

TOMS

TRIGLICERIDES OF MODIFIED STRUCTURE

NOVEL BIODIESEL

TOMS patent methodology produces modified triglycerides by way of “interesterification ” of triglycerides with alkyl esters of short chain fatty acids (practically: working with bio ethyl acetate as the reagent), whereby a mixture of reduced molecular mass modified triglycerides (with lowered viscosities, superior cold properties, etc.) and alkyl esters of displaced biomass fatty acids (i.e. conventional biodiesel) are formed in an equilibrium reaction, the rate of transformation being controlled by sufficient excess of bio ethyl acetate. NB: while enzymatically only one acetyl group containing modified triglyceride can be produced, in our “chemical pathway” we can attain any acetyl-content – (statistically speaking) – thus we are capable of manufacturing modified triglycerides applicable as substitutes of No. 2. Diesel oil as well as No. 4 Diesel. With this patented methodology the glycerol backbone of biomass triglycerides is retained as part of the fuel. Owing to this, and also the incorporation of ethyl acetate, out of a unit of, oil we get 12 – 17% more bio fuel, producing far superior fuel properties over conventional biodiesel.

TOMS-BF

**“Establishing -
interestification Bio
fuel methodology as
a mainstream sus-
tainable commercial
approach to the pro-
duction of superior
liquid bio fuel.”**

TOMS - BIO FUEL

NOVEL BIODIESEL:

We so modify naturally occurring, high molecular mass and hence high viscosity triglycerides, so as to replace a certain % of original long (C16 - C22) fatty acid chains with short ones (for practical reasons: with C2, i.e. acetyl, via partial interestification with methyl/ethyl acetate), whereby owing to molecular mass reduction we get lowered viscosity aceto-glycerides plus methyl/ethyl esters (FAME/FAEE) of displaced fatty acids, thus the overall viscosity of this fuel mixture being approximately 6 cSt.

Owing to retention of the glycerol backbone + incorporation of (m)ethyl-acetate moieties into the fuel, out of a single unit of feedstock oil we get a 12 - 17% excess of fuel, which is an inherently oxygenated one, with around 37 MJ/kg calorific value (however having a specific gravity of 0.91 - 0.92, this offsetting in terms of volumetric energy density).

The glycerol structure ensures excellent cold properties. TOMS gelling point being -15 °C on rapeseed oil based fuel, vs. 0°C for FAME, owing to the dilution of double bonds our iodine number is always lower than that of FAME/FAEE, etc.

IN THE BATCH MODE WE CAN PRODUCE "ANY" VOLUME

- DEPENDING ON FEEDSTOCK/EXCESS ETHYL ACETATE USED, WE CAN INFLUENCE FUEL (VISCOSITY) PROPERTIES WITHIN QUITE BROAD LIMITS (E.G. MAKING THE EQUIVALENT OF NO.4. DIESEL FOR HEAVY DUTY VEHICLES-GENERATOR FUELS AS WELL AS LIGHT NO 2, ETC.).

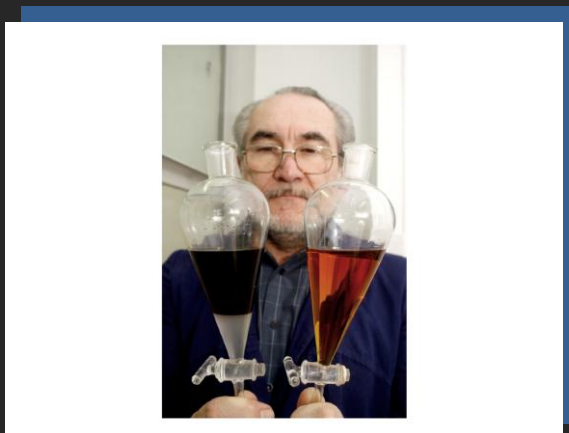


Prizes at Salons in:

•GENEVA: GOLD•KUALA L.: GOLD•WARSAW: GOLD•ZAGREB. GOLD

•TAIPEI: SILVER•NÜRNBERG: SILVER•BELGRADE: GOLD•B'PEST: GENIUS DIP.

• BIO FUEL INVENTION OF 2007.



JANOS THESZ has developed an entirely new process creating an innovative biofuel.

INTERLECTUAL PROPERTY RIGHTS OWNER OF PATENT GRANTED (HUNGARY & SOUTH AFRICA) AND OVER 50 INTERNATIONAL REGISTRATIONS:

THE EPO IS NOW PREPARING TO ISSUE FULL PATENT PROTECTION RIGHTS.

