



Baden-Württemberg

REGIERUNGSPRÄSIDIUM FREIBURG

Safety related questions

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Trailer filling station

Problem: one place – different pressures

- One filling place with three different operating pressures (200, 300 and 500 bar)
- Solution from operator: each operating pressure has a different connection
- Our problem: truck drivers often have additional fittings or adapters; what happens when a different trailer arrives?



Trailer filling station

Possible solution: A positive identification of every trailer and max. pressure is needed

- Chip card or other RFID-solution with physical connection to the trailer
- The chip card / RFID can transmit specific data to the process control system – This requires standardisation!
- This can include: ADR information, certifications, allowed pressure level, filling rate etc.
- Process control system allows only filling of known trailers and determines the pressure level
- Information from the haulage industry: a similar system already exists for oxygen and argon trailers



Technical Regulations & Standards

- Standards:
 - ISO, IEC
 - CEN, CENELEC
 - National (BSI, DIN, etc.)
 - other bodies and organisations: SAE, ANSI, EIGA, NFPA
- Many standardisation groups and technical committees
- Standards are important for the declaration of conformity in order to bring a product onto the market within the EU.
- **But:** many standards are currently developing and they are not all yet available



TRBS 2141 Gefährdungen durch Dampf und Druck
TRGS 720 Gefährliche explosionsfähige Gemisch –
Allgemeines
TRGS 721 Gefährliche explosionsfähige Gemisch –
Beurteilung der Explosionsgefährdung
TRBS 3145 Ortsbewegliche Druckgasbehälter – Füllen,
Bereithalten, innerbetriebliche Beförderung, Entleeren
TRBS 3146 Ortsfeste Druckanlagen für Gase
TRBS 3151 Vermeidung von Brand-, Explosions- und
Druckgefährdungen an Tankstellen und Gasfüllanlagen zur
Befüllung von Landfahrzeugen
TRBS 1111 Gefährdungsbeurteilung
TRBS 1112 Instandhaltung
TRBS 1112 Teil 1 Explosionsgefährdungen bei und durch
Instandhaltungsarbeiten – Beurteilung und
Schutzmaßnahmen)
TRBS 1115 Sicherheitsrelevante Mess-, Steuer- und
Regeleinrichtungen
TRBS 1115 Teil 1 Cybersicherheit für sicherheitsrelevante
Mess-, Steuer- und Regeleinrichtungen
TRBS 1122 Änderungen von Gasfüllanlagen, Lageranlagen,
Füllstellen, Tankstellen und Flugbetankungsanlagen
TRBS 1123 Prüfpflichtige Änderungen von Anlagen in
explosionsgefährdeten Bereichen
TRBS 1201 Teil 1 Prüfung von Anlagen in
explosionsgefährdeten Bereichen
TRBS 1201 Teil 2 Prüfungen und Kontrollen bei
Gefährdungen durch Dampf und Druck
... and many more....

Technical Regulations in GER

- Several Technical Regulations for operational safety and hazardous substances
- Which regulation has to be used when?
- Many cross references make it hard to understand
- Regulations are addressed to the operator
- Many operators are new in the world of hydrogen, no experience in chemical or petroleum plant – new customers for the inspectors



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Technical Regulations & Safety

- The electrolyser is not the only equipment on-site which is relevant for safety.
- The hydrogen which is produced must be dried and purified, stored, compressed and delivered to its respective end-users.
- This may involve connections to pipelines, process plant, bulk storage tanks, trailer filling stations or fuel filling stations.
- Interfaces between units must be understood as well as the consequences of disruption or failure within the system.
- Measures must be taken to provide sufficient and appropriate detection and alarm systems. These systems must be reliable and operate in the event of a power failure.
- Not all components of the hydrogen system are necessarily operated by the operator of the electrolyser. Paths of communication must be defined and practiced.





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