

Harmonizing Regulatory Requirements on Pipeline Security for Hydrogen

The comprehensive approach
of the UNECE
Model L Regulation

Example:
Sector Initiative for Equipment in Explosive
Environments

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UNECE – Working Party 6
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**REGULATORY COOPERATION
AND STANDARDIZATION POLICIES**



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Buncefield, UK, 11. Dezember 2005



More than 100 years of competence in Hydrogen



- Early work since the founding years of the PTR in the 19th century
- Coke-oven gas (Stadtgas) consists mainly of Hydrogen
- Involved in technical metering / metrological studies
- Combustion Processes

- **Historical highlight:**

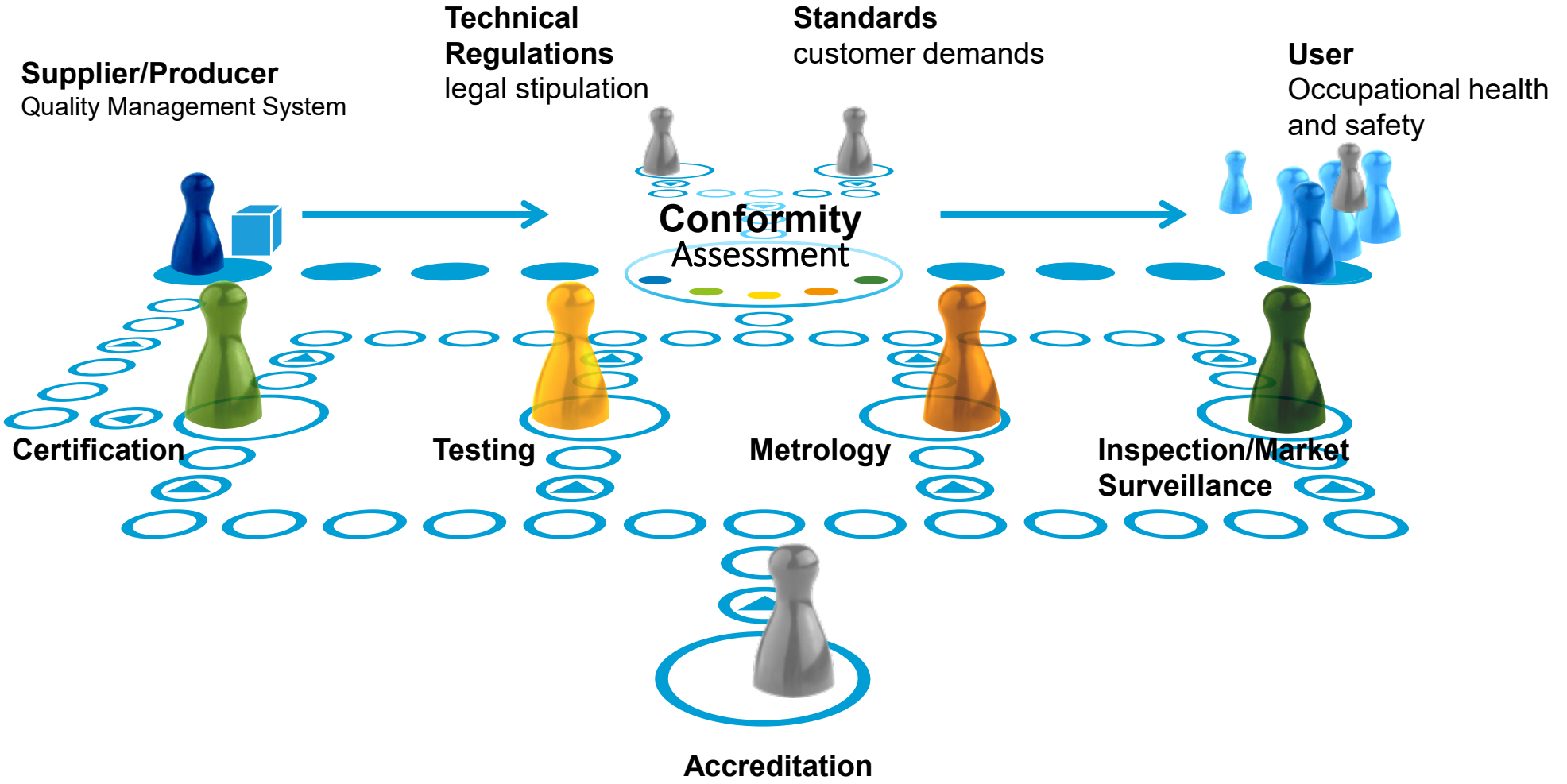
Development of one of the first hydrogen liquefiers in 1913 at the PTR by W. Meißner
→ enabled work with liquid H₂