(57) Abstract: The invention is directed to the use of triglycerides of modified structure, mostly known per se, as fuels, combustibles, or fuel and/or combustible additives, and to the fuels comprising them. In the description and in the claims the expression "fuel" means liquid motor propulsion materials and/or liquid combustibles. In addition, the invention is directed to new procedures for the simple, economical and environment protecting preparation of the triglycerides of modified structure and/or the mixtures comprising them, and at the same time the glycerol produced in the known procedures in large amounts can be utilized.

Signature product interesterified triglyceride specific for use as advanced liquid bio fuel.

- This contains modified triglycerides as well as Fatty-Acid-Ethyl-Esters (FAEE) of Fatty-Acid-Methyl-Esters (FAME).
- Janos Thesz's invention is 100% biological; it does not require fossil derived ingredients. The process creates zero waste.
- Thesz's novel process relies upon "interesterification," by proper convention of chemical nomenclature, acquiring international patent approval; the resultant bio fuel has been called TOMS-Bio Fuel from the detail "Triglycerides of Modified Structure".

COLLABORATING TEAM

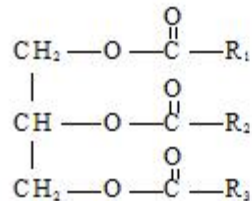
TOMS-Bio fuel is a multidisciplinary team of scientists, engineers and business personnel engaged with international commerce.

Dr. Janos Thesz, Chief Scientist and Researcher: Janos is the main proprietor patent holder of TOMS methodology. His expertise is essential for evolution of business while his hands-on technical experience is irreplaceable. Moreover, his knowledge is invaluable to existing biofuel producers seeking strategic business advantages. Janos has been working diligently in his Hungarian lab scaling-up the already proven bench-scale process. Janos has the capability that will enable TBK-Biofuels to become a profitable company. Janos works closely with two other proprietors and scientists, Bela Boros and Zoltan Kiraly as well as the Hungarian K+F Research and Development Consulting Center which sponsors their activity.

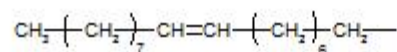
Mr. Mike Starkie, Chairman/Chief Financial Officer: Mike formerly served as the Group Vice President and Chief Accounting Officer of BP Plc, a role to which he was appointed in 1994. As Group Vice President and Chief Accounting Officer, Mike played a leading role in BP's mergers and acquisitions. During his tenure, he maintained responsibility for the Group's financial statements (including US corporate), U.S. SEC filings (20Fs and 6Ks) as well as ensuring compliance with other financial reporting requirements.

Dr. Clive Richardson, CEO CKWR: Clive currently operates with global reach from a European base as an independent consultant developing alternative energy strategies and climate change policy analysis within the sectors of agriculture, aviation and tourism. Clive also serves as the Senior Consultant and Advisor to Governmental, international development and Commercial organizations. He is Chief Executive Officer of Kilimanjaro Bio Fuels (T) Ltd, an R & D incorporation based in East Africa.

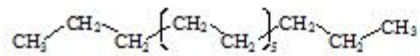
VEGETABLE OILS/FATS



R₁, R₂, R₃: 15-23 MEMBER HYDROCARBON CHAINS



DIESEL-OIL (e.g.:n-hexadecan)

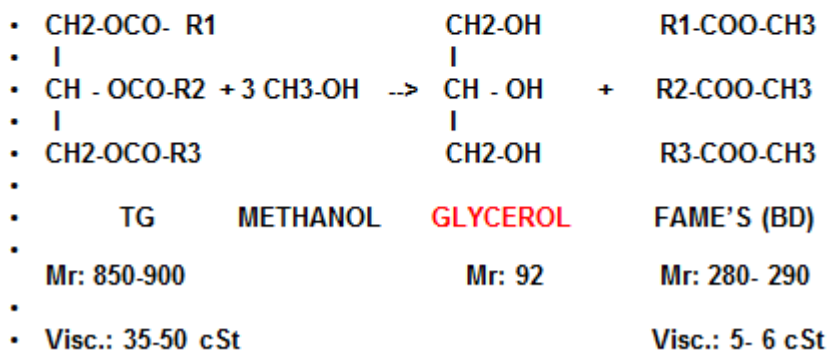


- NATURALLY OCCURRING TRIGLYCERIDES (TG's, = FATTY ACID TRIESTERS OF GLYCEROL): A RENEWABLE SOURCE FOR ALTERNATIVE FUELS IN DIESEL ENGINES (VEGETABLE OILS)
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- CH₂-OCO-R1 R1, R2, R3 = C15- C23
- |
- CH - OCO-R2 HYDROCARBON CHAINS
- |
- CH₂-OCO-R3 IN FATTY ACIDS (FA's)
-
- Calorific value: 40 000 kJ/kg (Petrodiesel: 45 000 kJ/kg)
- Mr = 950 - 1000
- Viscosity: 35 – 50 cSt at 40°C (Petrodiesel: 3 – 4 cSt)
- PROBLEM:
- **HIGH VISCOSITY** ON ACCOUNT OF THEIR HIGH Mr's → CANNOT BE ATOMIZED PROPERLY INTO ENGINES

