

**Alternative fuels – a major step towards a sustainable road transportation
of tomorrow?
Challenges and potentials from a life cycle perspective**

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The production of alternative fuels for internal combustion engines (ICE) and fuel cells (FC) attracts more and more different stakeholders.

Car manufactures as well as oil and chemical companies show enhanced interest in technologies for alternative fuel solutions based on renewable resources. Different propulsion solutions using alternative fuels and production technologies of alternative fuels are meanwhile operated in different states of development.

Hydrogen for example is currently produced either by centralized plants with high capacity (by-product of chemical plants or refineries) or by small production units (electrolyzer or steam reformer) using either renewable or non renewable energy sources. In case of biofuels, synthetic FT-Diesel (Fischer-Tropsch) and ethanol or ethanol-gasoline blends are amongst others promising approaches.

The presentation will focus on three main parts:

1. Discussion of different technologies and solutions, based on daily experiences of evaluating operating and in detail planned/ prototype plants of PE Europe. This part will give an overview of the ecological potentials and challenges of different solutions for road transportation (combination of fuel and propulsion technology) from a life-cycle-perspective.
2. Hydrogen as a fuel for public transportation. Presentation of the ecological part of the CUTE FC bus demonstration project discussing the main findings of the conducted LCA study. The presentation will discuss influence of the different life cycle phase and the opportunities of hydrogen as a fuel.
3. Production of synthetic diesel (SunDiesel) produced by gasification of wood waste followed by FT synthesis using the Choren process. The comparative Life Cycle assessment study for SunDiesel and conventional fuel produced from crude oil by standard refineries will be presented.