METROLOGY for HYDROGEN VEHICLES

# REPORT:

## *A5.2.1: Report on first Stakeholder Advisory Workshop*

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www.metrohyve.eu

This report was written as part of activity 5.2.1 from the EMPIR Metrology for Hydrogen Vehicles (MetroHyVe) project. The three year European project commenced on 1st June 2017 and focused on providing solutions to four measurement challenges faced by the hydrogen industry (flow metering, quality assurance, quality control and sampling). For more details about this project please visit www.metrohyve.eu.


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# Contents

# 1 Introduction and summary/results

**General information**

The EMPIR Metrology for Hydrogen Vehicles project is in great demand by the hydrogen industry as can be evidenced by the 45 letters of support received from hydrogen vehicle manufacturers (including BMW, Daimler and Toyota), hydrogen refuelling station (HRS) operators, gas producers and standardisation bodies.

A large hydrogen infrastructure is currently in development across Europe however the industry faces the dilemma that they are required to meet certain measurement requirements (set by European legislation) that cannot currently be followed due to the lack of available methods and standards. The EMPIR Metrology for Hydrogen Vehicles will be the first large scale project of its kind that will tackle these measurement challenges.

In order to properly determine the main measurement needs, a survey was undertaken involving key stakeholders of the hydrogen industry (including hydrogen producers, station operators, automotive manufacturers and standardisation bodies) to understand the measurement challenges that this industry currently faces. The results clearly demonstrated that there are four key technical measurement challenges that prevent a hydrogen economy from growing in Europe:

- It is not possible to accurately calculate the amount of hydrogen dispensed when filling hydrogen into a fuel cell vehicle and therefore the customer cannot be charged correctly when buying hydrogen from the station.
- Hydrogen provided by the refuelling stations will need to meet the hydrogen purity specifications of ISO 14687; however no laboratory in the world can currently perform all of these measurements under accreditation.
- HRSs will typically need to install instruments that can continuously monitor key impurities online to ensure harmful impurities never reach the fuel cell vehicles; these instruments are in development but have not yet been tested or validated.
- There are no verified techniques that can be followed, or validated sampling vessels available, when HRSs sample hydrogen to send to laboratories for purity analysis; there is a high risk that the sample received by the laboratory is not representative of the hydrogen dispensed into the vehicles.

**Stakeholder advisory workshop**

On 24 January 2018, the project held its first Stakeholder Advisory workshop (hereafter Stakeholder Advisory Board workshop, since it was organised for (and also with the help of) SAB-members, and non-SAB members), from 09:00h to 17:00h at NEN, Vlinderweg 6, 2623 AX Delft, the Netherlands. The workshops will be designed to allow non-project partners to provide comments and their own specific measurement challenges to the project. Invited participants will include stakeholders, automotive manufacturers, laboratories, instrument manufacturers, standardisation committees and NMI. Each work package was shortly presented and specific questions were posted before the group of participants. This group consisted of 43 participants (a minimum of 20 participants was required; this objective was reached).

The presentations of the workshop can be downloaded via this **link**.

