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Challenges and Perspectives on Biodiesel Standardisation

Issues that underline the need for Norms and Standards

Dermot BUTTLE

EBB Technical Expert

ICBS
Gaithersburg, Maryland
November 13th – 15th 2012

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Overview

- Brief Overview of EBB and the EU Biodiesel Industry
- Underlining the Importance for Norms and Standards
- Important Drivers
- Achieving the potential from different perspectives
- The need for biodiesel quality – risks and challanges
- Current standard challenges
- Importance of Specifications and Standards
- Biodiesel Quality – the assets

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Technical Expert

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European Biodiesel Board

- EBB is the European Federation of Biodiesel Producers; established in 1997
- We gather nearly 80 members across **21 EU countries** representing **75% of European biodiesel production**;
- EBB represents its members to the institutions of the European Union and in other international organizations
- We are constantly committed in the **promotion of scientific, technological, legal and research activities**
- Our aim is to **bring effective solutions to the biodiesel industry** from different perspectives (economic, political, legal, institutional and technical)

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Membership

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EU Biodiesel Industry - Market Status

- ✓ 2009 EU biodiesel production: **9 million tonnes**
- ✓ 2010 EU biodiesel production: **8.5 million tonnes**
- ✓ 2011 EU biodiesel production: **8.1 million tonnes**

- ✓ 2010 EU biodiesel productive capacity: **21.9 million tonnes**
- ✓ 2011 EU biodiesel productive capacity: **22.7 million tonnes**

Important drivers - Has Standards helped?

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Technical Expert

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Underlining the Importance for Norms and Standards

In former times (before circa. 1995)

- No test methods
- No quality specification for biodiesel

So what happened

- Everybody producing ‘premium quality’ on the paper
- But in reality ‘bad quality’

Consequences?

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Underlining the Importance for Norms and Standards

Automotive failures

- didn't take long before biodiesel business and finally biodiesel fuel was blamed
- considered not suitable for diesel engines??
- biodiesel industry was down to zero!

Significant challenge for key institutions like EBB to drive the set up of binding specifications for the whole business

Only by ensuring a **constantly high quality**, the car manufacturers agreed to the use of B100 in their cars

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Underlining the Importance for Norms and Standards

A process of evolution

- development of quality management handbooks
- on site laboratories for quality
- periodical external quality control

Important steps for the acceptance of biodiesel by OEMs, refineries etc

So what happened

- continuous growth

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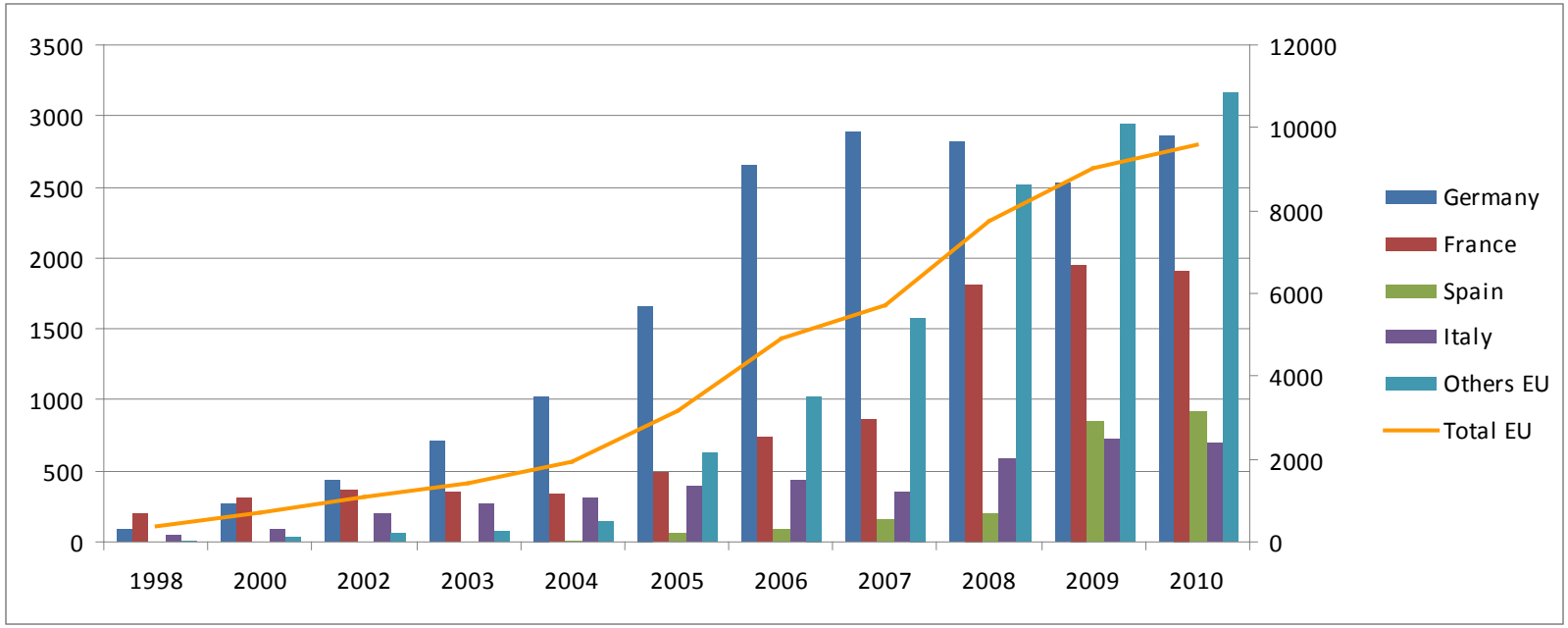
EU and Member States' Biodiesel Production ('000 tonnes)

