NEWSLETTER No.04

November 2013

Content

MobyPost ID

Title

Mobility with hydrogen for postal delivery

Programme

Fuel cell and hydrogen Joint undertaking — Call 2009

Duration

01/02/2011-31/01/2015

Main objective

MobyPost aims at developing a novel sustainable mobility concept that proposes to meet the challenge of experimenting a whole system combining a carbon neutral vehicle with a technology based on a solar hydrogen fuel cell system. This is what we call the solar-to-wheel solution.

Partner countries

Germany, Switzerland, Italy, France

Editorial

Dear Readers,

The **MobyPost** project is delighted to present you the 4th **MobyPost** Newsletter. In this edition we give you an update about the project's progress and development, present interesting news from the e-mobility field and we give you an unique insight in the work of project partner MES S.A., the developer, manufacturer and supplier of a fuel cell for the **MobyPost** vehicle.

Michel Romand has joined UTBM after the liquidation of IPV and is now officially the new coordinator of **MobyPost** under the direction of UTBM. He welcomed warmly the group at the UTBM premises in Belfort for the 30-months Steering Committee meeting of **MobyPost**. Read more details about this partner meeting and the recent developments and progress on the infrastructure and the vehicle side on page 2.

In our series of interviews with project partners, we would like to present in this newsletter edition an interview conducted with Roberto Bianchi from MES S.A., the manufacturer and supplier of the fuel cell. Read more about MES's main area of activities, its role in the project, the challenges faced during the development and the manufacturing of the fuel cell for the **MobyPost** vehicle and get also an insight into Roberto's vision for the future of electric vehicles equipped with hydrogen, all on page 3.

Talking about the fuel cell industry, we present subsequently in the section "News from the Field and upcoming Events" the general developments and trends of the fuel cell industry in 2013 and interesting events of this industry for the beginning of 2014.

Last but not least we would like to announce the good news that **MobyPost** project duration is officially extended for 12 months.

Apart from the newsletter, we kindly invite you to also regularly consult our website: www.mobypost-project.eu

Enjoy reading!

Your MobyPost consortium

MobyPost is co-financed by the European funds from the Fuel Cell and Hydrogen joint Undertaking (GA number

Past Events

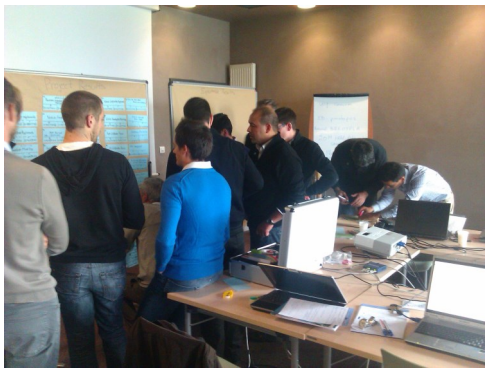
MobyPost partner meeting in Belfort, France, 17th – 18th September 2013

The 30-months **MobyPost** Steering Committee Meeting of **MobyPost** project took place in Belfort, France, at the UTBM premises. During the two days meeting, representatives of almost all project partners could share information about the latest development and progress of the work in **MobyPost** project.
The meeting started with a very warm welcome of the new project coordinator, Michel Romand from UTBM.
The first day was dedicated to review the general status of the work-packages dealing with the **MobyPost** vehicle and infrastructure. Furthermore a common dissemination road-map was developed and a presentation of the management status of the project was also given. After having discussed the project's developments on paper, it was time for some practical input. Therefore UTBM and LaPoste organized a visit of the infrastructure site in Audincourt in order to show all partners in real terms the advancement of the work.

MobyPost infrastructure site in Audincourt—ventilated building for hydrogen production

Afterwards in a workshops about the demonstration and experimentation phase partners had the chance to discuss the proceedings of this project phase. The demonstration and experimentation phase is of prime importance to make the proof of the **MobyPost** concept and will be determined for the follow-up activities of the project, such as for example knowledge transfer and business plans. The workshop underlined the importance to have a high level of availability of infrastructures and vehicles combined with an effective maintenance and troubleshooting road-map in order to guarantee the good operation during the entire experimentation phase. Having this importance in mind, the entire **MobyPost** consortium agreed on a roadmap for maintenance and troubleshooting with joint responsibilities.
The morning of the 18th September, was then focused on a show around the vehicle prototype followed by two parallel workshops for both infrastructure and vehicle groups in order to discuss together the progress of the work and to find suitable solutions for some open issues which remain to be solved for the project to be a success.
The workshop on the vehicle took place directly in one of the UTBM's experimentation lab, where the prototype is under construction. Good news are that the prototype is about to be finalized and internal tests are currently running. The homologation process is devided in two stages: one is the homologation process in Italy for the electric operation and the other is the French procedure for the fuell cell homologation.
During the Infrastructure Workshop, respective partners discussed the status of both infrastructure sites. Generally speaking both infrastructures are on a good way to be soon ready for the kick-off of the experimentation phase. The infrastructure in Perrigny for example is almost completed and commissioning should take place in December.