**Summary / Main results of this workshop/additional and new input to the project:**

- **WP 1: Flow metering** – Marc de Huu (Work Package 1 leader) provided a presentation the first Work Package for flow metering. For WP1 on flow metering, this workshop allowed to extend the number of valuable contacts and to explain in more details the philosophy behind using substitute substances to a wide hydrogen community. Moreover, very positive feedback and references were provided by the audience. The number of attendants and its variety also showed the interest and expectations from the hydrogen community. In the discussion several topics where discussed. Amongst these, it was discussed to what extent the tests with alternative fuels will be comparable to hydrogen, as they might show different behaviour in terms of temperature and pressure. Helium was proposed but not selected as an alternative testing fluid because of costs. Also discussed was the size of the tanks used in the mobile gravimetric standards under development The current project focusses on metering for cars and thereby limits the amount of delivered hydrogen to about 5 kg. Suggestions were made to extend the mobile testing facilities to include an IR communication system to allow an exchange of information with the hydrogen refuelling station before a refuelling process starts, as takes place with some cars. This option could be implemented in the future but the current design of the mobile standards should allow for successful testing.
- **WP 2: Quality assurance** - Thomas Bacquart (Work Package 2 leader) provided a presentation on the second work package 'quality assurance'. Feedback was provided that the new standard doesn't prescribe to measure the total list of potential contaminants. Instead, relevant compounds should follow from a risk assessment procedure. The SAB did not disagree with the list of compounds chosen to represent the total halogenated and the total sulphur compounds. In addition, response was received from the hydrogen community on experiences with ASTM. Several showed their interest to the offer of Mr. Bacquart to organize dedicated discussions with other analytical labs on quality assurance to draft good standards in the end. Regarding the assessment of the different methods, it was advised to also include operating costs. It was made clear that a compromise has to be made between costs and efficiency of the analysis. In addition it was suggested, to include relative and additional costs in comparison to other methods and to indicate the impact on the price of the fuel. For the development of the cost efficient analyser complying with ISO 14687, the SAB suggested to focus more on a modular equipment.
  The SAB advised to focus on the ISO 19880 scope as analytical laboratory flexibility is important. According to ISO 19880 and the required risk assessment to be carried by each hydrogen refuelling station, not every refueling station is served to measure the complete ISO 14687 contaminants, but subsets of it. For different sources you may have to measure for different contaminants. Mr Bacquart suggested to reformulate the task to take ISO 19880 into account and focus on dedicated sub-set of contaminants for the cost efficient analyser developments, based on the comments given. Several SAB members raised interest in joining the inter-comparison that will take place within the project.
- **WP 3: Hydrogen Quality Control** - Janneke van Wijk (Work Package 3 leader) provided a presentation on work package 'Hydrogen Quality Control'. The discussions with the stakeholders clarified that cost of ownership is very important in deciding on the use of online sensors as this includes purchase price but also costs of maintenance and calibration. It was suggested to include hydrocarbons in the list of components for the survey on cheap on-line sensors. The group was divided on the inclusion of nitrogen. The SAB suggested to send out the survey to find out what sensors are available and only hereafter decide on selecting a sensor for testing. Finally also the thresholds of contamination were discussed, which relate to the accuracy of measuring, type of sensor and resulting price. It was suggested to follow the ISO limits described for now.

- **WP 4: Sampling** - Oliver Büker, replaced Karine Arrhenius, and presented an overview of Work Package 4 on sampling because Karine Arrhenius (Work Package 4 leader) could not attend. The presentation of WP4 highlighted that the started tasks 4.1, 4.2 and 4.3 are on track, several reports have been sent to the coordinator including one published on the website. Some activities of WP4 are based on results and standards produced under WP2 so there is a close cooperation between these two WPs for these activities. Feedback received: A series arrangement for sampling was suggested when collecting hydrogen at the station.
- **WP 5: Creating Impact** - Indra te Ronde (Work Package 5 leader) introduced the fifth work package on impact and dissemination. Feedback from the SAB: The OEMs in the industry also formulated a survey in this area. The offer was made to compare the surveys. A question was asked on the current status of the Alternative Fuels Infrastructure Directive (AFI), degree of enforcement and the relations to standards and standardization. In particular it was asked how local knowledge may be adopted on a European level. An extensive explanation was given in response. Based on this comments, the WP 5 leader will put more information, however, more general, on the project and it's the relation to standards and the AFID directive on the website. In particular, OEMs requested for new articles providing feedback from all of the standardisation meetings that MetroHyVe attends.
  From WP 5 perspective, the workshop was considered a success because a big audience is now (further) informed about the project itself, and activities for creating impact in specific. The workshop also supports to actually build-up a wider hydrogen community, specifically interested in hydrogen measurement requirements. The audience is now aware that several sources of information are made available/will be developed (such as the project website, training sessions, etc.). And right after the workshop, already 4 people registered. And of course the workshop of today offered good input for the rest of the project('s WPs). It was a good decision to organise this workshop earlier than foreseen (M6 instead of M9), so more input could be collected at the start of the project('s activities), for even better results.