Source: EBB



Important Drivers

Renewable Energy Directive (2009/28/EC) mandated European Member States of a 10% use of renewable energy in transport by 2020

- Biodiesel is expected to account for 80% of the target

Enhanced security

- EU energy reliance on third-country (Russia, MENA), this can be overcome by alternative fuels

Diversification of supply

- Share of diesel in the overall transport modes is forecasted to increase steadily

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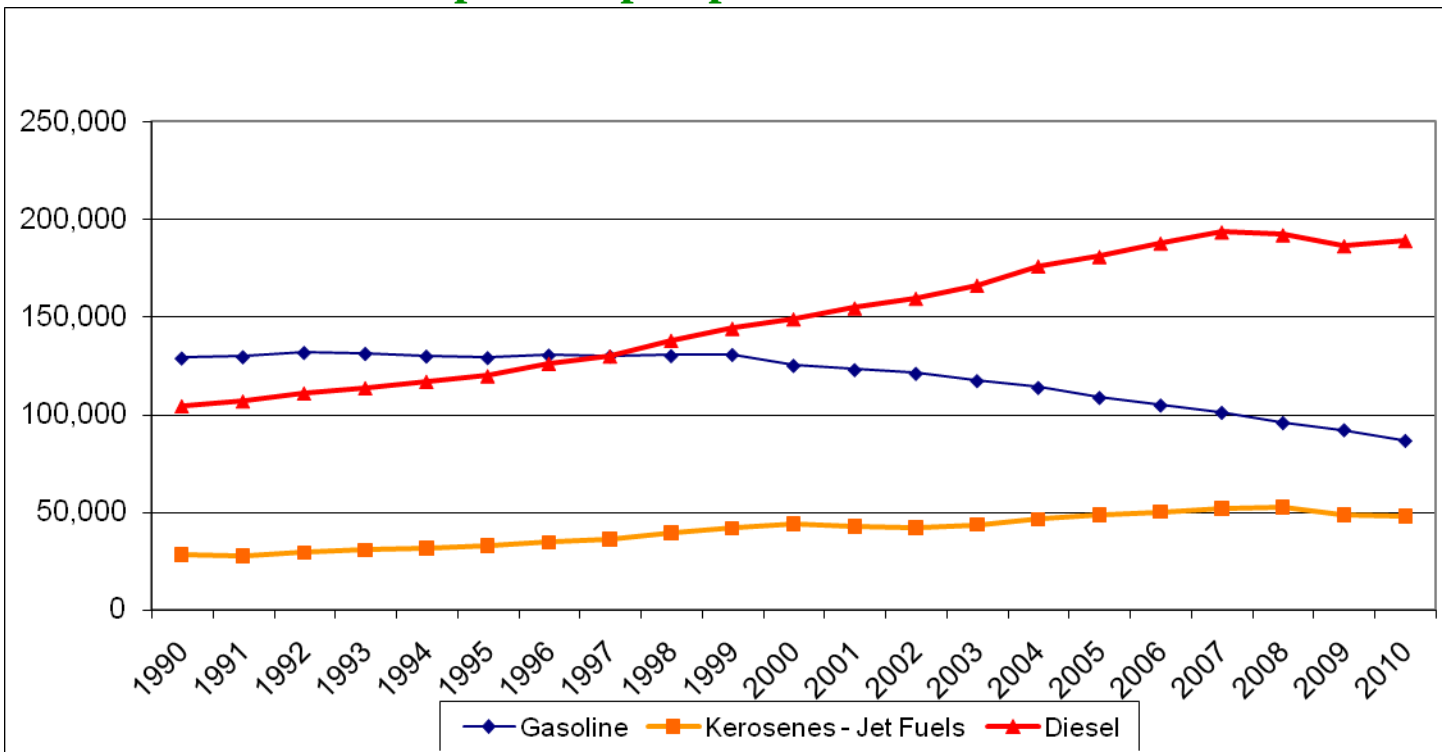
The evolution of the diesel and gasoline demand in the EU reveals important perspectives for biodiesel