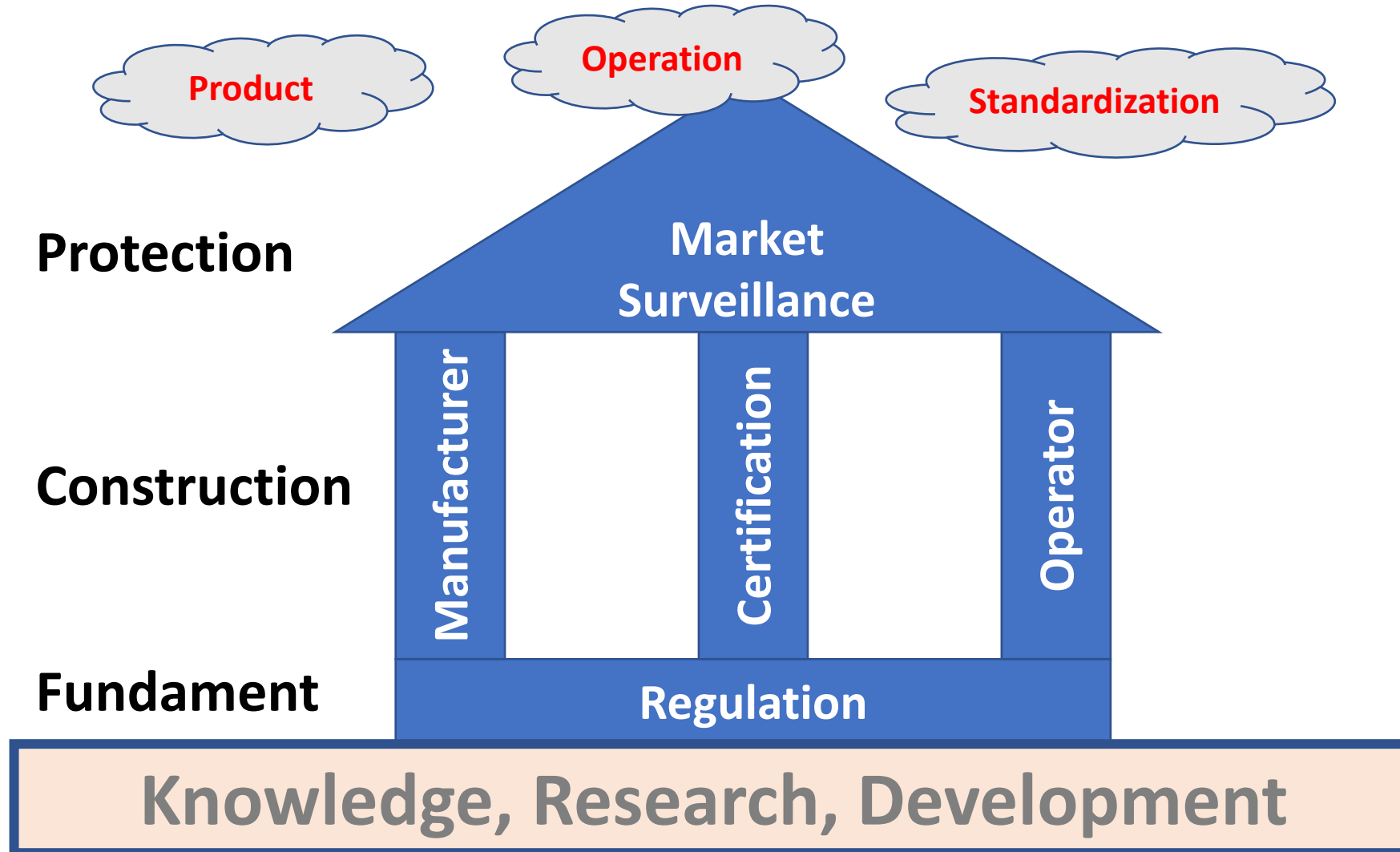
Installation of a gas lantern in Berlin 1890

