

## Biofuels - Top Subject

Dear readers,

A number of lectures in section B Fuel application, quality and environmental protection requirements on last year's 39th scientific symposium FUELS 2006 has treated the subject of biofuels. The authors have in their papers treated the topical subject of introducing biofuels as replacement or component in mineral fuels used in traffic and transportation. Biofuels were the topic of both fuel and additive producers, as well as colleagues from the faculty, approaching the subject from the aspect of application in vehicles.

The subject has been topical globally, in Europe, and has been becoming so also in Croatia. European Commission has in 2003 passed the regulation 2003/30/EC on promoting biofuel use in transportation. Owing to the growth of the living standard, it is the traffic sector that records a constant increase of motor vehicles and motor fuels consumption. Key motivators of the European politicians in passing the regulation were: 1. seeking greater energy supply safety in Europe – freeing it in part from importing energy from oil-rich countries involved in constant war threats, 2. concern for agricultural development and management of excess agricultural products, in order to preserve workplaces in the agricultural sector, and 3. most of all concern for reducing the emission of greenhouse gases, in order to bring down the intensity of climatic changes.

We are bringing three papers from the section in the present issue. We particularly point out the review by a group of authors from the Austrian company OMV, introducing us to the subject and speaking about goals and basic terms from the regulation on biofuels. The authors provide a review of the EU members' achievements in introducing biofuels in 2005. Europe has not reached the set goal of 2 % of biofuels in transportation (merely 0.75 %). EU countries are trying to encourage producers with various tax relaxations to reach, by 2010, the set indicated goal of 5.75 % share in the energy basis of biofuels in total traffic fuel consumption. The other part of the paper treats the properties of biodiesel and bioethanol which merit special attention when blending them into motor fuels, in order to avoid difficulties in their use in vehicles basically designed for the use of mineral fuels eurodiesel and eurosuper.

This brings us to the topic of the second paper by our colleagues from the Czech Republic, who have dealt with bioethanol and gasoline i.e. bioETBE and gasoline blends. Ethers of ETBE, same as the up to now more widely used MTBEs are components whose properties are very similar to those of motor gasoline. The idea was to investigate the impact primarily of ethanol, which, as a polar molecule, creates azeotropic compounds with the present hydrocarbon compounds from oil,

thus behaving according to the Raoult blending law. This makes room for possible difficulties due to increasing the value of properties such as vapour pressure, distillation, i.e. evaporation index.

Here, we should stress also the complete solubility of ethanol in water, which may lead to decomposition of the blend in which a small amount of water is also present.

The Republic of Croatia, as a candidate for EU membership, in keeping with the said Regulation 2003/30/EC, has passed a regulation NN 143/2005, dealing with European promotion of introducing biofuel also on Croatian market, applied as of 2007. Resolution has also been passed on the amount of biodiesel equivalent (volume of biodiesel according to the energy content, calculated in terms of biodiesel volume) – 22000 t, this year to be placed on the fuel market for the needs of transportation. Both Europe and Croatia have set a guiding goal of biofuel consumption on the market of gasoline and diesel fuel by 2010 to 5.75 % of energy content. EU in its latest development documents lists that the next goal should be achieved by 2020 – a 10 % substitution of mineral fuels by biofuel. The earlier prognoses have been even more optimistic, today however proven unrealistic due to limited available agricultural land and yields of required crops in certain climatic areas.

Globally, new technologies are already being developed, of the so called 2nd generation (the best known among them being BTL: biomass to liquid), capable of ensuring sufficient volumes of biofuel, entirely compatible with mineral fuels. The technology shall enable cheaper production of biofuel and further reduction of the harmful CO<sub>2</sub> generation.

Both Europe and Croatia are well aware of the fact that, based on the valid European (and Croatian) gasoline quality standards, HRN EN 228, and, for diesel fuels, HRN EN 590, it will not be possible to reach the goal. Some fuel may be sold as pure biodiesel B100, for certain consumers (e.g. city buses), who must consult vehicle manufacturers when it comes to using such fuels due to possible need for engine adjustments in order to be able to use the fuel, and avoiding dissatisfaction with engine performance and possible warranty losses. However, for a further promotion of biofuel use also required will be the change – increase up to permissible limits (volumetric share) of biofuels blended with mineral fuels. Task forces of the CEN Technical Committees are already working on this.

Production and application of biofuels, pure or blended in a certain percentage with mineral fuels, will continue to be the top subject of our scientific symposia.

Yours guest editor,

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