

Decarbonisation - Renewable Fuels bridging the CO₂ Gap

Decarbonisation is the key word talking about future energy supply and climate change. The mighty “Group of 7” countries (Canada, Japan, USA, Germany, United Kingdom, France, and Italy) declared that “deep cuts in global greenhouse gas emissions are required with a decarbonisation of the global economy over the course of this century.” Many interpreted this as a call to phase out fossil fuels *by the end of the century*.

Besides all enthusiasm there are strong concerns coming up that the G7 plan is an excuse to keep pumping oil for decades while promoting hypothetical, unproven or nonexistent technologies to save us – *by the end of the century*.

Nevertheless: There are small and medium-sized enterprises around, already “living decarbonisation” for more than one decade. It goes without saying that everybody practically involved in utilizing renewable fuels is fascinated by the feasibility of substituting 90% and more fossil fuels by just converting his standard vehicle with dual-fuel technology thus saving 100 tons of CO₂ per year. A well proven technology, matter of continuous development and scientific research, keeping up-to-date with latest engine and emission requirements but looking back on a long tradition: Rudolph Diesel himself powered his engine with peanut oil – *one century ago*.

It seems easy bridging the gap in CO₂ reduction in road transport - sustainably and *immediately*.

What stays behind is clear political targets in sight and as a consequence a reliable legislative framework at least *for the next decade*.

But it's not G7, it's not EU, it's the member states and nations themselves being responsible for changing future energy supply to sustainability – *before the end of the century*.

Europe's commitment: Driving Road Decarbonisation forwards

European Commissioners Arias Cañete, Bieńkowska and Bulc, responsible respectively for Climate and Energy, Internal market and Industry and Transport, organized a high-level conference in Brussels on 18th June 2015 to discuss the next EU level actions on road transport decarbonisation.

Road transport contributes about one-fifth of the EU's total emissions of carbon dioxide (CO₂), the main greenhouse gas. While these emissions fell by 3.3% in 2012,

they are still 20.5% higher than in 1990. Transport is the only major sector in the EU where greenhouse gas emissions are still rising.

Heavy-duty vehicles – trucks and buses – are responsible for about a quarter of CO₂ emissions from road transport in the EU and for some 6% of total EU emissions.

Despite some improvements in fuel consumption efficiency in recent years, these emissions are still rising, mainly due to increasing road freight traffic.

The importance of the sector has meant that the decarbonisation of road transport is challenging. The European Council in its conclusions of October 2014 invited the Commission "to further examine instruments and measures for a comprehensive and technology neutral approach for the promotion of emissions reduction and energy efficiency in transport, for electric transportation and for renewable energy sources in transport also after 2020". The Commission's Energy Union Communication identifies a series of actions to be taken in this field in the coming years.

The Commission is working on a comprehensive strategy to reduce CO₂ emissions from heavy-duty vehicles in both freight and passenger transport.

Renewable fuels: ready-to-go

Renewable fuels according to German DIN SPEC 51623 are already state-of-the-art for an immediate and massive CO₂ reduction with heavy-duty vehicles, on-road and off-road.

According to the European Fuel Quality Directive (FQD Directive 2009/30/EC) and the related sustainability criteria, Renewable Energy Directive (RED Directive 2009/28/EC), vegetable oil DIN SPEC 51623 has been acknowledged by legislation, listed as a fuel in German legislation since December 2014 ("10. Bundesimmissionsschutzverordnung").

Already in 2007 about 7% of the fuel demand in Germany's heavy-duty transport sector was covered with pure vegetable oil (DIN 51605), delivering a remarkable contribution to CO₂ reduction. With the new Emission Standard Euro VI (Regulation EC 595/2009) in place the requirements of engine technology and fuel properties have been revised and have led to the new fuel specification for vegetable oils DIN SPEC 51623.

Demonstration Projects

In Europe, Germany and UK respectively, an international consortium of small and medium-sized enterprises have joined in demonstrating a well proven decarbonisation concept for road transport through the use of renewable fuels. The aim is not about to revolutionize the whole world but to prove the concept for certain applications and provide a strong and significant contribution.

Launched in 2012 in an ongoing pilot project, founded by permission of the German Financial Ministry, about 200 heavy-duty vehicles are currently being field tested in Germany. The vehicles are equipped with a dual-fuel technology supporting renewable fuel DIN 51623 and conventional Diesel (EN590), special attention is given to emission standard Euro VI. The technical feasibility, across all major brands in current commercial vehicles and every-day-use including refueling infrastructure has already been proven. The 3-years pilot project will go into an extra year plus in 2016 for final long term approval.

In the UK, a further project with some major logistics companies is illustrating the major benefits of this low carbon transport technology. While mirroring the German field test in this case the feedstock used for these trials is Used Cooking Oil (UCO) and again the project is utilising the latest Euro VI engine technology. The project is part sponsored by the UK Government's Department for Transport Office for Low Carbon Vehicles and its successes are clearly being noted within these official channels and also within the UK's heavy transport communities.

Up to 90 % of the annual average diesel consumption is replaced by DIN 51623 specification fuel and thus saves 100 tons of CO₂ per vehicle per year typically.

B100 Biofuel framework in European member states

Up to now the operators of heavy-duty vehicles have often not been able to access renewable fuels that provide an advantage in greenhouse gas emissions for their fleet under economically acceptable costs within the national legislative frameworks. With few exemptions in fact most European countries have enforced CO₂ reduction only by blending of biofuels with conventional diesel fuel.

Renewable fuel DIN 51623 as a real substitute is an excellent opportunity to bridge the gap in CO₂ reduction in road transport – immediately and sustainably.

Looking into the future: Decarbonisation is one thing.

In May 2015 UN Secretary-General Ban Ki-moon stated:

“We Are the First Generation that Can End Poverty, the Last that Can End Climate Change”

Renewable fuels are already capable of providing food, feed and fuel in a closed loop of regional economies contributing a broad variety of benefits beyond sustainability and greenhouse gases.

(Author: Wolfram Kangler, bioltec systems GmbH, www.bioltec.de)