# 2 Participant list

| Name | | | Company / organisation | Country |
|---|---|---|---|---|
| Aarhaug | Thor | | SINTEF Industry | Norway |
| Adler | Florian | | Tiger Optics | United States |
| Amorim | Vasco | | INESC TEC \| UTAD | Portugal |
| Büker | Oliver | | RISE | Sweden |
| Bacquart | Thomas | | NPL | United Kingdom |
| Baldan | Annarita | | VSL | The Netherlands |
| Boonman | Jacoline | | VSL | The Netherlands |
| Benton | Andy | | Michell Instruments Ltd. | United Kingdom |
| Carre | Martine | | Air Liquide | France |
| Elliott | Alice | | Shell | The Netherlands |
| Gindroz | Bernard | | BMGI Consulting | Belgium |
| Hayashi | Hitoshi | | Toyota Motor Corporation | Japan |
| Hafseld | Ulf | | HYOP | Norway |
| Hogendoorn | Jankees | | KROHNE | Netherlands |
| Huu | Marc | de | METAS | Switzerland |
| Jong | Françoise | de | SFEM | The Netherlands |
| Kang | Woong | | KRISS | Republic of Korea |
| Knipschild | Max | | NEN | The Netherlands |
| Kuett | Johannes | | Silco Tek GmbH | Germany |
| Lazzari | Marc | | Mestrole | France |
| MacDonald | Marc | | NEL | United Kingdom |
| Marel | Leendert | van der | Kiwa Nederland B.V. | The Netherlands |
| Mattelaer | Vincent | | Toyota Motor Europe N.V. | Belgium |
| Meuzelaar | Heleen | | VSL | The Netherlands |
| Murugan | Arul | | NPL | United Kingdom |
| Pauwels | Harold | | NEN | The Netherlands |
| Perotti | Remco | | SFEM | The Netherlands |
| Petter | Harm Tido | | VSL | The Netherlands |

| Name | | | Company / organisation | Country |
|---|---|---|---|---|
| Reijerkerk | Jaco | | Ekinetix | The Netherlands |
| Ronde | Indra | te | NEN | The Netherlands |
| Schnitzeler | Frank | | Air Products Nederland BV | The Netherlands |
| Spitta | Christian | | ZBT GmbH | Germany |
| Steuer | Thomas | | Rheonik Messtechnik GmbH | Germany |
| Storms | Ward | | Toyota Motor Europe | Belgium |
| Struijk | Frank | | Michell Instruments Benelux | The Netherlands |
| Teunisse | George | | Min. of Economic Affairs and Climate / AT | The Netherlands |
| Tolosa | Manuel | | BMW AG | Germany |
| Tomoaki | Sunada | | Toyota Motor Europe | Belgium |
| Valter | Vladimir | | ZSW (Zentrum für Sonnenenergie- und Wasserstoff-Forschung) | Germany |
| Viitakangas | Jaana | | VTT Technical Research Centre of Finland | Finland |
| Vogelaar | Bram | | Air Liquide | The Netherlands |
| Whelan | Frank | | Gas Analysis Services Ltd | Ireland |
| Wijk | Janneke | van | VSL | The Netherlands |

# 3 Workshop agenda

09:00 Registration

09:30 **Welcome to NEN**
Harold Pauwels (NEN) / Business unit manager NEN standards

09:45 **Introduction to MetroHyVe**
Arul Murugan (NPL) / MetroHyVe Project coordinator

10:00 **Introduction to Hydrogen Vehicles**
Speaker, Vincent Mattelaer (Toyota Europe)

10:30 Coffee break

10:45 **WP 1 'Flow metering'**
WP 1 leader, Marc de Huu (Metas)

11:30 **WP 2 'Quality assurance'**
WP 2 leader, Thomas Bacquart (NPL)

12:15 **Lunch**

13:15 **WP 3 'Quality control'**
WP 3 leader, Janneke van Wijk (VSL)

14:00 **WP 4 'Sampling'**
WP 4 leader, Oliver Büker (on behalf of Karine Arrhenius) (RISE)

14:45 Coffee break

15:00 **WP 5 'Creating impact'**
WP 5 leader, Indra te Ronde (NEN)

15:15 **Wrap-up of the day**
Arul Murugan (NPL) / MetroHyVe Project coordinator

16:00 Drinks

# 4 Workshop proceedings

## 4.1 Welcome to NEN and introduction to MetroHyVe

Harold Pauwels (Business unit manager NEN standards) welcomed all participants. He has been involved in hydrogen standardization in the past. He explained that in his experience trust is crucial to prevent lock-in. Metrology, standards and certification are in that sense essential in rolling out all kinds of businesses, like the hydrogen business. This is also the role of NEN. The core business is making standards, however together with all stakeholders NEN should make sure that standards are actually used and impact is created. He underlined that this is why the MetroHyVe project is so important. The stakeholder advisory meeting of today will be very valuable to assure that impact is created.

