CLAIMS

1. A process for producing renewable hydrocarbon components from triglyceride containing feedstock, said process comprising

    a. hydrolyzing said triglyceride containing feedstock to provide a mixture comprising fatty acids, glycerol and water;

    b. subjecting said mixture comprising fatty acids, glycerol and water to a phase separation to recover an oily phase comprising fatty acids, and an aqueous phase comprising glycerol and water;

    c. subjecting said oily phase comprising fatty acids to fractionation to provide a first fatty acid fraction comprising at least 80 %-wt of free fatty acids having a carbon chain length of C16 or less, of the total fraction weight, and a second fatty acid fraction comprising free fatty acids having a carbon chain length of at least C17;

    d. subjecting said first fatty acid fraction to

        hydroprocessing to provide paraffinic renewable aviation fuel components, or

        ketonisation before hydroprocessing to provide paraffinic renewable base oil, or

        a combination thereof;

    e. subjecting said second fatty acid fraction to hydroprocessing to provide

        renewable paraffinic diesel fuel components, or

        renewable paraffinic technical fluid, or

        a combination thereof;

    f. recovery of renewable hydrocarbon components from steps d and e, wherein hydroprocessing refers to hydrodeoxygenation, hydrodesulfurization, hydrodenitrogenation, hydrodehalogenation, hydrogenation of double bonds, hydrocracking, hydroisomerisation and removal of metals.

2. A process according to claim 1 wherein the fractionation of step c is conducted by distillation, preferably vacuum distillation.

3. A process according to claim 2 wherein the distillation conditions of step c comprise a temperature from 200 to 300 °C, preferably from 220 to 250 °C.

4. A process according to claim 2 or 3 wherein the distillation conditions of step c comprise a pressure from 0.2 to 5 kPa, preferably from 0.2 to 1 kPa.

~~5.~~ A process according to claim 1 wherein the triglyceride containing feedstock is selected from a group consisting of plant fats, plant oils, plant waxes, animal fats, animal oils, animal waxes, fish fats, fish oils, fish waxes, waste and residue materials, such as UCO~~.~~

~~6.~~5. ~~A process according to claim 5 wherein the triglyceride containing feedstock;~~ preferably the triglyceride containing feedstock comprises palm oil waste materials, animal fat waste materials or a combination thereof.

~~7.~~6. A process according to claim 1, wherein the hydroprocessing comprises hydrodeoxygenation and hydroisomerization, simultaneously or in sequence, preferably first hydrodeoxygenating and then hydroisomerizing.

~~8.~~7. A process according to claim ~~7~~6, wherein the hydrodeoxygenation conditions comprise a temperature in the range from 100 to 500 °C, preferably from 250 to 400 °C; a pressure in the range from 2-8 MPa, preferably 1-2.5 MPa; optionally a WHSV in the range from 0.5 to 3 h^{-1}, and preferably a H_2 flow of 350-900 nl H_2/l feed, in the presence of a hydrodeoxygenation catalyst, which is preferably selected from Pd, Pt, Ni, CoMo, NiMo, NiW, CoNiMo on a support, wherein the support is preferably alumina and/or silica.

~~9.~~8. A process according to claim ~~7~~6, wherein the hydroisomerization conditions comprise a temperature in range from 200 to 450 °C, preferably from 250 to 400 °C; a pressure in range from 1-6 MPa, preferably 2-5 Mpa; optionally a WHSV in range from 0.5 – 3 h^{-1}, and preferably a H_2 flow of 100-800 nl H_2/l feed, in the presence of an hydroisomerization catalyst, preferably selected from a Group VIII metal, more preferably Pd, Pt or Ni; and a molecular sieve, optionally on an alumina and/or silica support.

~~10.~~9. A process according to claim 1 wherein the ketonisation reaction conditions comprise a temperature from 300 to 400 °C and a pressure from 0.5 to 3.0 MPa, in the presence of a metal oxide ketonisation catalyst selected from one or more of Ti, Mn, Mg, K, Ca, and Zr containing metal oxide catalysts, preferably TiO_2.