ONE POSSIBLE SOLUTION TO REDUCE VISCOSITY: VIA FRAGMENTATION OF SVO's

MOST PREFERRED AT THE MOMENT: **BIODIESEL** (BD, „FAME“)
MANUFACTURE → ALCOHOLYSIS OF TG'S WITH METHANOL:

- („Transesterification“):



TRANSESTERIFICATION



I. TRIGLYCERIDE +METHANOL



II. GLYCEROL DISPLACED



III. FATTY ACID METHYLESTERS

- **DISADVANTAGE:** 10 -12 W% GLYCEROL BY-PRODUCT
 - LOST FOR FUEL PURPOSES
 - CONTAMINATED WITH METHANOL, WATER, SALTS, COLOURANTS → NO FEEDSTOCK FOR THE CHEMICAL INDUSTRIES IN THIS FORM
 - COSTLY REFINING
 - GROSS OVERSUPPLY
 - RAPIDLY ACCUMULATING STOCKS
- ENVIRONMENTAL PROBLEMS ON ACCOUNT OF 60-70 LITERS SEWAGE/MT BD

OUR SOLUTION TO THE GLYCEROL "SYNDROME"

TOMS-BIODIESEL!

A TOTALLY NEW CONCEPT- APPROACH. TO ELIMINATE, AN ENVIRONMENTAL PROBLEM.

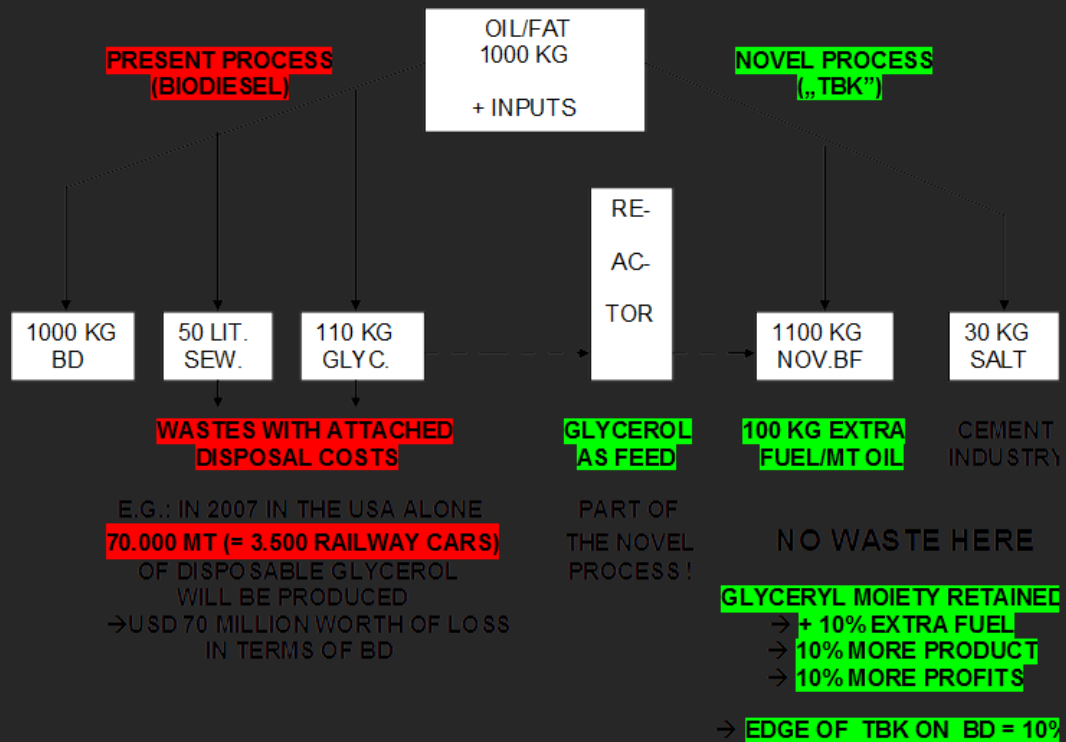
TO INCREASE BIOFUEL YIELDS OUT OF TG's BY AT LEAST 10 %

PARTIAL TRANSESTERIFICATION OF TG's WITH ALKYL ESTERS OF SHORT-CHAIN CARBOXYLIC ACIDS CHEMICALLY
MODIFIED TG's WITH REDUCED MOLECULAR MASSES LOWERED VISCOSITIES, CP's, PP's.