Arul Murugan (project leader MetroHyVe) welcomed all participants on behalf of the MetroHyVe project. A short roll call followed in which all participants mentioned briefly their name, company and their involvement in the hydrogen business. Finally, Indra te Ronde (Work Package 5 leader) stated that he is responsible for this meeting and the SAB board. He offered the opportunity to join the SAB, if not already taken care of.

Subsequently, Arul Murugan introduced EMPIR (European Metrology Programme for Innovation and Research) and their priorities over the years. In 2017 the call theme was Energy and Environment, which lead to the initiation of the MetroHyVe project. He subsequently briefly mentioned the main measurement challenges regarding hydrogen vehicles in view of the MetroHyVe consortium. Challenges in the areas of flow metering, quality assurance, quality control and sampling. He showed that the MetroHyVe project has been highly anticipated because of a clear identification of challenges, highly capable partners and very good support from these partners. He thanked all participants for this support. He made clear that the consortium intends to have a two direction meeting in which the MetroHyVe Stakeholders provide advice and the MetroHyVe partners provide solutions. He added that there are possibilities for a new round of EMPIR energy projects by 2020. It's always a possibility to initiate a sequel for MetroHyVe for more research to metrology, if suggestions cannot be taken along in MetroHyVe.

## 4.2 Introduction to Hydrogen Vehicles (by Toyota)

Vincent Mattelaer (Toyota Motor Europe) provided a presentation on why to introduce hydrogen vehicles from Toyota's point of view. He started to explain that the ambitious targets of the COP21, air quality and energy security are main drivers. The holistic future vision of Toyota on a hybrid between a hydrogen network and electricity grid was subsequently explained. Especially in terms of storage, hydrogen can play a major role. He noted that batteries have their advantages, but their capacity is relatively low. Hydrogen storage has geographical disadvantages, but has a relatively high capacity, especially over longer periods. Several other advantages of hydrogen as a versatile zero emission energy carrier were subsequently discussed e.g. as feedstock for the industry. For transport, BEVs would be more suited for short distances, but for big size cars, buses, trucks and trains FCEVs would be more beneficial. He underlined that the Mirai model is very important for Toyota, just as the Prius model has been since 1995. It fits their philosophy and long term vision. They have been working on FCEVs already since the Toyota Earth Chapter from 1992. The Mirai is now the 8th FCEV model of Toyota. For the Mirai it is expected that the growth will be not that fast as for the Prius however, because they are limited to bigger size cars and hydrogen refueling stations. In addition, they cannot increase production at the moment as a new assemble train would be required. He argued they believe in a mixture of powertrains for the future. Although the majority will be plug in hybrid, all will have a place in the future system, depending on what the

customers prefer. The mix of sources for sustainable mobility are all based on a similar hybrid technology, at which Toyota is already proficient at. The Fuel Cell main components are also developed inhouse, which make them reliable and allows them to provide a long-term warranty. As an example he provided information on an intense driving style test in Europe for the Mirai. In the discussion that followed, he underlined that the most important condition for performance is excellent hydrogen quality. Regarding the other MetroHyVe challenges, Toyota would prefer online measurements over the offline ones. Mr. Mattelaer also explained that two types of impurities affect the performance. First, specific contamination which causes damage over the longer time and is difficult to measure. Second, contaminations like water and nitrogen as a result of human mistakes, which result in immediate damage.

## 4.3 WP 1 'Flow Metering'

Marc de Huu (Work Package 1 leader) provided a presentation of the first Work Package on flow metering. He briefly introduced the partners in the consortium. Subsequently an overview was provided of the objectives of the work package. He explained that the workload is divided over 5 tasks. First, information is obtained e.g. on how various HRS are designed and where meters are placed through direct contacts to hydrogen refueling station operators. A public report should be available during Q1. Then performance testing of Coriolis flow meters with alternative safe fluids to hydrogen like nitrogen, air or water are to be performed on flow meters provided by manufacturers as in kind contribution. The aims is to test how they behave and to possibly ease the work for conformity testing by using safer fluids. They intend to develop a procedure to make testing with these fluids easier for laboratories. In particular, water and oil will be used to test the pressure dependence of Coriolis flow meters. Subsequently the meters need to be calibrated, verified and validated in the field. Mobile gravimetric standards (Hydrogen Field Standards = HFS) are being developed to satisfy this need. Finally, a good practice guide will be made on how to verify refueling stations. A future step is to provide uncertainty budgets for the various approaches. Also, a cost-estimate of a dedicated reference metrology infrastructure to high pressure hydrogen flow metering will be included.