<https://www.udo-leuschner.de/basiswissen/SB100-01.htm>

Quality Infrastructure: A Complex Network



Principles of the Business



European Union



Brussels, 8.7.2020
COM(2020) 301 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL
COMMITTEE AND THE COMMITTEE OF THE REGIONS

A hydrogen strategy for a climate-neutral Europe

TOWARDS A HYDROGEN ECOSYSTEM IN EUROPE: A ROADMAP TO 2050

In the first phase, from 2020 up to 2024, the strategic objective is to install at least **6 GW** of renewable hydrogen electrolyzers in the EU

In a second phase, from 2025 to 2030, hydrogen needs to become an intrinsic part of an integrated energy system with a strategic objective to install at least **40 GW** of renewable hydrogen electrolyzers by 2030



[Hydrogen generation in Europe - Publications Office of the EU \(europa.eu\)](#)



JRC TECHNICAL REPORTS

Towards net-zero emissions in the EU energy system by 2050

Insights from scenarios in line with the 2030 and 2050 ambitions of the European Green Deal

[JRC Publications Repository - Towards net-zero emissions in the EU energy system by 2050 \(europa.eu\)](#)

Challenges



Climate change and development

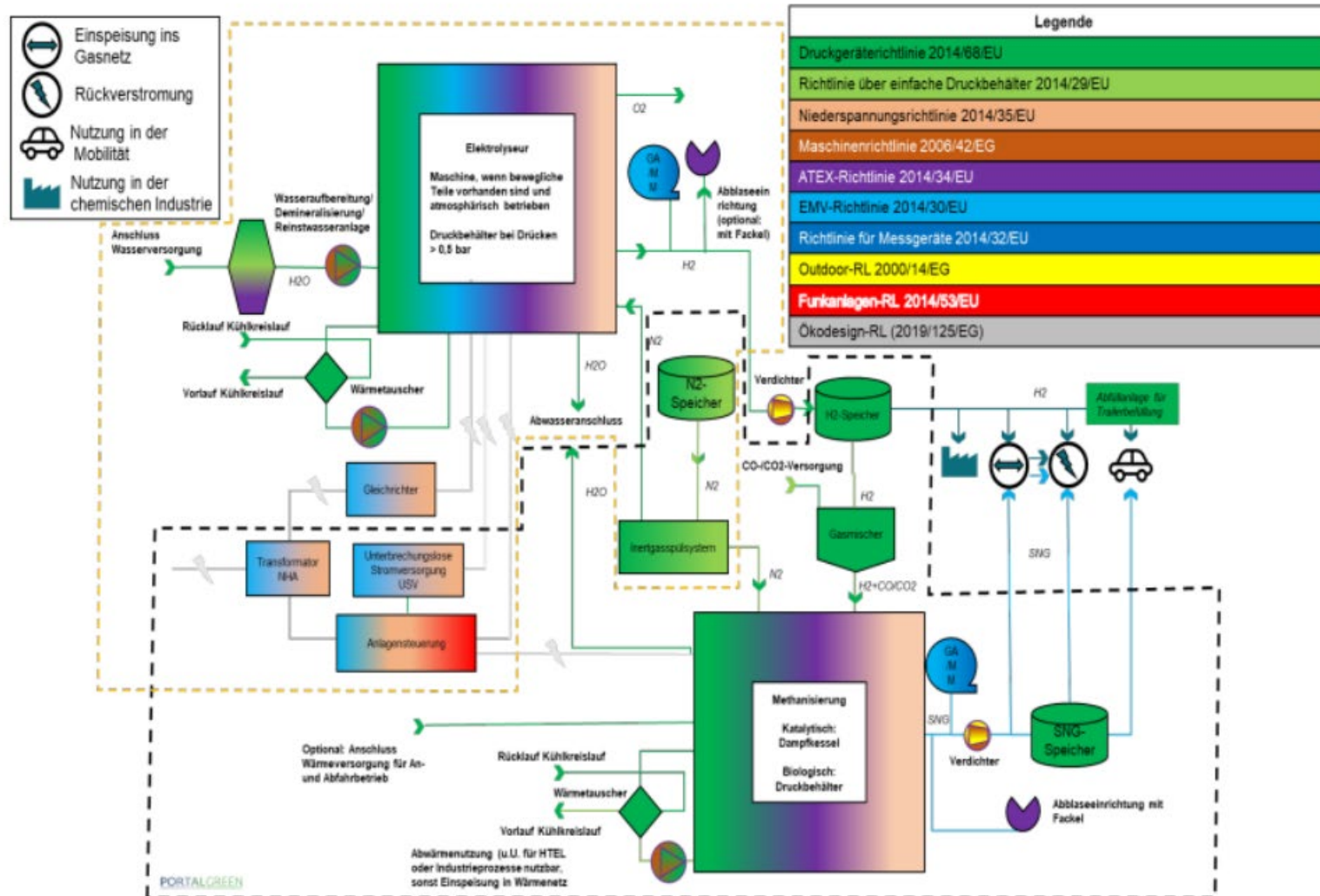
Climate and development are inextricably linked. Climate change is already having severe consequences for humans and the environment, especially in developing countries. If we manage to limit global warming and adapt to climate change worldwide, then we will be able to prevent uncontrollable consequences for our planet and at the same time create new development opportunities.



