



Production of hydrogen > Localised (Electrolysis, Steam-Methane reforming, and H2 liquification) > Simplified process Austria

The purpose of this LAP is to highlight if a simplified process exists for localised production units as compared to centralised ones taking advantage of the smaller amount of hydrogen considered, and if yes, what is the threshold and what are the permitting requirements and process.

Are there any simplified process for producing and storing a small quantity of hydrogen?

Yes, for production and storage of below 100 kg of Hydrogen

Specify the threshold

When it comes to production the processes have been defined in LAP 1–1–1. When it comes to storage there are several provisions to be taken into consideration

Specify the permitting requirements

When it comes to production the processes have been defined in LAP 1–1–1 and LAP 1–1–3. When it comes to storage there are several provisions to be taken into consideration

Specify the permitting process:

a - Competent authority

a - County administration

b - Different steps

b - Because of “small amounts” of hydrogen, the facility has to be permitted in line with the Trade, Commercial and Industry Regulation Act, – the county administration acts as an One Stop Shop. In other words, the county administration takes care of all other obligations in line with the provisions of the relevant laws respectively the out of it generated requirements

c - The costs

c - can't be specified because it depends on the circumstances like whether the plant is some kind of brown field or green field investment, whether it is a permanent installation, whether it is linked with other industrial plants respectively oil and gas production facilities etc.

d - The duration of the process

d - not definable in practice because hydrogen is currently still a “new” medium for the authorities and even experts

Is it a barrier?: YES

Type of Barrier: Economic barriers

Assessment Severity: 2

Assessment: Small scale production has to be licensed by the county administration. Storage of hydrogen for commercial and industrial application has to be licensed as well. Licensing of small scale production and storage of small amount of hydrogen – up to 100 kg, requires approval by the county administration, hence a process with thereby generated costs is needed.



National Legislation

- **Regulation on flammable liquids = Verordnung über brennbare Flüssigkeiten**
Article 1 and 2 are “guiding to the relevant following articles
- **Employee protection law = Arbeitnehmerinnenschutzgesetz**
Article 2 and 3 are guiding to the relevant articles
- **Chemicals Act = Chemikaliengesetz**
Article 2 and 3 are guiding to the relevant following articles
- **Regulation on toxins = Giftverordnung**
Article 2 and 3 are guiding to the relevant following articles
- **Regulation on Identification = Kennzeichnungsverordnung**
Article 1a, 1b and 2 are “guiding” to the relevant following articles

EU Legislation

- **Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances (so-called SEVESO Directive)**
The Directive covers situations where dangerous substances may be present (e.g. during processing or storage) in quantities exceeding certain thresholds.

It establishes:
 - General obligations on the operator (Article 5)
 - Notification (information on the form and amount of substances, the activity, and the surrounding environment) of all concerned establishments (Article 7),
 - The obligation to deploy a major accident prevention policy (Article 8),
 - The obligation to produce a safety report for upper-tier establishments (Article 10);
 - The obligation to produce internal emergency plans for upper tier establishments (Article 12);
 - Authorities to exert control of the siting of new establishments, modifications to new establishments, and new developments including transport routes, locations of public use and residential areas in the vicinity of establishments, (Article 13)
 - The obligation to conduct public consultations on specific individual projects that may involve risk of major accidents (Article 15)

Annex I, Part 1, establishes Hydrogen as a dangerous substance (therefore within scope) and lists the quantity of hydrogen for the application of lower-tier requirements (? 5t) and upper-tier requirements (? 50t).

For quantities of less than 5 tonnes of hydrogen, none of the obligations above would apply.

● **ATEX Directive 2014/34/EU - covering equipment and protective systems intended for use in potentially explosive atmospheres**

The Directive defines the essential health and safety requirements and conformity assessment procedures (Article 4) to be applied before products are placed on the EU market and is significant for the engineering of hydrogen production plants. It covers inter alia equipment and protective systems intended for use in potentially explosive atmospheres.

The Directive requires employers to classify areas where hazardous explosive atmospheres may occur into zones. The classification given to a particular zone, and its size and location, depends on the likelihood of an explosive atmosphere occurring and its persistence if it does.

The Directive requires the manufacturers to design their equipment to be suitable for use within their customer's explosive atmosphere. Therefore, manufacturers of equipment rely upon their customer to give them information about the classification of the zone and the flammable substance(s) within that zone.

The Directive describes the rules and regulations for all actors in the value chain, with respect to ensuring that only safe equipment for use in potentially explosive atmospheres are sold and applied. It provides regulation of how the equipment shall be constructed, produced and documented, as well as the rules for CE-labelling.

It also contains, inter alia conformity assessment procedures (Art 13) EU declaration of conformity (Art 14) and General principles of the CE marking (Art 16)

● **Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control (IED))**

The Directive, which applies to the production of hydrogen (production on an industrial scale by chemical or biological processing) (Annex I, point 4.2) contains inter alia:

- Basic obligations of the operator (Article 11)
- The content of permitting applications (Article 12)
- Permitting Conditions (Article 14)
- Emission limit values, (Article 15)
- Monitoring requirements (Article 16)
- Access to information and public participation (Article 24)

The meaning of "production on an industrial scale by chemical or biological processing in Annex I section 4" has been clarified by the EU Commission, in support of transposition and implementation measures. :

Annex I Section 4 ("chemical industry") refers to "production on an industrial scale" and contains no quantitative capacity thresholds. The scale of chemical manufacture can vary from a few grams (of a highly specialised product), to many tonnes (of a bulk chemical product); yet both may correspond to "industrial scale" for that particular activity.