In general, Work Package 1 encounters a lot of constraints due to certification issues and long delivery times, but they are making progress now. Mr. de Huu thanked the manufacturers for providing the flow meters.

**Feedback from the SAB:**

In the discussion thereafter several topics where discussed. Amongst these, it was discussed to what extent the tests with alternative fuels will be comparable to hydrogen, as they might show different behaviour in terms of temperature and pressure. Helium was proposed but not selected as an alternative testing fluid because of costs. Also discussed was the size of the tanks used in the mobile gravimetric standards under development The current project focusses on metering for cars and thereby limits the amount of delivered hydrogen to about 5 kg. Suggestions were made to extend the mobile testing facilities to include an IR communication system to allow an exchange of information with the hydrogen refuelling station before a refuelling process starts, as takes place with some cars. This option could be implemented in the future but the current design of the mobile standards should allow for successful testing.

## 4.4 WP 2 'Quality Assurance'

Thomas Bacquart (Work Package 2 leader) provided a presentation on the second work package 'quality assurance'. He stressed that feedback from stakeholders will be very valuable as they are still in an early phase of the project. Subsequently the objectives and tasks of the work package were explained. After each task, several topics were suggested for discussion. For task 2.1, they made a selection of reactive compounds to be measured, based on the review on measurement from HRS. He made clear they need to focus and cannot measure all potential harmful compounds from a cost perspective. The anticipated ISO standard on quality measurement has been taken into account and is used for guidance. The compounds are also selected on the basis of literature research.

**Feedback from the SAB:**

Feedback was provided that the new standard doesn't prescribe to measure the total list of potential contaminants. Instead, relevant compounds should follow from a risk assessment procedure. In addition, response was received from the hydrogen community on experiences with ASTM. Several showed their interest to the offer of Mr. Bacquart to organize dedicated discussions with other analytical labs on quality assurance to draft good standards in the end. A list of halogenated (Dichloromethane, Tetrachloroethylene, C4Cl4F6, Dichlorobenzene, Chloroform) and sulphur (Carbonyl sulphide, Carbon disulphide, Tert-butyl mercaptan, Tetrahydrothiophene, Methylmercaptan) compounds were presented to represent the total. The SAB did not disagree with the list of compounds chosen to represent the total halogenated and the total sulphur compounds.

Regarding the assessment of the different analytical methods, it was advised to also include operating costs. It was made clear that a compromise has to be made between costs and efficiency of the analysis. In addition it was suggested, to include relative and additional costs of analysis in comparison to other methods and to indicate the impact on the price of the fuel. For the development of the cost efficient analyser complying with ISO 14687, the SAB suggested to focus more on a modular equipment. The SAB advised to focus on the ISO 19880 scope as analytical laboratory flexibility is important. According to ISO 19880 and the required risk assessment to be carried by each hydrogen refuelling station, not every refueling station is served to measure the complete ISO 14687 contaminants, but subsets of it. For different sources you may have to measure different contaminants. Mr Bacquart suggested to reformulate the task to take ISO 19880 into account and focus on a dedicated sub-set of contaminants for the cost efficient analyser developments, based on the comments given.

Several SAB members raised interest in joining the inter-comparison that will take place within the project. The SAB members agreed for two laboratories outside of Europe being the most used.

## 4.4 WP 3 'Quality Control'

Janneke van Wijk (Work Package 3 leader) provided a presentation on work package 'Hydrogen Quality Control'. She made clear that the third work package has the aim to develop and validate online analyzers for measuring impurities in hydrogen. Work Package 3 has a lot of overlap and similarities to Work Package 2 however. Next, all work package tasks were clarified. The list of components to be measured was discussed. Although nitrogen is now not part of it, it may be potentially be included afterwards. Hydrocarbons are suggested to add for the online measurement. The attendees were invited to take part in the inter comparison of online purity analyzers. Subsequently, input was asked regarding the relevant criteria for low costs sensors for hydrogen purity measurement. Also a survey will be spread in this regard. Interference, stability (drift), maintenance and calibration were mentioned as important ones. Support was then asked to

determine what realistic market prices for commercial sensors for online measurements and whether parties are interested in providing these.