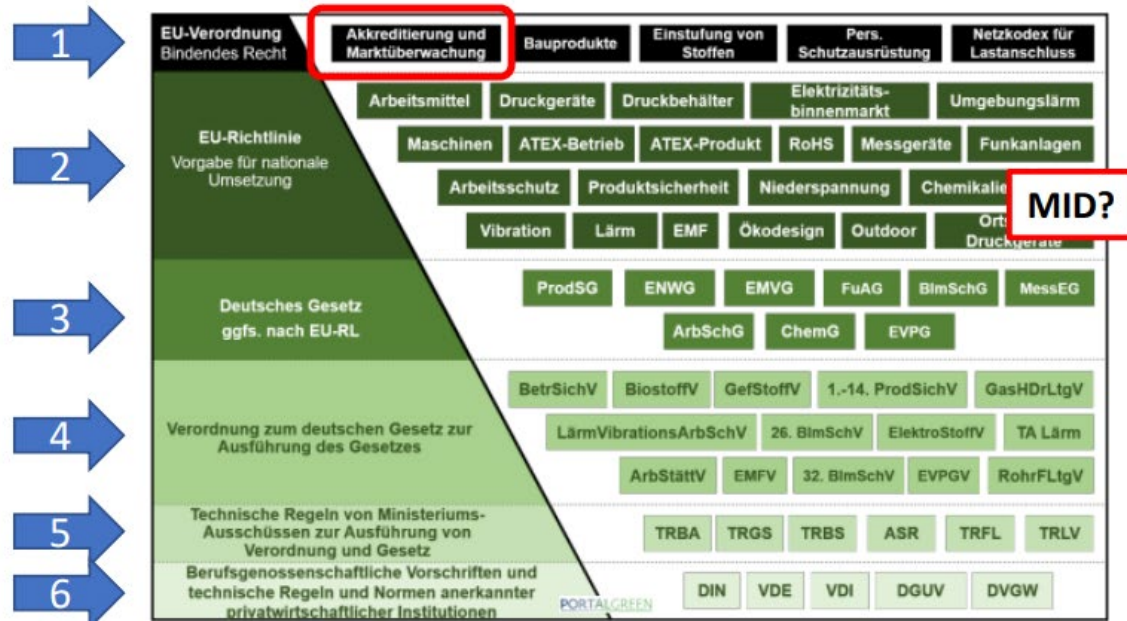
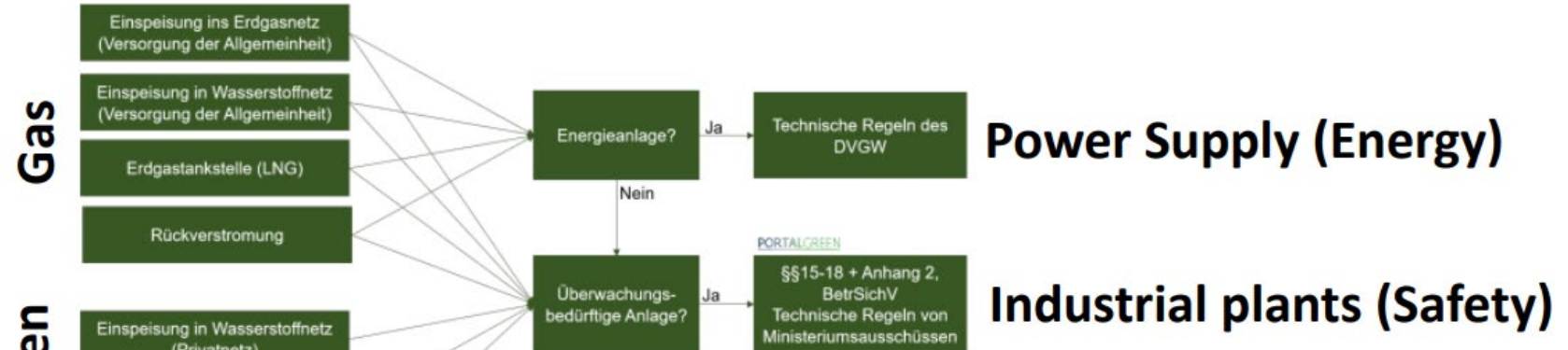
Green hydrogen and Power-to-X products

