

# HYDROGEN GENERATION, DISTRIBUTION AND USE

## Services to Legislators, industry and manufacturers



Hydrogen is set to play an increasingly important role as an energy vector as Governments, industry and society de-carbonise the energy infrastructure. Hydrogen has many advantages, not least that it can be efficiently produced from excess renewable electricity and stored; this coupled with its ease of transport and negligible environmental effects at point of use make hydrogen a very attractive energy source for power generation, industrial, commercial and domestic scale use and also importantly in the automotive sector. Kiwa is actively involved across these markets providing a variety of services; from feasibility studies for pure hydrogen distribution and use for major utilities, to a range of technical, testing and certification services for component and appliance manufacturers.

### Consultancy Services

Kiwa offers a range of services across the hydrogen space. Kiwa's consultancy services assist utilities, industry and appliance developers to optimise their activities with regard to hydrogen. In the Netherlands (Ameland), Kiwa investigated the injection of hydrogen into a local gas network and investigated the impact of hydrogen exposure on PE pipelines. In the UK Kiwa is advising upon the impact of hydrogen injection on the safety of

existing gas appliance stock. Also in the UK Kiwa is supplying point of use expertise and working in conjunction with a major engineering contractor on the feasibility of creating a hydrogen generation and distribution system to service localised population and commerce. Kiwa also provides a wide range of services drawing upon both its knowledge of hydrogen and the European Energy markets; these include:

- Proof of concept
- Technical due diligence
- Market analysis
- Technological development - risk analysis and mitigation
- Regulatory advice
- Techno-economic analysis & consultancy eg H2 injection
- Carbon footprinting/reporting
- Field Trial management and data analysis
- Feasibility studies eg 100% H2 distribution system

### Technical Services

Technology developers, distributors and adopters require a varied range of technical services pertaining to ensuring technology reliability, safety and performance. Recently Kiwa has been working with several mCHP

developers through their product development phase providing dynamic heat load testing allowing the manufacturer to optimise control strategies quickly and cost effectively. We also provide a wide range of development stage testing services – safety, performance benchmarking and environmental testing are common requests. Also the complexities of installing high pressure hydrogen systems are not inconsiderable – Kiwa is assisting technology adopters to ensure that their installations are safe and that they are fulfilling their duty of care to their staff eg DSEAR and PUWR in the UK. Kiwa offers a range of services including:

- Safety assessment
- Performance assessments – optimisation for local standards
- Environmental tests
- Installation safety assessments
- Testing of mCHP under dynamic heat load
- Control parameter optimisation
- System control optimisation
- Effects of Hydrogen exposure
- Compliance review - ATEX, PED, MD, LVD, EMCD, ErP, GAD etc
- Expert witness
- HALT testing
- Contaminant exposure testing for fuel cells

#### **Testing and certification**

As one of the leading appliance testing and certification bodies in Europe, with offices and laboratories across Europe, Kiwa is the ideal partner for technology developers when it comes to Testing, certification and compliance services. For example Kiwa is the market leader for testing and certification of fuel cell power, mCHP, portable device and micro-fuel cell systems – whether fuelled by pure hydrogen or using other feedstocks. A key service aspect of Kiwa is early engagement in the development stages – early input from the compliance perspective allows accurate development planning and mitigates against risk of compliance issues occurring as field trial or commercial roll-out dates approach.

Services include:

- CE compliance for appliances
- Pre-assessment – technical and commercial risk mitigation
- Theoretical compliance review
- Detailed design review
- Pre-testing
- Hydrogen generator testing
- Distribution materials
- Component testing – GAD
- Component Testing – automotive
- Quality marks

#### **Training**

Kiwa delivers a range of courses and specialises in delivering technical courses bespoke to our client's needs. Examples of topics include:

- Compliance/regulatory courses
- Principles of fuel usage
- Operative training
- Manufacturer safety training
- Carbon and environmental management

#### **Product Development**

Through Kiwa Gas Technology product and sub-system development services are available. From concept through initial prototyping and even beta-phase production we have a range of services to match your needs.

#### **Do you want to know more?**

We will be happy to provide you with any information you might need, so please contact us! [eup@kiwa.nl](mailto:eup@kiwa.nl)

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