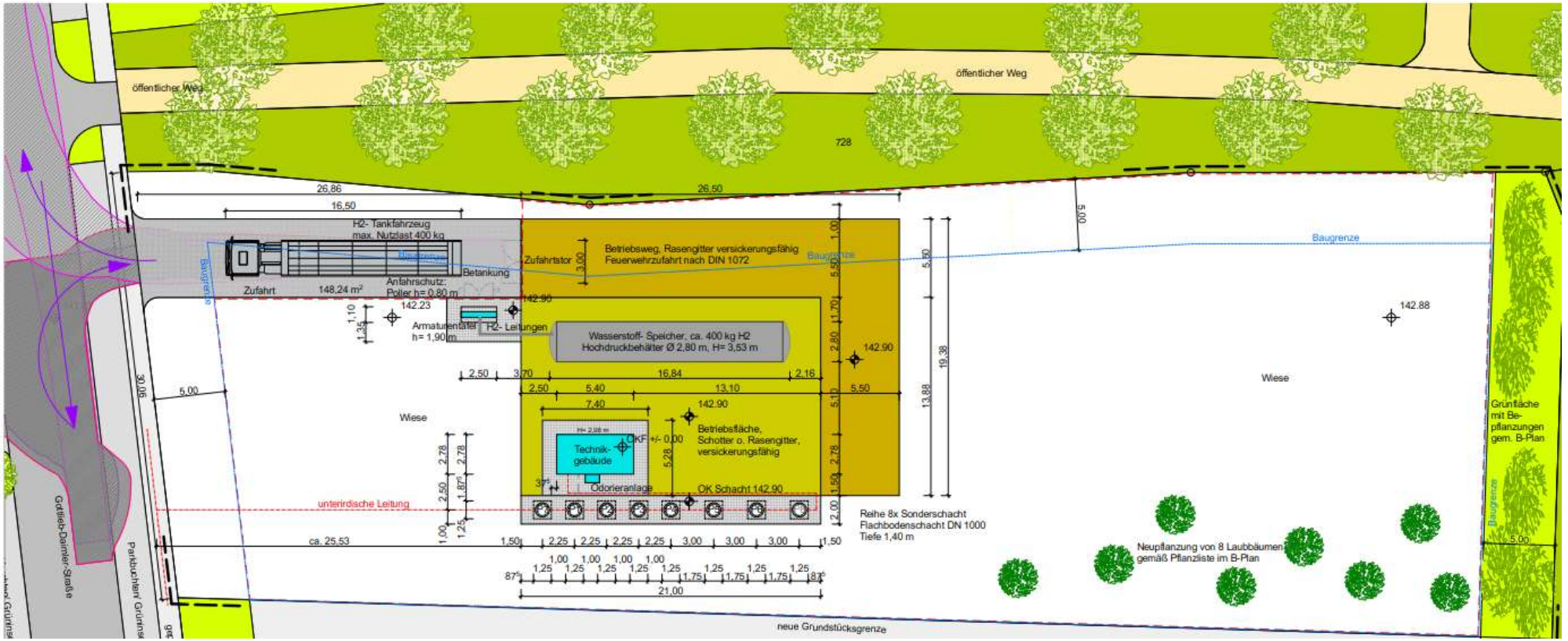
Scheme of the H_2-infrastructur



Layout plan


Dortmund Airport
Existing natural gas pipeline converted to 100 % hydrogen
New natural gas pipeline to supplement heat generation
Test PA12
H_2- high pressure tank:
• max. working pressure: 45 bar
• 440 kg capacity
• Regular filling by trailer
GDRM system:
• Inlet pressure: 3 bar
• Outlet pressure: 0.3 bar
• Odorisation with THT

Layout plan on the plant location



H_2HoWi – Impressions

Hydrogen that reaches our customers

- Installation of a Remeha boiler for 100% hydrogen

- Gas house connection and integration of the H2-Therme into the existing natural gas system at our hydrogen customers sites
- Implementation of technical and organisational security measures

Important findings for the development and operation of the H_2 infrastructure in Germany

1. Our operational experience since October 2022 is that all elements of the H_2 infrastructure have so far been without significant technical defects or operational anomalies.

2. The first results of the permeation measurements are in line with expectations: preliminary proof of the operational and technical H_2 -suitability of the former natural gas infrastructure elements

3. The operational conversion to H_2 has shown us: Compared to natural gas, other resources have to be used in some cases (measuring devices, tools).

4. For network operators and installers: early technical and organisational "integration of hydrogen" (in training courses and operating instructions) is required.

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Thank you for your attention !

any questions?

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