EVALUATION OF TOMS Bio Fuel:

- ✓ VISCOSITY: 5 – 6 cSt AT 40°C (MEETS PRESENT STANDARDS)
- ✓ CLOUD POINT: - 15°C (SUPERIOR!)
- ✓ FLASH POINT: >250°C (SUPERIOR!)
- ✓ SPEC. GRAVITY AT 15°C: 0,91 (3.4% GREATER)
VOLUMETRIC ENERGY DENSITY)

- ✓ MOTOR TESTS (10% BLEND WITH PETRODIESEL): SAME AS FOR FAME/FAEE BD
- ✓ EMISSIONS: SUPERIOR TO BD (50% LESS SMOKE!)
- ✓ MEETS GERMAN "RK-QUALITÄTSSTANDARD", BUT NO PREHEATING IS REQUIRED!!



A **SWITCH TO TBK** IN USA RELATION (700.000 MT BD IN 2007; USD 1.00/KG):

- **USD 70 MILLION EXTRA REVENUES**
- **USD 14 MILLION EXTRA PROFITS**

TBK Economics (€/1 t fuel)

INP. kg	LURGI	COST	TBK	COST
OIL	1000	600	910	546
MeOH	96	40		
Ester			90	76
NaOMe	16	64	10	40
Electric	12 kWh	0,84	27 kWh	1,89
Steam	416 kg	4,37	450 kg	4,72
Water	25 m3	17,50	7 m3	4,90
Pr.Cost		726,71		673,51
(- Glyc.)	(128 kg)	(- 10,24)		

VIABILITY OF TBK-BIODIESEL

	Pr. Cost €/T	Price €/T	Profit €/T	Extra pr. €/T
Lurgi	726,71	800	73 ; 10%	
TBK-BD	673,51	800	126;19%	12,6 1,9%
(- glyc.)	(716,47)	800	(83) 12%	

TOMS Bio Fuel for Heating

More and more eco-conscious businesses are turning to this renewable, clean-burning fuel to power boilers in offices, factories and schools. It works beautifully as a replacement for traditional heating oil and is much more environmentally friendly.

Economically it can be attractive too. There is no fuel duty payable on biodiesel used in heating. There are also specific government incentives to encourage biodiesel use in some heating applications - notably the Renewable Heat Incentive due to be implemented in 2011.

TOMS Bio Fuel for Power Generation

Electricity generating companies looking to reduce their carbon footprint are turning to Bio Fuel. To support this, bio fuel used for the generation of electricity will earn Renewable Energy Certificates (ROCs) from April 2011.

TOMS Bio Diesel for Transport

TBK Biodiesel as 100% requires no preheating and as a blend it is tested to be an efficient improver of overall engine performance.

The EU and UK governments recognise the benefits of fuels from renewable sources, the role they have to play in reducing reliance on finite supplies of fossil fuels, and in reducing harmful carbon dioxide emissions. So there is support for biodiesel production and use – particularly for biodiesel from the most sustainable sources.

The UK has signed up to two significant EU Directives. The Renewable Energy Directive sets a 10 per cent binding minimum target for biofuels in transport to be achieved by each member state by 2020. The Fuel Quality Directive requires oil companies to reduce their carbon emissions by 6 per cent by 2020. This will be achieved mainly through the use of biofuels. The biofuel supplied to meet these directives must achieve measurable greenhouse gas savings and must be made from material which meets appropriate sustainability criteria.

The UK operates a Renewable Transport Fuel Obligation (RTFO) which requires that 4 per cent of all fuel sold on UK forecourts must come from renewable sources, rising to 5 per cent by 2013/14. Obligated fuel suppliers who fail to meet their obligation under the RTFO are required to pay a buy-out price currently set at 30p per liter.

To encourage fuel suppliers to source the most environmentally friendly biofuels, companies are required to report on the sustainability and greenhouse gas benefits of the biofuels they sell. The government has signaled that from December 2011 it will only reward biofuels under the RTFO if they are made from feedstocks which meet appropriate sustainability standards.

TOMS Bio Fuel, can be manufactured from approved agricultural activity, tallow and used cooking oil, using Bio Catalysts so is 100% non-fossil derived bio fuel that rates very highly both on greenhouse gas saving and sustainability.