Global energy consumption is set to grow by 50 per cent by 2050; in developing countries and emerging economies it will increase by as much as 70 per cent. This means that green hydrogen is absolutely essential to a successful energy transition and to achieving international climate goals. It can be used, among other things, to produce climate-neutral fuels. They are called Power-to-X products (PtX). Green hydrogen can also be used to store energy. That makes green hydrogen a key commodity in a successful energy transition.

Regulations ... : How to find the way?



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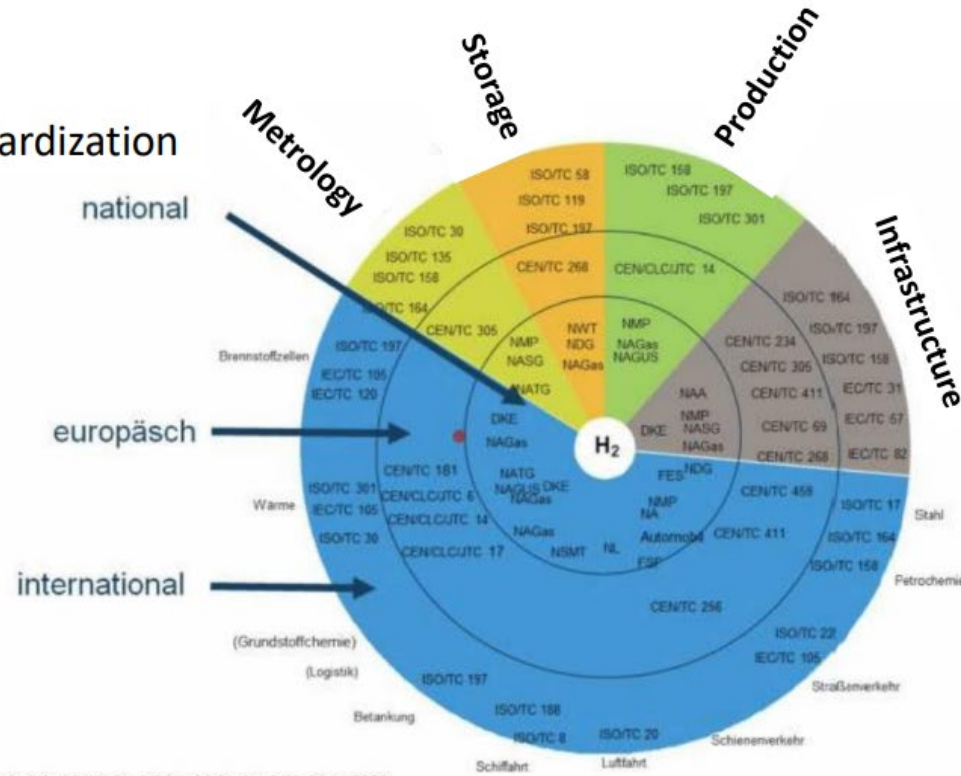