**Feedback from the SAB:**

Feedback was given on a realistic price range for so called cheap online sensors. However, the remark was made that price should relate to performance, a sensor that would only be suited as an alarm should cost less than a senor that gives information on the actual level of the measured impurity. In that regard, total costs of ownership would be a more preferable criterium than just the CAPEX. It was suggested to include hydrocarbons in the list of components for the survey on cheap on-line sensors. The group was divided on the inclusion of nitrogen; most problems found were related to nitrogen but these were caused by maintenance and should therefore not selected for online analysis. The SAB suggested to send out the survey to find out what sensors are available and only hereafter decide on selecting a sensor for testing . Finally also the thresholds of contamination were discussed, which relate to the accuracy of measuring, type of sensor and resulting price. It was suggested to follow the ISO limits described for now.

## 4.5 WP 4 'Sampling'

Oliver Büker, replaced Karine Arrhenius, and presented an overview of Work Package 4 on sampling because Karine Arrhenius (Work Package 4 leader) could not attend. The aim of the Work Package was discussed. The main outputs will be good practice guides. Next, Mr. Büker explained the underlying tasks. A first report is already available on the website. The report describes a risk assessment on the possible contaminants and issues when sampling. For the validation of particulate sampling using filters, two surveys have been sent out. Results are expected in February/March 2018, upon which a report will follow. Also a procedure for preparing the vessels before sampling is being developed. A final report of a literature review on state-of-the-art particulate sampling techniques will be published by the end of January 2018. For the task of efficiency of sorbent tubes, a report was published on existing hydrogen purity from 24 different refueling stations. An overview was then provided on the IFE Hynor Hydrogen Technology Center for the assessment of feasibility of direct sampling at HRS on sorbent tubes. The final task of assessing suitability of commercial available sampling vessels has not started yet.

**Feedback from the SAB:**

A series arrangement for sampling was suggested when collecting hydrogen at the station.

## 4.6 WP 5 'Creating Impact'

Indra te Ronde (Work Package 5 leader) introduced the fifth work package on impact and dissemination. He made clear this work package is overarching and less concerned with the technical substance and research. The consortium likes to share the results with the outside world and also to gain input back. Several activities are formulated in this work package to assure this. Examples are the establishment of the Stakeholder Advisory Board (SAB) and the website www.metrohyve.eu. A wider impact of the project is intended on the economic, social and environmental level. Also trainings and workshops are offered in this regard. Next, an overview was provided of the relations between the different work packages, the SAB and the hydrogen community. Shortly the website was shown. All attendees were invited to notify NEN on important news items. These can be put on

the website if desired. The aim and role of the SAB was then explained in more detail. He once more made clear that it is still possible to join the SAB, and he invited all attendees to participate or to become a liaison to the project. The WP 5 leader could be contacted for that (indra.teronde@nen.nl) Suggestions on possibilities for knowledge transfer (e.g. oral presentations, peer-reviewed publications and trade journals) were discussed. Regarding standardization, NEN and/or the consortium members are involved in almost all standardization committees/working groups listed. Relevant results of MetroHyVe will be put on the agenda via these relations.

An online survey has been circulated to the wider community to discover new contacts in the hydrogen industry that would benefit from the measurement solutions provided by this project. Mr. Murugan commented that the list of questions similar to the questions asked today. Everybody is invited to provide feedback. The link is available on the website and will be open to the end of the project.

Mr. Murugan finally commented on the Virtual Hydrogen Measurement Service Hub. It will comprise a website on which everybody of the hydrogen community may find measurement capability throughout Europe, including a good search function. It will be open to any laboratory (also outside Europe) that wants to put their information on there and will be available for all the public.

**Feedback from the SAB:**

The OEMs in the industry also formulated a survey in this area. The offer was made to compare the surveys.

A question was asked on the current status of the Alternative Fuels Infrastructure Directive (AFI), degree of enforcement and the relations to standards and standardization. In particular it was asked how local knowledge may be adopted on a European level. An extensive explanation was given in response. Based on this comments, the WP 5 leader will put more information, however, more general, on the project and it's the relation to standards and the AFID directive on the website. In particular, OEMs requested for new articles providing feedback from all of the standardisation meetings that MetroHyVe attends.

# 5. Photo impression