

## **HYVOLUTION or the hydrogen revolution from potato peels ! "Bangers and Mash"**

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How can you run your car whether new or an old banger on a steamed potato? Or, even better, on steamed potato peel? No, this is no joke about bad cooking. It is the reality on which HYVOLUTION is based. Its aim is to produce hydrogen from biomass to satisfy an increased demand for hydrogen and provide in a highly efficient way greater security of energy supply at the local and regional level.

The aim of the project – with 13 countries participating including Russia and Turkey – is to develop a blueprint for the construction of prototype modules of the plant required to produce high quality hydrogen in a process fed by multiple biomass feedstock. Biomass is the basis for the whole chain: from biomass to pure hydrogen. HYVOLUTION is a dream come true: the creation of small scale sustainable hydrogen production from locally produced biomass. Started three years ago, the project will run until 2010 and promises to become a real revolution both for rural and urban areas.

At a recent general assembly meeting in December 2008 of all the partners of HYVOLUTION it was decided to focus further work on hydrogen production from four promising feedstocks: sugar beet, wheat bran, barley straw and, obviously, the ever present potato peel. Specific agricultural conditions of different EU regions are taken into account. The case study illustrated in Wageningen for the “rural south” referred to a piece of research being conducted in Thessaly (Greece) while the “urban north” focused on the development of a prototype in Rotterdam using urban biomass. The difference is the kind of biomass used to feed the plant – based on a combination of thermal fermentation (also called “dark fermentation”) with a light-based fermentation. In the first kind of fermentation heat-loving bacteria are used to start the bioprocess with the advantage of obtaining a higher hydrogen yield than in fermentations at ambient temperatures.

The final aim of the project is to develop an economically viable, fully sustainable decentralised process for hydrogen production in an integrated system since the participants in the project are biomass suppliers, end-users or stakeholders interested in developing specialist enterprises. The advantages in terms of reviving of local economies are an obvious and highly welcomed consequence even if the technologies developed by HYVOLUTION as a result of the research will be commercialised only after 2015. This will be in time, however, to facilitate the transition to mass hydrogen markets. The European Commission has set an objective of 20% substitution by bio fuels in the road transport section by 2020. The car running on potato peels could be a reality in less than a decade. And this is nothing to laugh about.

### **Contact:**

**Project Manager: Dr. P.A.M. Claassen, University of Wageningen, [pieternel.claassen@wur.nl](mailto:pieternel.claassen@wur.nl)**

**Communication Officer: Ben Geerlings, tel 0031 317 484158, [ben.geerlings@wur.nl](mailto:ben.geerlings@wur.nl)**  
**Duration of the project: 60 months**  
**Website: [www.hyvolution.nl](http://www.hyvolution.nl)**