

Best-Practice-Projects for Bioenergy utilisation in urban environments



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Project name: Bionet Europa, S.L.
Location: Reus (Catalonia, Spain)
Bioenergy Technology Concerned: Biodiesel production

Executive Summary:
Biodiesel plant located in Reus using recycled vegetal oil. Operation started in 2004

CASE DESCRIPTION:

Background:

The importance of this project is in the fact that allows the elimination of a problematic waste (used vegetal oil) turning it into an effective and respectful fuel with the environment. The sulphur content of biodiesel is usually less than 0,1%. So the benefit for the waste oil producer is clear, elimination of a residue and production of a new fuel.

Description:

The plant produces 4.000 tons/month of biodiesel using recycled vegetal oil and also a subproduct of 3.200 ton/year of glycerine. The biodiesel is finally commercialised as pure biodiesel or as a mixture with mineral diesel (10-20% of biodiesel).

The plant is prepared for the use recycled oil of low and high acidity, for that reason the transformation into biodiesel has two differentiated basic processes: Esterificación for oils of high acidity and transesterification for oils of low acidity. The result of the esterification process is methyl-ester (biodiesel), but of bad quality, for that reason it is introduced in the line of transesterification, along with vegetal oils to improve it. In the transesterification, the products here are methyl-ester and glycerine. The process is completed with the separation of the byproduct and further stages for purification.

Technical Data (capacity, output, etc.):

- Biomass Type: Recycled vegetable oil (used frying oil from homes, hotels, etc, car service workshops, etc)
- Biodiesel Production: 50.500 tons/year plus 3200 tons/y of glycerine (the biggest of the 8 biodiesel plants in service in Spain at the beginning of 2006). The plant is now at full capacity. The production in 2005 was of 30.000 tons.
- Occupied area: 5.000 m²

Financial Data (investment, subsidies, etc.):

The total Investment is 16 Million Euros. The income target for 2006 is 30 Million Euros.

Which main problems had to be overcome?

Legal factors:

There is a need for legal actions focused to the development of the domestic biodiesel market. In 2005 the 60% of the Spanish biodiesel production was exported and the domestic consumption was only a 0,44% of the total consumption (0,9% in 2006), far behind the target of 2% for 2005 established in the EU Directive 2003/30/CE and 5,8% for 2010.

Socio-economic factors:

The demand of biodiesel by fuel distributors has been lower than expected so Bionet started the setup of their own distribution net and also the sale of biodiesel to transport companies (such as, the Public Transport of Barcelona (TMB) through the company Petrocat).

Economic:

Initially two public institutions (ICAEN and IDAE) took part in the project together with private investors (REAGRA and Agrar Technik) but when the plant entered the normal production phase new private investors entered in Bionet.

The plant started in 2004 will get into economic benefits in 2006 due to the fast increase of the oil price in the international market.

Others:

There is a weak distribution network for biofuels in Spain. The main fuel distributor in Spain CLH has just started to build blending plants, one finished in Madrid and other two planned in Vizcaya and Barcelona.

Information flow (which information needed, sources, difficulties, etc)

Bionet Europa is a member of the European Biodiesel Board (EBB), association of the main biodiesel producers in Europe.

Lessons learned

The company Reagra is part of Bionet Europa and is also the provider for used oil. The inclusion of the bioenergy source provider in the bioenergy project is an interesting solution to avoid logistic problems.

The recovery of cooking oil that otherwise has to be eliminated in the sewage treatment plants increases the running costs of this plants by 25%.

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Pictures