Example Germany

Standardization



Overview of the various levels of standardization



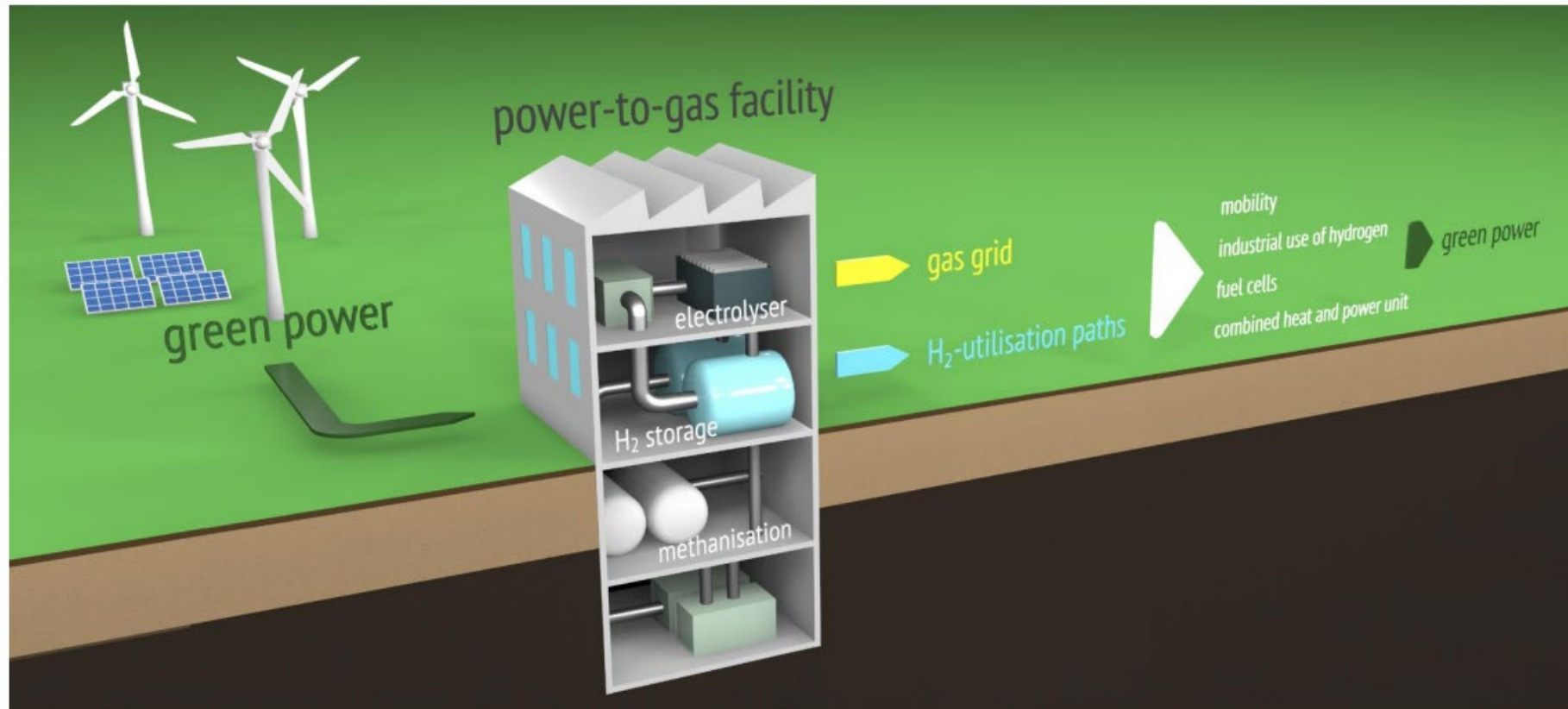
CEN/TC 234
Gas infrastructure

Quelle: Vortrag „Einblicke in Beispiele aktueller Normungsarbeit bei DIN“ Dr. Michael Schmitt, DIN, 04.11.2020

- Publications
- Projects

I) Standardisation of functional requirements in the field of gas infrastructure* from the input of gas into the on-shore transmission network up to the inlet connection of gas appliances; II) Determination and coordination of the gas infrastructure aspects in the technical work dealt with by other CEN/TCs and any other bodies, whether or not reporting to the Sector Forum Gas Infrastructure; III) To act as a focus for standardisation issues in the field of gas infrastructure. *including transmission, distribution, storage, compression, regulation and metering, installation, injection of non-conventional gases, , gas quality issues and others.

