



II International Workshop

Technical Aspects of Biofuels Use in Fleets

Agenda and Speakers Abstracts

Zagreb (Croatia) 17-18 February 2010

**University of Zagreb, faculty of Mechanical Engineering and Naval
Architecture – Building Block A – Room number 323, 3rd Floor**

Agenda 17th February 2010

Venue: Conference Room of the Faculty of Mechanical Engineering
And Navel Architecture - Ivana Lučića 5, 10002 Zagreb

- 14:30 Registration and welcome coffee
- 15:00 Context of BIOSIRE Project and workshop objectives - Natasa Avlijas, Net Engineering SpA
- 15:15 **A Possibility of Introducing Biodiesel as a Fuel for Motor Vehicles of HEP** - *Zoran Lulic*, Faculty of Mechanical Engineering and Naval Architecture Department of Engines and Vehicles
- 15:35 **"Grazer Verkehrsbetriebe" switching fleet to Biogas** - Gerfried Cebrat, FGM-AMOR
- 15:55 Question and answer session
- 16:55 End of the first day

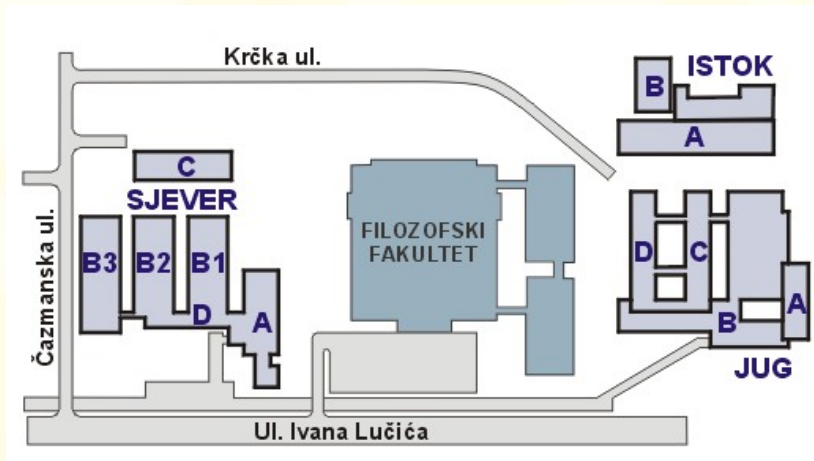
Agenda 18th February 2010

Venue: Conference Room of the Faculty of Mechanical Engineering and Navel Architecture - Ivana Lučića 5, 10002 Zagreb

- 9:00 Registration and welcome coffee
- 9:30 **Energy use in transport and engine technology** - *Nils-Olof Nylund*, VTT Technical Research Centre of Finland
- 9:50 Question and answer session
- 10:20 **Dbus experience on Biofuels (CIVITAS ARCHIMEDES project)** - *Eduardo González López*, CTSS - Public Bus Company of San Sebastián 10:40 Question and answer session
- 11:10 Coffee Break
- 11:40 Panel Discussion: Usual problems with biodiesel fleet and how overcome them.
- 12:30 End of International Workshop.

Location of International Workshop

University of Zagreb, faculty of Mechanical Engineering and Naval
Architecture – Building Block A – Room number 323, 3rd Floor



ISTOK 3. KAT - BLOK A



Zoran Lulic

Zoran Lulic received his Master's degree in mechanical engineering from the University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture (FAMENA), in 1991. In 1995 he was at the Technical University of Graz, Institute of Internal Combustion Engines and Thermodynamics, where he started his work on biodiesel. He received his M.Sc. degree in 1996 and Ph.D. in 2000 at the FAMENA. He is currently an assistant professor at the Chair of Internal Combustion Engines at FAMENA. Also, he is the Head of Laboratory for IC Engines and Vehicles. His research interests include IC engines, biofuels, and electrical equipment of motor vehicles and design of bus structures.

Abstract; A Possibility of Introducing Biodiesel as a Fuel for Motor Vehicles of HEP

The presentation is divided into two main parts. The first part is a general introduction to Diesel engine and biodiesel, and the second part is a description of results of the pilot project entitled "A Possibility of Introducing Biodiesel as a Fuel for Motor Vehicles of HEP". Themes dealt with in the first part: How Diesel engines work; Basic facts about biodiesel; Biodiesel and standards; Diesel fuel vs biodiesel -advantages and disadvantages; Power and fuel consumption of engines propelled by biodiesel.

Themes dealt with in the second part: Selection of a test vehicle; Performance of vehicles running on diesel fuel and on biodiesel; Fuel consumption during the test period; Characteristic of used biodiesel; Results of engine oil analysis and conclusion.

Cebrat Gerfried



Cebrat Gerfried has been from 1989 to 1997 AE&E, Technical calculations, acquisition and project management, later responsible for research & technical development of industrial plants license as technical bureau for mechanical engineering and IT since end of 1998 working with FGM.

In 2002 he gave lecturer at the University for Applied Sciences in Graz, measuring techniques and mechanical engineering.

