

# New technology revives biofuels

August 9 2011

---

Biofuel, in spite of controversies surrounding it, still holds many advantages, on an economical, as much as on an environmental level– it is derived from plants, which naturally absorb CO<sub>2</sub>, making it a much cleaner and widely available source of energy than, say, oil sands. But there's a hitch: biofuels contain a high amount of water and oxygen, which have a corrosive effect on engines.

Hybrid car fuels such as the E10, a mixture of 10% ethanol and 90% gasoline, fast became unpopular in parts of Europe and consumers trust in this source of energy is not good. Around 70 % of German motorists, (reveals a poll recently published), have been steering clear of bioethanol because of a suspicion that it could damage car engines.

## The consumer is king

The transport industry has addressed the problem by diluting ethanol in regular fuel , thus adapting the gasoline obtained to existing engine standards. But now, a consortium of universities, small companies and bigger players in the energy and transport sectors has taken a novel approach to the problem, not changing the fuel mixture but the engines themselves. The challenge was to redesign engines so that they could adapt to non-conventional fuels, , by rethinking each component's finishing, rather than modifying their traditional structure. 'The result is not only a new breed of engines adapted to biofuels, the engines themselves are less noisy and longer lasting,' says project leader Dr Amaya Igartua, a senior scientist at Tekniker-IK4, a research institute in Spain's Basque country.

Current industry efforts to make biofuels more reliable and popular have not been successful because of the difficulty of maintaining and controlling the quality of fuel along the distribution line. Igartua readily admits that the strategic vision behind EQUIMOTOR PLUS was to regain the floundering confidence of European consumers: 'The issue of the quality of blended fuels available, due to their tendency to absorb water, has had a damaging effect on the market'.

## **A pragmatic approach**

The idea for the project first came about in research carried out outside EUREKA, through the COST programme, but soon, the academic partners initially involved felt there was a potential for the results of their fundamental research to have a real impact on the market.

EUREKA, with its simple procedures and orientation towards product development, was the perfect platform for elaboration of the project. Three years ago, EQUIMOTOR PLUS was launched through E!SURF, EUREKA's umbrella organisation for market-applied research on materials and nanotechnologies. From the outset, the project took a pragmatic line: the main benefit of biofuels, especially when compared with other green energy sources, was that their progressive introduction did not require a major technological leap, but rather innovation and market-adaptation.

Despite their corrosive effects, biofuels are adjusted to engines as we know them, (mainstream internal combustion motors), whereas there is still an on-going debate on the viability of the technology used, for example, in electric cars. If no serious technological alternative emerges in the years to come, studies show that it is extremely likely that the majority of powertrains available in 2030 will require liquid fuels, and, with the decreasing availability of petrol, biofuels will be leading the pack. 'We need to go step by step,' says Igartua. 'The main focus of the project was on the improvement of a technology that is already available,

adapting it to the types of fuel blends that are the most commonly used, from E10 to E30.'

## Hope for the future

But the European market might still not be ready for the introduction of this new technology. Iñaki Aguinaga, Product Engineering at Guascor-Dresser Rand, one of the main industrial partners in the project, says that his objective was to reach two markets located outside of Europe: Brazil and Venezuela. 'We wanted to sell in parts of the world where, in the consumer's eyes, biofuels are a viable solution'. Yet the results of the EQUIMOTOR project could be a game changer for the entire energy sector worldwide: 'What we have learned in this project, how to tackle the corrosive effect of biofuel, could equally be applied to the exploitation of gas or biomass, which there are also issues with corrosion.'

Moreover, while biofuel detractors still brandish the threat of a growing demand for [biofuel](#) raw materials meaning an increase in food prices, a new generation of biofuels is in production. They would not use food products as their main component but rather the otherwise-unconsumed share of the biomass. 'It was important for us to consider what are called 'second generation' biofuels and biofuels based on algae, as they represent a very promising source of energy for the future,' says Igartua. The project also opens new horizons for the introduction of fuel blends with a higher concentration of ethanol. 'This will certainly be the topic of a future EUREKA project!' she says.

Provided by EUREKA

Citation: New technology revives biofuels (2011, August 9) retrieved 24 April 2024 from <https://phys.org/news/2011-08-technology-revives-biofuels.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.