Metrology and Hydrogen



Metrological requirements:

- validated measurement procedures
- fairness of billing
- Technical safety



gas quantity



efficiency



process quantities



pressure



liquid properties

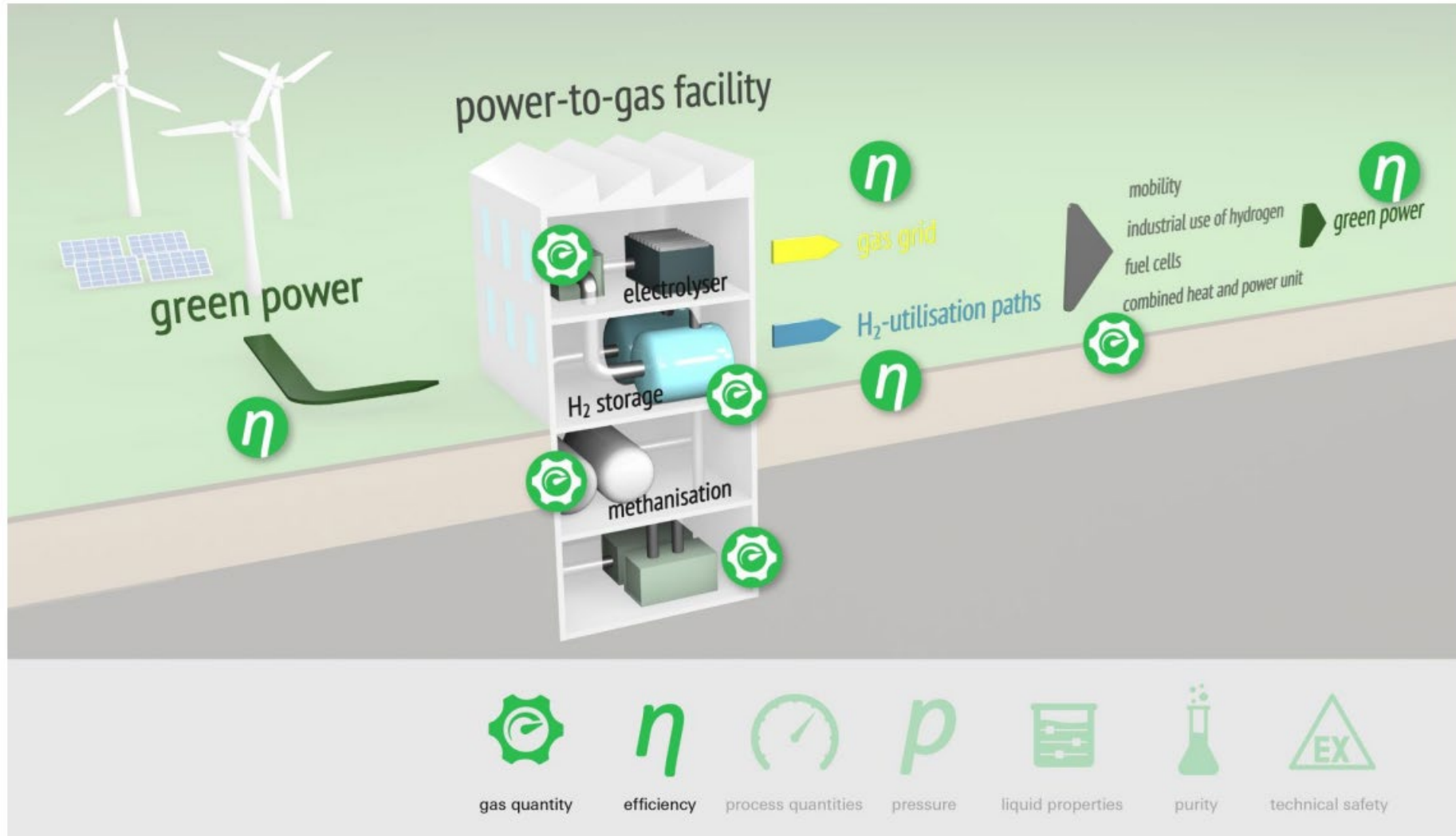


purity



technical safety

Metrology and Hydrogen



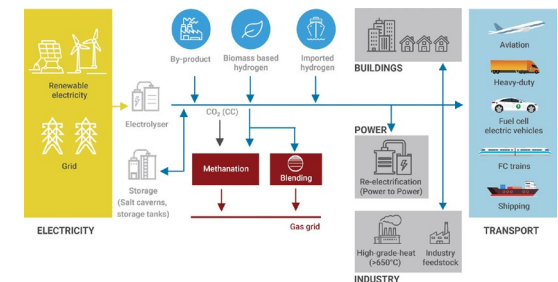
Interest of the Industry using Ex-Products