Abstract: GVB Biodiesel

1. **The setting** - public transport and alternative fuels
 - What are the options?
 - What are the conditions to be able to use them?
 - What are the business models in pt and how the use of biofuels is affected?
 - What are the strengths and weaknesses in pt organising bio/alternative fuel usage?
2. **The history** - how biodiesel/PPO developed in Styria
 - Joint undertaking of research, producers and pt.
3. **How B100 developed with GVB**
 - Test buses- 100% (only in summer) - winter use - only summer.
4. **The motivation** - What enabled the B100 usage?
 - What were the drivers?
 - Policy support, university backing, etc.

5. **The problems** - how industry made it impossible to go on- high efficiency as enemy of plant oils
 - Natural oils leave their characteristics in RME/AME- high pressure pumps and exhaust gas cleaning should have been adapted.

6. **The future** - What alternatives are now tried out in practice?
 - Bio CNG biogas is the next target but the meal is not eaten yet- investment in bio-gas is huge and economy not given if NG prices are low.

7. **My ideas** - how liquid biofuels might re-enter the arena (serial hybrid)
 - Biodiesel is out of range for the future unless there is a theological development with engine and vehicle producers. This is bad for local initiatives sticking to 1st generation biofuels. There are examples how technology might enable sustainable decentral fuel usage. Serial hybrid power trains might help.

Nils-Olof Nylund



Nils-Olof Nylund has a PhD degree in mechanical engineering (internal combustion engines).

He started working for VTT Technical Research Centre of Finland in 1979 on the subject of alcohol fuels. In 2004 – 2008 he ran his own consultant company, and is now back at VTT as a Research Professor for energy use in transport and engine technology.

Nylund has been the Finnish delegate to IEA

Advanced Motor Fuels since 1990.

Since 1998 he has been either Chairman or Vice Chairman of AMF.

In 2007 he was appointed IEA EUWP Vice Chairman for Transport, with the task to promote cooperation among transport related IEA Implementing Agreements.

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Abstract: Optimised usage of next generation biodiesel fuel - OPTIBIO project

Helsinki City Transport, Helsinki Metropolitan Area Council, Neste Oil and Proventia Emission Control have joined forces to demonstrate the potential for emission reductions using NExBTL renewable diesel fuel. The new renewable fuel developed by Neste Oil is used in high concentration in buses in everyday operation in greater Helsinki. Some 300 vehicles are taking part in the field test. Some buses have been retrofitted with P-DPF type particulate catalysts to enhance emission performance. The new hydrotreated renewable diesel fuel is used as a 30% blend and as such, and especially for the latter case significant emission reductions have been demonstrated. VTT Technical Research Centre of Finland carries out emission measurements in a chassis dynamometer. Measurements with

several vehicle models show average emission reductions of 10% for NO_x and 25-35% for particulates (fuel effect only, 100% renewable diesel). The field test is the largest one in the world using paraffinic renewable diesel. The fuel tested is now made by hydrogenation, but this fuel also depicts the operational quality of synthesis gas based actual BTL fuels. Future widespread use of such fuels require acceptance by the vehicle manufacturers and vehicle operators and also progress in standardisation. The OPTIBIO project contributes to this process.

Eduardo González López



Eduardo González López has a degree in Industrial Engineering by the University of Navarra, School of engineering. He is specialized in mechanical engineering.

In 2003 He worked for the Research and Development Department in the CTA (Aeronautics Technical Centre).

From 2003 till 2007 Mr. López was responsible for the Mechanical

Maintenance and Logistics department for Civil engineering Machinery Company.

Actually he is Responsible for the Mechanical Maintenance Engineering department of the Municipal Bus Company of San Sebastián (Donostiabus).

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Abstract: Dbus experience on Biofuels (CIVITAS ARCHIMEDES project)

Donostia Bus (Dbus), The Municipal Bus Company of San Sebastián is responsible for the public transport of the city of Donostia – San Sebastián. As guilty of the 30% of the CO2 emissions of the planet, like many other Transport Companies, Dbus is studying the different alternative fuel options and propulsion technologies that are replacing the existing old Diesel polluting buses. The conclusion of a research study for Dbus has sum up that in a short time term, the best choice is the use of the new Diesel engines with exhaust gas treatment (Euro V, EEV...) combined with Biodiesel (2nd generation if possible).

The decision of using Biodiesel in a municipal fleet sets the beginning of a fight between bus manufacturers and biofuel suppliers. And in this fight the

end user finds himself in the middle confused by all the controversy and the lack of clear and practical information. So that he has to be sure of the answer to the question: Why the hell do I get into this trouble?

On December 2008 Dbus changed his fuel filling station and turned it into a biofuel mixingpumping station. With two underground tanks of 60.000l each, one full of Diesel and the other one of Biodiesel The “mixing-pumping” station fills each bus with the appropriate blend previously programmed. This system gives to Dbus the flexibility needed to improve to higher blends in each bus type depending on the results of the testing periods.