

Hydrogen and Fuel Cells as Key Technologies for a Sustainable Future

The German 'National Organization Hydrogen and Fuel Cell Technology' (NOW GmbH) welcomes the 'EU 2020' initiative of the European Commission. The NOW GmbH recognizes the salience of the priorities identified by the Commission Working Document, and with its activities contributes to creating a greener and more competitive economy. The NOW GmbH coordinates and implements the € 1.4 billion 'National Innovation Programme Hydrogen and Fuel Cell Technology' (NIP) of the German federal government, in collaboration with the 'Project Management Organization Juelich'.

Hydrogen offers great potential as a transport fuel that can be produced from domestic renewable energies. By facilitating the decarbonization of the transport sector and increased energy security, hydrogen contributes to achieving key EU policy goals. As a medium of energy storage of outstanding capacity, hydrogen also promises to level out fluctuations in the supply of regenerative energy that represent an increasing concern of EU policy-making.

Hydrogen used as a fuel for fuel cell vehicles allows exploiting a key advantage of the fuel cell: energy-efficiency far superior to conventional engines. The combined advantages of hydrogen and fuel cells may result in car emissions as low as 20 g. CO₂/km, as compared to an average of some 160 g. CO₂/km today, thus exceeding current EU emission reduction targets. At the same time, fuel cell vehicles offer driving range and performance comparable to today's cars.

Major motor and energy companies anticipate the market introduction of fuel cell vehicles and the build-up of refueling infrastructure by 2015 on a worldwide scale, thereby recognizing the fundamental change road transport is set to experience to accommodate sustainability pressures. To stay ahead in the global innovation race and benefit from expected economic gains, many companies invest substantially in hydrogen and fuel cell technologies.

As a governmental organization acting in the spirit of a public-private partnership, the NOW GmbH financially supports and coordinates R&D projects in Germany, thus pooling public and private resources towards maximizing the benefits of innovation activities. Important is the close cooperation between the NOW GmbH and its counterparts 'Joint Technology Initiative for Fuel Cell and Hydrogen' and 'European Regions and Municipalities Partnership for Hydrogen and Fuel Cells' at the European and regional level, to again align policies and achieve greater impact.

Hydrogen and fuel cells also offer remarkable opportunities for eco-innovation in the stationary sector and in special, i.e. early, markets. Fuel cell combined heat and power plants achieve very high energy-efficiencies and are attractive both for industrial and home applications. Many special market applications have already entered commercial markets regarding, e.g., on-board electricity supply for caravans. Again real environmental and economic advantages materialize. Apart from mobile applications, the NOW GmbH supports market preparations in the stationary sector and special markets.

By supporting hydrogen and fuel cell technologies, the NOW GmbH contributes to achieving core goals of the 'EU 2020' agenda as envisaged today. It will be essential to continue and enhance ongoing activities to work towards a sustainable future. An important aspect is to increase awareness of the potential of hydrogen and fuel cells and to more intensively communicate with a wider range of stakeholders in transport and energy.

A recent European initiative regarding the construction of an offshore power grid, e.g., offers the opportunity to combine the advantages of supergrids regarding power transmission with the great potential of hydrogen as a energy storage medium. Both technologies taken together promise to achieve better results in leveling out electricity fluctuations than if used in isolation.

Not last to identify and exploit potentials for synergies, the NOW GmbH encourages a more intense dialogue between stakeholders from politics, industry and science. This is to harness the potential of hydrogen and fuel cells to achieve an environmentally and economically sustainable future, while ensuring still better alignment with related activities.

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