Various criteria should be taken into account to decide whether production is "on an industrial scale", including such factors as the nature of the product, the industrial character of the plant and machinery used, production volume, commercial purpose, production solely for own use, environmental impact. Such considerations should take account of the primary objective of the IED as expressed in Article 1 as to "prevent or, where that is not practicable, to reduce emissions into air, water and land and to prevent the generation of waste, in order to achieve a high level of protection of the environment taken as a whole", complemented by the general principle set in Article 11 (c) that "no significant pollution is caused".

The fact that the activity is carried out for "commercial purposes" may be a strong indicator of "industrial scale", [...] However, it may not be sufficient to use the "commercial purpose" of an activity as the sole determinant of "industrial scale". It may also be important to take into account the potential environmental impact of a production sequence.



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- **Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment).**

The Directives (and their subsequent amendments) define a strategic environmental impact assessment procedure. The procedure is summarized as follows: the developer may request the competent authority define what should be covered by the EIA information to be provided by the developer (scoping stage); the developer must provide information on the environmental impact (EIA report – Annex IV); the environmental authorities and the public (and affected Member States) must be informed and consulted; the competent authority decides, taken into consideration the results of consultations. The public is informed of the decision afterwards and can challenge the decision before the courts.

In line with the EIA Directive, Production and Storage of Hydrogen falls within the projects listed in Annex II (6a and 6c -production of chemicals; and storage facilities for chemical product), for which Member States shall determine whether the project shall be made subject to an assessment or not. In some EU countries, storage of 5 tons of hydrogen or more falls within the scope of the Directives.

The latest amendment, (Directive 2014/52/EU) introduces minimum requirements with regards to the type of projects subject to assessment, the main obligations of developers, the content of the assessment and the participation of the competent authorities and the public.

- **Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (EIA Directive)**

- **Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (SEA Directive)**

- **Council Directive 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work**

The requirements of this Directive apply where hazardous chemical agents are present or may be present at the workplace (Article 1.2). When applicable, the Directive imposes certain obligation on the employers

- Determination and assessment of risk (Article 4)
- General principles for prevention of risks (Article 5)
- Specific protection and prevention measures (Article 6)
- Arrangements to deal with accidents (Article 7)
- Information and training for workers (Article 8)

- **Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage**

The Environmental Liability Directive (“ELD”) establishes a framework of environmental liability, based on the “polluter-pays” principle, to prevent and remedy environmental damage. The ELD places the financial consequences of certain types of harm caused to the environment on the economic operator who caused this harm. It covers: (a) “damage to protected species and natural habitats” (b) “water damage” and (c) “land damage”.

Additionally, where imminent threats exist or when required by the competent authority operators are required to take preventive measures.

The Directive applies to the production to Hydrogen by reference to Annex I, point 4.2 of Directive 2010/75/EU on industrial emissions

- **European Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances [CLP regulation]**

The CLP Regulation (Classification, Labelling and Packaging of substances and mixtures) entered into force on the 20th of January 2009 and replaced the two previously existing laws or legal instruments, the Dangerous Substance Directive (DSD) and the Dangerous Preparation Directive (DPD). CLP is based on the Globally Harmonized System (GHS), a set of recommendations drafted by the United Nations. The CLP Regulation is applied to substances since 2010 and to mixtures since June 2015.

The Regulation includes hydrogen in its list of substances of hazardous substances (Part 3, Table 3.1) establishes rules for the harmonised classification and labelling of hydrogen.



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- **Directive 2009/104/EC of the European Parliament and of the Council of 16 September 2009 concerning the minimum safety and health requirements for the use of work equipment by workers at work**
The general provisions of Chapter II (Employers obligations) apply. However, this legislation applies broadly and is not to be regarded as hydrogen specific.
- **Directive 1999/92/EC of the European Parliament and of the Council of 16 December 1999 on minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres**
Lays down minimum requirements for the safety and health protection of workers potentially at risk from explosive atmospheres
- **Directive 2014/68/EU of the European Parliament and of the Council of 15 May 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of pressure equipment.**
The Pressure Equipment Directive, applies to the design, manufacture and conformity assessment of pressure equipment and assemblies with a maximum allowable pressure greater than 0.5 bar.

Technical requirements and classification according to an ascending level of hazard, depending on pressure, volume or nominal size, the fluid group and state of aggregation, as well as conformity assessment procedures are laid down and required by the Directive

Hydrogen is a fluid which falls under Group 1. Group 1 consists of dangerous fluids (flammable, toxic and/or oxidizing). As a result, a large part of the equipment for H2 production, storage and distribution must meet the technical requirements set out in the Pressure Equipment Directive (PED).

Glossary

Simplified process

An explicit, formal announcement, either oral or written stating that a certain amount of hydrogen will be produced or stored (e.g.: simple declaration in France for storing <100 KG).

Localised (Electrolysis, Steam-Methane reforming, and H2 liquification)

Localised Production is the production of hydrogen for a given application on the same location, eliminating the need to transport the hydrogen outside a facility.



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