Last but not least, all partners were actively involved in an IPR and exploitation workshop organized by SEZ.



MobyPost IPR and exploitation workshop

MobyPost partners left Belfort updated about recent project developments and highly motivated about the upcoming project period. All partners are especially looking forward to the kick-off of the official experimentation phase and to see **MobyPost** vehicle driving on France's roads delivering the post.

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Past Events

MobyPost at POST-EXPO 2013 in Vienna

POST-EXPO 2013, convention-exhibition center Vienna, Austria

POST-EXPO is a leading international conference and exhibition for mailing, postal, express, Parcel and Courier industries that deals with technology, customer service, operations and business management for the Postal, Parcel and Courier Industries.
POST-EXPO 2013 was held in Vienna, Austria from the 1st to the 3rd October and brought together senior directors, CEOs, key decision makers, managers, buyers and suppliers from all over the world involved in the Postal, Parcel and Courier Industry. On this year's POST-EXPO, for the first time **MobyPost** project was present.

Eric Gauthier (LaPoste) on the PostExpo conference

Eric Gauthier from partner LaPoste presented **MobyPost** project, its objectives and achievements during a conference in front of an international audience. The feedback of this project presentation was very positive and the audience showed much interest in the overall **MobyPost** concept.
Furthermore partners DUCATI, UTBM, and LaPoste managed a **MobyPost** stand in the exhibition hall during the two days international fair. Many interested visitors came to the stand to get more detailed information and explanation about **MobyPost** project and its implementation. The presence on the POST-EXPO was considered as a very good opportunity to disseminate the project, in particular the **MobyPost** vehicle and its special system of renewable energy production.

Future Project Events

Next **MobyPost** partner meeting is scheduled for the beginning of next year, between January and February 2014. **MobyPost** partners will meet again at the infrastructure sites in order to investigate the infrastructure and to discuss the progress of the demonstration period.

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Interview with Roberto Bianchi from MES S.A.

Short profile

Roberto Bianchi

Roberto holds a degree in Electrical Engineer of the Politecnico of Milan (2001).

Currently he is a member of the advisor commitment of the Energy and Nuclear department of the Politecnico of Milan.

He worked for two years in the R&D department of Ansaldo Sistemi Industriali. After which he started to work at MES in the Fuel Cell department. Since then he has worked intensely on the development of Polymer Electrolyte Membrane (PEM) fuel cell control technique. Furthermore he is in charge of the management of the swiss scientific projects on the fuel cell technology for MES. In MobyPost project, he is involved as member in the technical committee and is responsible for the development of the Fuel Cell power train.

1. What is MES's main area of activities?

Company MES SA, founded in 1976, is part of a pool of 14 companies worldwide named CEBI international (2'800 employees and 220'000 m2 of working facility worldwide). MES SA is located in Stabio, Canton Ticino, the southern part of Switzerland and develops, designs, manufactures and commercializes components for Automotive, Household appliances and ventilation industries.

Since the beginning of 2010, MES has included in its own portfolio the activities related to the fuel cell technology and the components for the electrical vehicle coming from MES -DEA, another company of the CEBI group.

2. Is MES actively seeking innovative developments? If yes, in which area/field in particular? Are there any particular trends?

MES is strongly dedicated to monitor the last trends of the electrical actuators market and to answer the more and more restrictive requests coming from MES' clients.

Within the last couple of years, we have noticed a particular trend coming from the market and the international regulation side, which clearly shows that in the automotive application field the level of noise became the priority and determines who the market leader is. In the ventilation field of application however, energy efficiency still remains the most important aspect on which development is focusing on.

3. Does hydrogen plays a strategic role for MES's future development?

Yes indeed, hydrogen plays a strategic role for MES: the fuel cell department of MES has a special role within the company and is very much distinguished from the typical product scheme of MES and its group. The continuous investment in this sector, since over 10 years, shows the importance given by MES to it and underlines the strong believes in this technology and its market potential.

During the last years positive synergies have been created between the larger part of the company and the smaller fuel cell department. On the one hand, the fuel cell department benefited of the implementation of some rigid guidelines and rules that are inherent to big certified companies and which helped to organize the development of the fuel cell department and the products in a more effective way. On the other hand, the highly innovative aspects of the fuel cell technology also helped to pave the way for new contacts and new opportunities to the rest of the company.