Source: Eurostat

The widening EU mineral diesel deficit: a major strategic challenge

- The EU is confronted with an enduring deficit in conventional diesel

Biodiesel can provide a practical and sustainable solution to this challenge

- National Action Plans forecast strong progression of biofuels and specifically biodiesel demand until 2020
- France and Germany expected to remain major consumers of biodiesel in 2020; strong progression of Spain, Italy and UK

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Achieving the Potential

Ensuring market operators of quality of their products

- The European Commission (EC) in parallel with
- CEN (European Committee for Standardisation)
- biodiesel producers
- automotive industry
- the fuel industry

work collectively in the development and continuous improvement of standards for biofuel use in automotive engines

The biodiesel industries commitment and input is an integral part of the process

EBB participates to CEN Technical Committees

EBB participates as liaising organization in the **CEN / TC 19** for Gaseous and liquid fuels, lubricants and related products;

Working Group 24 – 'specification for automotive diesel' EN590
Working Group 14 – 'cold filter plugging point'
Working Group 31 – 'cold soak filter blocking and Total Contamination'
Working Group 34 – 'cold operability testing and fuel correlation'
FAME Task Force

Underlining the need for Norms and Standards - market issues, risks and challenges:

- Excessive enthusiasm and eventual speculations
- Short term considerations
- Relatively new product, i.e. an easy target for groundless criticism
- Necessary adaptation to new engine technologies
- Market re-education

Market assurance - EN14214

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The importance of CEN Specifications on FAME (Fatty Acids Methyl Esters)

- The EN14214 standard: a cornerstone for biodiesel development
- Its main quality: a unanimously accepted standard in the EU
- Interaction with the EN 590 standard for conventional diesel
- The EU biodiesel industry fulfils all its requirements

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EN14214 Parameter Overview

- Ester content
- Density
- Kinematic viscosity
- Flash point
- Sulfur content
- Carbon residue
- Cetane number
- Ash content
- Water content
- Total contamination
- Copper strip corrosion
- Oxidation stability
- Acid number
- Iodine number
- Linolenic acid ME
- Polyunsaturated ME
- Methanol content
- Glycerin, Glycerides
- Alkali metals
- Alkaline earth metals
- Phosphorous content
- Cold flow properties

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Current challenges

The very first biofuel specification standards were focused on Biodiesel from Rapeseed, Soybean and Sunflower oil

New EN 14214 standards adapted to be more suitable for todays market

- one aim was to allow the use of almost all kinds of oils and fats
- on the other hand the new standard has to deal with new quality issues which came up during last few years

Market acceptance of todays quality

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Current challenges

Monoglycerides (in particular saturated MG) suspected cause for precipitations and poor cold flow properties

- Total Monoglyceride Content depends on feedstock used
- Saturated monoglycerides raises cloud point of biodiesel
  - Limiting their presence to avoid filtering issues linked to cold temperatures
  - Monoglycerides from soy and rape are naturally much less saturated than tallow and palm

Total Monoglyceride Content in EN14214:2012 reduced from 0.8 to 0.7% (m/m)

Demonstration of the Biodiesel industry responding to market requirements

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Current challenges

Biodiesel Standard EN14214:2012

- ensures operability (most of the parameters)
- ensures long term stability (water, oxidation stability)
- limits mixture with other products (ester content)
- limits direct emissions (sulphur)
- limits impacts on the exhaust after treatment system (metals, phosphor)

Next steps

- 10% in EN590

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Biodiesel quality - the assets:

- Quality is the pre-condition to biodiesel development
  - technical, political, economical
- The commitment for quality of the EU industry
- EBB's commitment on a quality product
- EBB QUALITY REPORT
- The approval of new EN 14214:2012 standard in June 2012

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Technical Expert

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Conclusion

The biodiesel produced today in Europe is a high quality product and quality will always remain the first key-word for granting biodiesel a stable market

In this frame the CEN specifications and more particularly the EN14214 standard represents the real and very solid pillar for future biodiesel development

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Technical Expert

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Dermot BUTTLE

Technical Expert

EBB - European Biodiesel Board

Bld Saint-Michel 34 – 1040 Brussels

Tel +32 2 763 24 77, email: db@ebb-eu.org

Or visit the EBB web-site : www.ebb-eu.org