

European Hydrogen Emergency Response training programme for First Responders



HyResponse

Regulations Codes and Standards relevant to First Responders

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Brief CCS background



General

- Established in the UK in 2005
- Provides technical and strategic services in the new and renewable energy sector

Expertise in RCS activities

- International standards development and compliance
 - ISO/TC 197 Hydrogen technologies
 - IEC/TC 105 Fuel cell technologies
 - United Nations, WP.29 and SCETDG
 - other

Participation in Industry group

- Member of the NEW IG Industry grouping (part of FCH Joint Undertaking FCH-JU) since its establishment in 2008
- Participates in several FCH-JU projects such as HyFACTS and others.



What is RCS

- extracts from ISO/IEC Guide



- **Regulation:** Is a document providing binding legislative rules, that is adopted by an authority
- **Technical regulation:** Regulation that provides technical requirements, either directly or by referring to or incorporating the content of a standard
- **Code:** A set of guidelines set forth and enforced by a local government agency for the protection of public safety, health, etc.
- **Standard:** A document, established by consensus and approved by a recognized body, that provides for common and repeated use
- **International standard:** A standard that is adopted by an international standards' organization and made available to the public. Examples: ISO, IEC.



What is RCS

- general information



- The ISO and IEC work results in international agreements, which are published as international standards. These international standards are: voluntary, market driven and globally relevant.
- In Europe, the equivalent international bodies are CEN and CENELEC who work under agreements with ISO and IEC to avoid duplication of efforts.
- At this early stage of FCH technology, there are not too many published RCS available.
- standards provide a set of technical requirements based on input of experts.



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CCS involvement in WP1, WP2, WP3, WP6 and WP7



- **WP1 – Project coordination**

Participation in SG and ACP

- **WP2 – Development of emergency scenarios**

Providing RCS input for selected FCH Systems

- **WP3 – Development of educational training material**

Providing RCS list and contribute to the preparation of content of training course.
Coordinate production of RCS reports for first responders

- **WP6 – Pilot EHSTP training Sessions**

Contribute to preparation of RCS sections of the pilot training sessions.

- **WP7 – Recommendations and dissemination**

Contribute to recommendations and final workshop. Coordinate production of RCS recommendations to the international bodies



HyResponse Training on hydrogen safety for first responders



- Basics of Hydrogen safety: properties, behavior and hazards related to hydrogen under high pressure use
- production, storage and distribution of hydrogen for transport and stationary applications
- RCS requirements concerning these applications
- Intervention strategies and tactics



International RCS relevant to HyResponse

- Short list



- **UN ECE World Forum for Harmonization of Vehicle Regulations (WP.29).**
- GTR 13 for hydrogen fuelled vehicles
- **UN ECOSOC Sub-Committee of Experts on the Transport of Dangerous Goods**
- Orange Book and ADR
- **79/2009/EC Regulation on Type Approval of hydrogen-powered motor vehicles.**
- **EU 406/2010 implementing the above regulation.**



International RCS relevant to HyResponse

- Short list



- **BS 7974:2001** Application of fire safety engineering principles to the design of buildings. Code of practice.
- **EN 60079-10-1** Explosive atmospheres – Part 10-1: Classification of areas – Explosive gas atmospheres. (Being presently revised for Edition 2)
- **ISO/TS 15916** Basic considerations for the safety of hydrogen systems. (Being presently revised.)
- **ISO 26142** Hydrogen detection apparatus – Stationary applications



International RCS relevant to HyResponse

- Short list



- **ISO 22734** Hydrogen generators using water electrolysis process – Part 1: Industrial and commercial applications. Part 2: Residential applications
- **ISO 16110-1** Hydrogen generators using fuel processing technologies – Part 1: Safety
- **ISO/TS 20100** Gaseous hydrogen fuelling stations. (Being presently re-written as ISO/TR 19880-1.)
- **ISO/TS 15869** Gaseous hydrogen and hydrogen blends – Land vehicle fuel tanks. (Being presently revised.)
- **ISO 19884** Gaseous hydrogen – Cylinders and tubes for stationary storage. (Being presently developed.)



International RCS relevant to HyResponse

- Short list



- **IEC 62282-3-100** Fuel cell technologies – Part 3-100 Stationary fuel cell power systems - Safety
- **IEC 62282-3-200** Fuel cell technologies – Part 3-200 Stationary fuel cell power systems – Performance test methods
- **IEC 62282-3-201** Fuel cell technologies – Part 3-201 Stationary fuel cell power systems - Performance test methods for small systems
- **IEC 62282-3-300** Fuel cell technologies – Part 3-300 Stationary fuel cell power systems - Installation
- **IEC 62282-4-100** Fuel cell technologies – Part 4-100 Fuel cell systems for forklift applications - Safety
- **IEC 62282-4-200** Fuel cell technologies – Part 4-200 Fuel cell systems for forklift applications – Performance test methods



Acronyms



- **RCS** Regulations, codes and standards
- **FCH-JU** Fuel Cell and Hydrogen Joint Undertaking
- **NEW IG** New Industry Grouping
- **SG** HyResponse Steering Group
- **ACP** HyResponse Advisory Consultative Panel
- **EHSTP** European Hydrogen Safety Training Platform



Thank you.



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