4. Do you have an internal R&D department? And if yes, on which R&D topics does your company focus on?

MES has its own R&D department dedicated to its standard products and in parallel there is the Fuel Cell department which is dedicated to the development and production of Polymer Electrolyte Membrane (PEM) fuel cell technology. Once again it is worth mentioning the synergies between these two departments. So for example is the R&D department recently involved in testing new powerful software tools in order to predict the noise of the final product. Both departments are testing new materials and solutions, and also work in close collaboration with swiss research centers.

Follow the interview on the next page!

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Interview with Roberto Bianchi from MES S.A.

This is very important for us in order to have continuous information exchange with the latest academic research results. For example we have recently finished a project which allowed us to improve the conductivity of our bipolar plate by two-three times just changing the polymer-graphite compound used. We are now close to start a new project with the scope to study the possible aging Membrane electrode assembly (MEA) effects after a thaw procedure has been applied.

5. How did you become involved in the MobyPost project? What was your motivation to join? What are your particular interest in and expectation from participating?

MES-DEA was invited to become a **MobyPost** partner by the company EDI which at the beginning was in charge of the development and manufacturing of the **MobyPost** vehicle. After the Fuel Cell activity was moved from MES-DEA to MES in 2010, MES has officially taken over its place in the consortium.

Our motivation to join this European project has been very high since the beginning. Clearly because it gives us the great opportunity to improve our system and to test it in a real application, but also because our history started exactly twelve years ago thanks to a strong collaboration with Aprilia Motorbike and the idea to develop a fuel cell full propulsion scooter. Unfortunately during the years most motorbike manufacturers haven't proceeded with their experimentation on fuel cell vehicles like the car manufacturers have done. And so, let me say, participating in **MobyPost** was like coming back to our roots.

6. In MobyPost project, MES mainly acts as a developer, manufacturer and supplier of a fuel cell which has to feed the electric motor of the vehicles. What kind of activities concretely does this include?

Our activities have started right at the beginning of the project. Thanks to the work of UTBM, we were able to define the right size in terms of power that the fuel cell would need. Hence we have deisgned the right stack dimension and we have proceeded to select and assemble the correct auxiliaries. Many efforts were put into the work to increase the releability of the system in under zero ambient condition and to optimize with the partners the thermal interface with the MeH hydrogen tanks. Last but not least, the European Conformity certification (CE) of the developed system was a big obstacle we had to face and which was a real challenge. Finally we managed to get the CE certification which was a great success for MES and the whole **MobyPost** consortium.

7. What was (were) the biggest challenge(s) developing and manufacturing the fuel cell and later on its implementation? Did you have to face some stumbling blocks?

Probably the biggest stumbling stone that we had to face up to now was the optimization of the fuel cell stack. Indeed with the change of the dimension and of some components, first of all the MEA for which we have introduced a new product specifically designed for automotive application, we have lost a good part of our milestones in term of compression set. We had to work hard for the optimization before to get a stable functioning with good performance of the FC stack.

8. There are many different solutions for the implementation of clean/renewable energy. What are the advantages of hydrogen and fuel cell technologies?

It is well known that storage energy through a pressurized gas is one of the cheapest ways that exist at the moment to produce energy. Considering the specific case of hydrogen there are additional benefits. Let me explain briefly: First of all the hydrogen can be synthesized through various industrial processes. Secondly, if the hydrogen comes from the hydrolisys of water powered by a renewable energy (also known as green hydrogen) and this hydrogen is converted again in electricity by means of a FC, any kind of pollution is avoided and the water balance is close to zero. This short inside shall be sufficient to underline the great sustainability of this architecture and how important it is to promote its use combined with other renewable technologies.

Follow the interview on the next page!

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Interview with Roberto Bianchi from MES S.A.

In the case of an electric vehicle, it is easy to create a harmonious functioning between the fuel cell technology and a battery in order to answer correctly to the power and autonomy demands. Furthermore there is the additional advantage that the tank refuelling time is normally comparable with the gasoline standard one, overtaking in this way one of the weakest point that the public opinion has highlighted about this kind of vehicle.

9. What is your long-term vision concerning the MobyPost concept? Do you think it may have an impact on a wider deployment of hydrogen-driven vehicles, in Europe?

