The development of PtX in an integrated energy system

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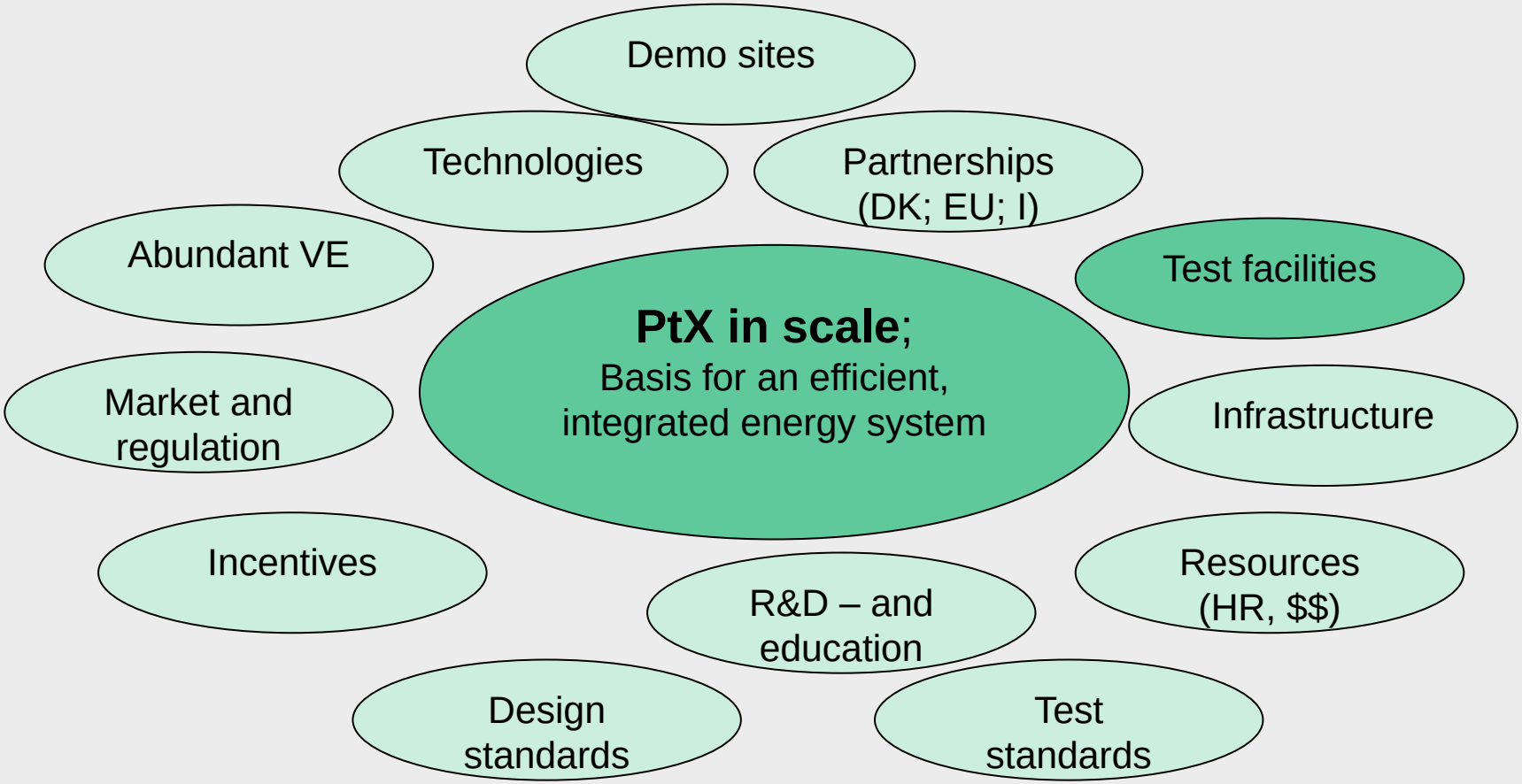
PtX Leadership – what does it take?



Test Centre for Hydrogen Technology

- The new Test Centre is operated jointly by the Danish Gas Technology Centre and Force Technology and is supported by the EUDP/GreenLabDK programme.
- We aim to help and support the industry and other players in the demanding transition to hydrogen/PtX technologies.
- Stationary and mobile facilities.
- Tests and analyses for
  - Production,
  - transport and
  - consumption of hydrogen

Hydrogen Technology Test Center services

- Hydrogen purity and quality testing
- Performance testing (different gas mixtures)
- Efficiency and safety
- Material and component testing
- Emissions from consuming equipment and exhaust gases from energy consuming and chemical processes
- Metrological services
- Modeling and calculation
- On-site inspection services - onshore and offshore

Hydrogen purity according to ISO 14687 specifications grade D – full package ultimo 2021

ISO 14687 Grade	D PEM, road vehicles	E, Cat. 3 PEM, stationary	B industrial fuel	A combustion
Total non-hydrogen gases	300 ppm	0,1 %	0,1 %	2%
Nitrogen + argon + helium	300 ppm	0,1 %	-	-
Water + oxygen + nitrogen + argon	-	-	-	1,9 %
Methane	100 ppm	100 ppm	-	-
Non-methane hydrocarbons (C1)	2 ppm	2 ppm	non-condensing	100 ppm
Oxygen	5 ppm	50 ppm	100 ppm	-
Water	5 ppm	non-condensing	non-condensing	non-condensing
Carbon dioxide	2 ppm	2 ppm	-	-
Carbon monoxide	0,2 ppm	0,2 ppm	-	1 ppm
Carbon monoxide + formaldehyde + formic acid	0,2 ppm	0,2 ppm	-	-
Ammonia	0,1 ppm	0,1 ppm	-	-
Halogenated compounds	0,05 ppm	0,05 ppm	-	-
Total sulfur compounds (S1)	0,004 ppm	0,004 ppm	10 ppm	2 ppm
Mercury	-	-	0,004 ppm	-
Particles	1 mg/kg	1 mg/kg; < 75 µm	no damage	no damage

Danish Gas Technology Centre (DGC)

- DGC is a specialized supplier of consulting, assessments, verifications, measurement services, R&D, consultancy and other knowledge intensive energy services
- DGC holds a Test Centre for Green Gases for analysis of hydrogen, biogas etc. as well as an accredited laboratory to test gas appliances and to make gas analysis
- DGC performs on site measurements of methane emissions
- Key areas of expertise include gas analysis and utilization (hydrogen, biogas..) biomethane production/cleaning, sector coupling and environmental performance
- DGC represents the Danish gas DSO/TSO in various technical associations
- Private sector company, owned by Danish Gas sector

Thank you for your attention