

Handelshaus Runkel

Biogene Treib- und Schmierstoffe
Pflanzenöltechnik



INFO 008

planto-tec-process

Novel method for plant oil use as fuel in diesel-engines

Mode of operation and description

Introduction:

With the planto-tec process it is possible to modificate a wide range of plant oils without industrial facilities so they can be used directly as fuel in diesel-engines.

Plant oils are triglycerides (organic compound between glycerine and different fatty acids) so there is no environmental risk in using them. There is an expert´s report about plantanol-diesel reducing carbon black of about 60 %. Furthermore you have about 6% better performance value in comparison to conventional diesel-fuel.

Hint: Above statement refer to a mixture 60% rape seed oil / 3% DX 52 / 37% diesel tested by Technical University Darmstadt

Process description:

For motor use cleaned plant oils get purified by addition of complex additive mixtures, which solubilise the chemical structure of the oil. Especially there are combustion performance testing components and additives to improve flowability, keep combustion chamber cleaned, protect valves and increase shelf-life leveraged. New complex compounds are generated with more short chained properties. After homogenisation molecular compounds are stable and don´t break down even under high injection pressure. So there is an adequate fuel available.

Particularly when using in addition a special ecofriendly additive to protect from cold and increase flowability (PW 1) there is an optimal digestion of fats. This makes complete and very low-emission combustion possible. In particular, well-known damage because of polymerisation of motor oil will be avoided extensively.

Innovation potential:

- * low-priced technology, locally realisable without large-scale facilities
- * good cost-performance ratio with better technical degree of efficiency
- * operation without motor modification (to a large degree)
- * sustainable renewable resource, good availability
- * ecofriendly technology, less carcinogenic diesel exhaust particulates
- * mixable with other diesel-fuels in every measure
- * low-risk handling

Note: Good environmental impact of the fuel mixture is tested (expert´s report about ecotoxicology).

Competitive position:

Tested above 8 years in different diesel-engines with good results.
Clientele at home and abroad.

Customer value:

Customer value results from good cost ratio in comparison to other fuels, better technical degree of efficiency and phenomenal reduction of diesel exhaust particulates. Moreover there is better motor lubrication when using plant oil. This causes less mechanical wear.

Ecology:

Accepted institutes attest up to 4 times less release of carcinogenic substances when burning plant oil in adapted motors respectively using planto-tec process instead of normal diesel. Moreover reduction of particulate matter up to 92% is documented when using biogenous motor oil additionally (plantanol-diesel 100).

Because of its CO₂-neutrality there is release of CO₂ when burning plant oil only as much as the plant incorporated during growth before. The result is a largely CO₂-neutral circle. Moreover plant oil contains no sulphur, so there are no sulphurous acids causing problems due to acid rain.

The fuel value is much better than this of diesel. This normally causes reduction of fuel consumption of about 5-10% (noticed by major customers). Routes of transport get shorter when using local content. Even when mixed with DX 52 (plantanol-diesel 100) plant oils cause no aquatic hazard, so there is no environmental risk by transport and storage.

Conscious choice in cultivation of plant oils cause no pressure of competition with food cropping. There is even the possibility to use mixed cultivation (f.e. wheat and gold of pleasure) and so get a synergetic effect. Agricultural value added is higher than in monocroppings. Using wild sorts like false flax and jatropa harnesses fallow land.

Intensified cultivation of oil plants for fuel use has a share in natural scenery (there exist above 400 oil plants) and encourages biodiversity.

So there is an ecofriendly, CO₂-neutral replacement for mineral diesel-fuel available.

Energetic value (energy utility)

The energetic value of the planto-tec-process compared with other technologies gives you the best efficiency.

Gasoline Engine	(Standard without Turbo)	=	25%	Efficiency
Methanol operated engine	(- 30% compared with gasoline)	=	19%	Efficiency
Mineral-Diesel operated engine	(+15% compared with gasoline)	=	40%	Efficiency
Bio-Diesel operated engine	(-10% compared with Diesel)	=	36%	Efficiency
plantanol-diesel operated engine	(+10% compared with Diesel)	=	44%	Efficiency

That's why the „planto-tec-process“ with the fuel „plantanol-diesel“ is the most efficient fuel technology. A high efficiency and easy, decentralised environmental friendly production is given.

Hint: Our date we give by using normal vegetable oils. Oil-Plants who are genetically modified - like Soja-Been modified - can give up to 30% less energy. This causes up to 30% more fuel consumption.

Market launch:

Commercial fuel mixture brought on the market from 2004 to 2007. The fuel was used successfully with good references from several communal, large and medium-sized firms. Solely because of full tax since 1. January 2007 we had to phase out plantanol-diesel. Some customers use the possibility to mix the fuel themselves for their own use so there is no tax to pay.

Final evaluation:

Everybody calls for new technologies especially for climate protection. With the "planto-tec-process" it is possible to build up a separate bio-fuel market fast and well-priced.

Efficiency of energy is perfect when using plant oils as fuel (effort: release of energy about 1:9). So this technology is appropriate to decelerate accumulation of dangerous gas in short time to achieve the purpose of maximum 2 C° global warming and 450 ppm CO₂. This may be basic for an economic "win-win-situation" for all.

Using all aerial parts of plants (oil, press remainder and fibre parts) as fuel, animal-food, heating material and for direct food production (bred and fry-cake) provides effective value added and at the same time ensures vital supply with high-quality protein. This process allows adding value without major polluting waste products.

Cultivation of oil plants means enrichment of natural scenery (if management is biological) and makes a contribution to biodiversity. Use of effective and ecological manuring (CULTAN) as well as special non-toxic water retaining granulates (GroundAqua) provides for good long-time supply of the plant with nutriments and water. Drought periods can be bridged. Continuous supply of the plants is assured so the chance to get constant crop is much better.

Technical fitness of planto-tec-process has become established and is improved by long lasting studies and practical tests.

**The planto-tec-process gives for everyone
a suitable mostly environmentally friendly energy supply.**

**Crude-Oil supplies are drying up
But the sun will keep shining for the next five thousand million years.**

**Homepage:
www.handelshaus-runkel.de**

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