I think that the **MobyPost** project could be a very good incubator of ideas for the future. For sure this experience will be useful for the postal field for which everything has been designed ad hoc. But moreover, the possibility to demomstrate the feasibility to realize a fleet of hydrogen vehicles for a specific work mission integrated with a recharge station can be the right occasion to launch new initiatives, simply by reproducing and customizing our experience.
We should not forget that with **MobyPost** we tackeld big obstacles for the diffusion of FC vehicles, just to give some examples:

- hydrogen recharging station with production on-site from renewable energy
- low pressure hydrogen storage on board of the vehicle
- the energy efficiency of the vehicle was deeply studied and optimized in order to optimize the autonomy
- vehcile running on public roads

A success of the **MobyPost** project could be an example of the right solutions which can be used for several other similar case studies

10. Do you think that fuel cell technologies and vehicles equipped with hydrogen, similar to those developed for MobyPost will be easily accepted by the professional users, the public or possibly even by private users?

The acceptance of fuel cell vehicles by private users is clearly not related to the confidence in the technology because people are usually very excited about driving a FC vehicle. But the bigger problem rather is the limited facilities available for this product. More concretely I am talking about autonomy, refuelling time, availability of refuelling stations and last but not least the costs.
After years of development we are now at a turning point at which the technologies are ready to be deployed but at the same time we are caught in a paradox: no car manufacturer wants to start a large-scale production and commercialization activities, without a sufficient infrastructure available. In return no oil and gas company wants to invest big amounts of money to realize hydrogen refuelling stations without FC cars on the road.
The national authorities are likely to be the right key to solve this dilemma.
At this stage, I also would like to mention the new fields of oil sands recently found that can guarantee for a long time energy at low cost even though at high cost and risk for the environment. This discovery could postpone and slow down tremendously the transition to clean renewable energy. The open question is then: will we really be so short- sighted?

11. What is MES's vision on your own activities in the field? Would you go for similar initiatives or projects like MobyPost, possibly even at a larger scale?

The possibility to continue the improvement of our product for the automotive sector will remain one of our main focuses for the future. However, for the success of future projects where a large fleet of vehicles is involved we think it is indispensable to focus on a consequent immediate entrance into the market, especially for a company like MES which is not a big car manufacturer.
Consequently, we are also working on other sectors that have fewer obstacles and where a market penetration is closer, as for example: portable power unit and telecom.

Thank you Roberto for this very interesting interview!

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News from the field

Fuel Cell Industry Review 2013 shows continued sector growth

Fuel Cell Today has just published its latest annual review of the fuel cell industry, reporting continued growth through 2012 and into 2013 across all regions. The Fuel Cell Today is a global source of information covering the international market for fuel cell.
The Fuel Cell Industry Review 2013 forecasts shipments in 2013 reaching 66,800 units worldwide, growing by 46% compared with 2012. This continued success follows on from the growth seen between 2011 and 2012. Polymer electrolyte membrane fuel cells (PEMFC) are again expected to lead 2013 unit shipments, accounting for 88% of the total, and regionally Asia to dominate with a 76% share of total units.
Fuel cells are becoming well established in a number of markets where they are now recognised as a better technology option than conventional internal combustion engine generators or batteries. Despite a shortfall in expected shipments from the portable sector, 2012 demonstrated continued growth in unit shipments of fuel cells for transportation and a significant increase in unit shipments of stationary fuel cells, leading to an increase overall. The stationary sector is by far the stand-out performer for fuel cell technology, finding application across all scales. A special feature in the Review focusses on financial support for stationary fuel cells in California.

In the Review Fuel Cell Today provides an overview of recent developments in 2012 and 2013 related to fuel cell technology. To read the full review, please click here.

Hydrogen refuelling stations will continue to be added in 2013 as a number of regions prepare for the commercial release of fuel cell electric vehicles in 2015. Countries in Europe, North America and Asia have all launched hydrogen infrastructure programmes in 2012 and 2013 to facilitate this.

Regionally, Asia continues to dominate the fuel cell industry in terms of system shipments with 28,000 in 2012 or 61% of the global market. Asia also overtook North America to lead the 2012 megawatt count with 86.1 MW, or 52% of the total; North America now follows second with 37%.

Upcoming Events

10th International Hydrogen & Fuel Cell Expo 2014, 26th—28th February 2014, Tokyo, Japan

Join the world's largest industry event where all kinds of technologies, knowledge, talks, decisions and people gather. FC EXPO offers valuable business opportunities to meet worldwide fuel cell & it's system manufacturers, hydrogen and fuel cell users from various kinds of industries, energy related professionals, etc.

http://www.fcexpo.jp/en/

Annual European Fuels Conference 2014, 18th - 20th March 2014, Rome, Italy

Now in its 15th year, the European Fuels Conference will offer crucial insight on the future for refining in the region – and on the responses needed from the refineries in order to survive and remain competitive. What is the effect of future regulation on the industry? How can refineries become more energy efficient? What technologies can help improve margins?

http://www.wraconferences.com/event/european-fuels-conference

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