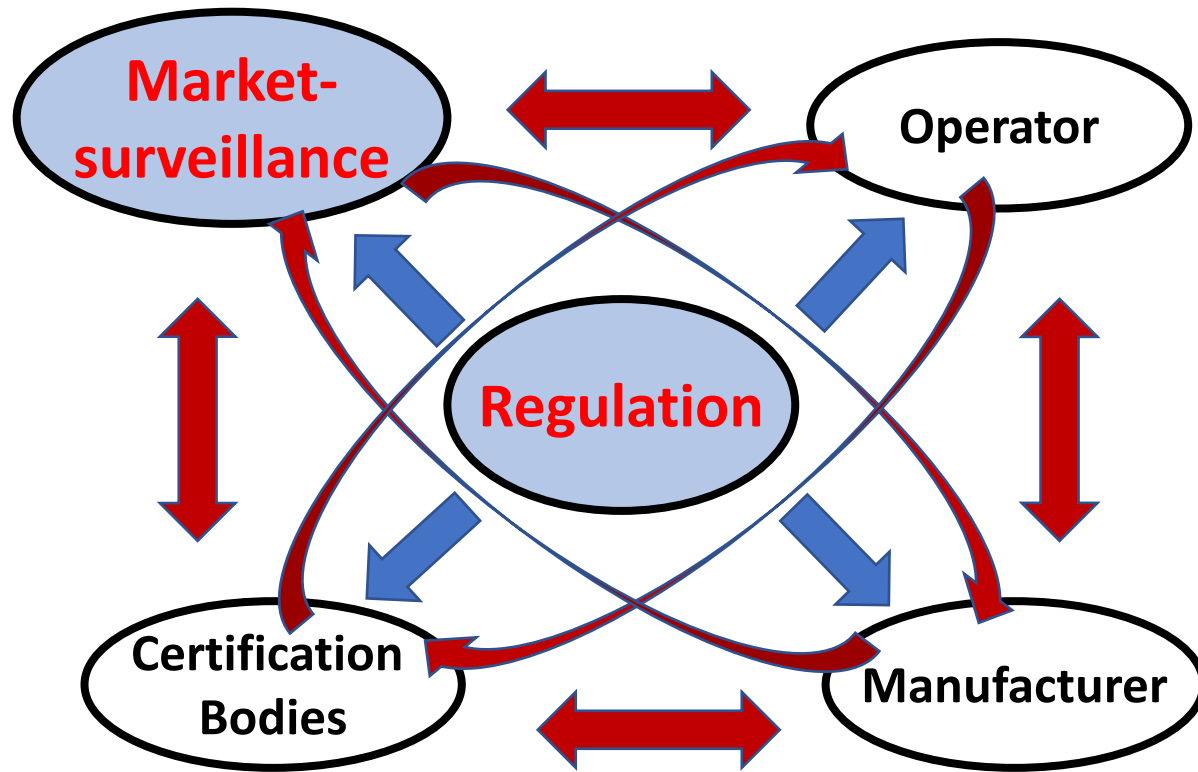
Users in the **hydrogen** industry act globally with a single engineering approach for their plants

- to earn savings of engineering, installation and maintenance costs
- to buy the equipment in a larger number and to get a better price per piece
- to have benefit from the global competition under manufacturers

Barriers against this tendency are domestic rules and regulations which require **special engineering for the plants** from country to country.



Interaction/Relationship within the SIEEE-System



1. Definition/Jurisdiction
 - a) Market Surveillance
 - b) Certification Bodies
 - c) Manufacturer
 - d) Operator
2. Interaction
 - a. Cert. B. ↔ Manu.
 - b. Manu. ↔ Oper.
 - c. MS ↔ Oper.
 - d. MS ↔ Manu.
 - e. MS ↔ Insp. B.
 - f. Cert. B. ↔ Insp. B.

Challenges



- Climate change requires Renewable Energy Solutions
- Transition from Oil and Gas to Hydrogen (new or old story?)
- Every country can participate (producing of Hydrogen)
- Developing of a Recommendation for Regulation “**Pipeline Security for Hydrogen**”

Merci ありがとうございました Hvala Ačiū
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Thank you

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