~~11.~~10. A process according to claim 1 or ~~10~~ 9 wherein the ketonisation reaction conditions comprise the presence of CO_2 gas flow, preferably the CO_2 flow is 0.1 to 1.5 gas/feed ratio (w/w).

~~12.~~11. A process according to claim 1 wherein the recovery of hydrocarbon components comprises recovery of at least three components selected from renewable paraffinic base oil, renewable paraffinic diesel fuel component, renewable paraffinic aviation fuel component, renewable paraffinic naphtha component and renewable paraffinic technical fluid, such as renewable paraffinic transformer oil.

~~13.~~12. A process according to any of the preceding claims, wherein the process further comprises subjecting said aqueous phase comprising glycerol and water obtained from separation of step b., to a step g. for producing propanols.

~~14. A process according claim 13, wherein step g comprises~~

~~i. at least one evaporation, wherefrom the vapor phase is directed to;~~

~~ii. catalytic conversion of glycerol to 1-propanol, 2-propanol or a mixture thereof at vapor phase in presence of water,~~

~~iii. separation and recovery of 1-propanol, 2-propanol or a mixture thereof as a renewable propanol gasoline component.~~

~~15. A process according to claim 14, wherein the catalytic conversion (ii) is conducted at a temperature below 400 °C, preferably from 200 °C to 300 °C, more preferably from 230 °C to 290 °C, most preferably form 250 °C to 280 °C.~~

~~16. A process according to claim 14, wherein an aqueous residue is withdrawn from the evaporation (i).~~

~~17. A process according to any of the preceding claims from 13 to 16, wherein the process further comprises blending the obtained propanols or renewable propanol gasoline component with a renewable paraffinic naphtha component.~~

~~18.~~13. A process according to claim 1 wherein the renewable paraffinic aviation fuel component consists essentially of paraffinic hydrocarbons having carbon chain length from C6 to C17, fulfilling the ASTM D7566-18 standard specification, having a density of less than 772 kg/m^3 as measured according to ASTM 4052D, and a freezing point of less than -40 °C as measured according to IP529.

~~19.~~14. A process according to claim 11 wherein the renewable paraffinic transformer oil consists essentially of paraffinic hydrocarbons fulfilling the IEC 60296 standard, and having viscosity at 40 °C as measured according to ENISO 3104 of 12 mm^2/s or below, typically 3.4 mm^2/s, viscosity at -30 °C as measured according to ENISO 3104 of 1800 mm^2/s or below, typically 42.2 mm^2/s, a flash point (PM) as measured according to ENISO 2719 of at least 135 °C, typically 138.5 °C, and acidity of less than 0.01 mg KOH/g, typically less than 0.001 mg KOH/g.

~~20.~~15. Use of process according to any of the preceding claims for producing at least one product selected from

- renewable base oil fulfilling the API Group III base oil ~~spesifications~~specifications having ≥ 90 wt% saturated hydrocarbons, ≤ 0.03 wt-% sulfur and a viscosity index of ≥ 120;
- renewable aviation fuel component consisting of paraffinic hydrocarbons having carbon chain length from C6 to C17, fulfilling the ASTM D7566-16b, Annex A2 specification, having a density of less than 772 kg/m^3 as measured according to ASTM 4052, and a freezing point of less than -40 °C as measured according to IP529;
- renewable transformer oil consisting of paraffinic hydrocarbons fulfilling the IEC 60296 specification, and having viscosity at 40 °C as measured according to ENISO 3104 of 12 mm^2/s or below, typically 3.4 mm^2/s, viscosity at -30 °C as measured according to ENISO 3104 of 1800 mm^2/s or below, typically 42.2 mm^2/s, a flash point (PM) as measured according to ENISO 2719 of at least 135 °C, typically 138.5 °C, and acidity of less than 0.01 mg KOH/g, typically less than 0.001 mg KOH/g;
- renewable diesel fuel consisting of paraffinic hydrocarbons fulfilling the EN 15940:2016 European standard; and
- renewable gasoline fuel~~.~~,

preferably for combined renewable transformer oil and fuel production.

~~21. Use according to claim 20 for combined renewable transformer oil and fuel production.~~