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TECOSOL GmbH, Ochsenfurt

Technical challenges for the recycling of waste to biodiesel

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Actuel Situation

- 80 % of running biodiesel plants worldwide use standard technologies with alkaline catalyst (NaOH, KOH, Na-Methylat, K-Methylat)
- 15 % of running biodiesel plants worldwide work with waste oils and fats but also use alkaline catalyst
- 5 % of running biodiesel plants worldwide can work with other catalysts like sulfuric acid, ionic exchanger or encyms.
- Political regulation and social acceptance more and more ask for high CO_2-Reduction of biofuels
- Liquid biofuels could be a very important building block to save CO_2 and help to limit global warming.

Input

Raw materials are Animal Fats, Used Cooking Oil, Fatty acids and Acid Oils.

- Animal Fat
- Fatty Acids or Acid Oils
- Used Cooking Oil, Yellow Greese
- Other Residues from Oils and Fats

    

What are the Technical Challenges?





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Technical challenges

- Impurities and polymers reduce ester content and yield
- Phosphor compounds produce emulsions
- Sulfur compounds produce out of spec biodiesel
- Oxidated compounds reduce oxidation stability
- Dark color of raw materials
- Acid number (1 to 10 mg KOH/g) produces loss of yield and need higher consumption for alkaline catalyst
- Acid numbers (> 10 mg KOH/g) needs additonal process steps like preesterification or esterification





What are the Technical Solutions?

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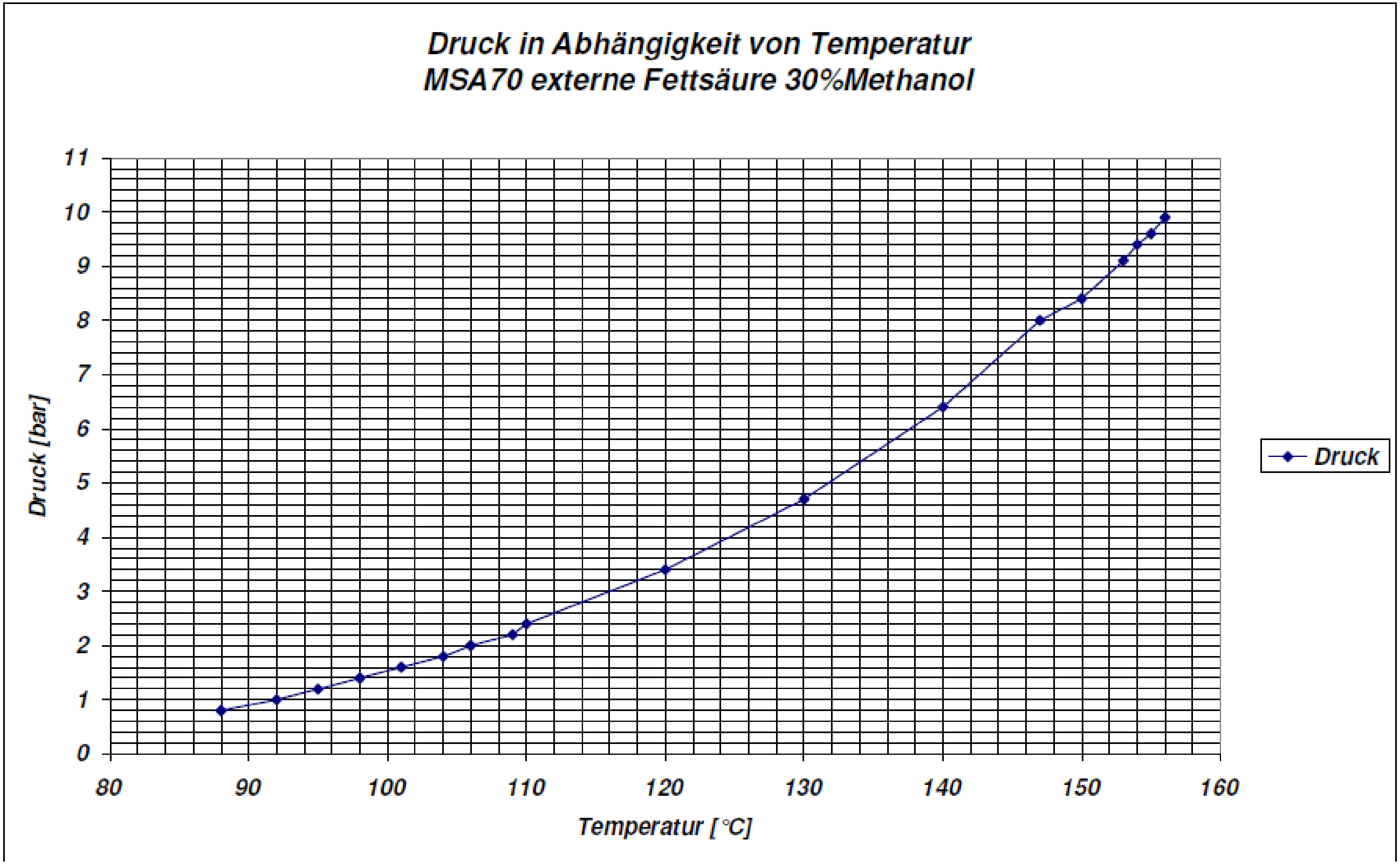
Technical Solution:

- New MBT-Process works completely flexibel from raw materials quality
- With Methansulfonicacid transesterification and esterification is done in one step
- No raffination of raw material is necessary
- Reduction of Tri-, Di- and Monoglycerides in specification level of EN 14214
- No emulsion problems in the process
- Methansulfonates have very good solubility in glycerin
- Full technology compatibility with any existing technology



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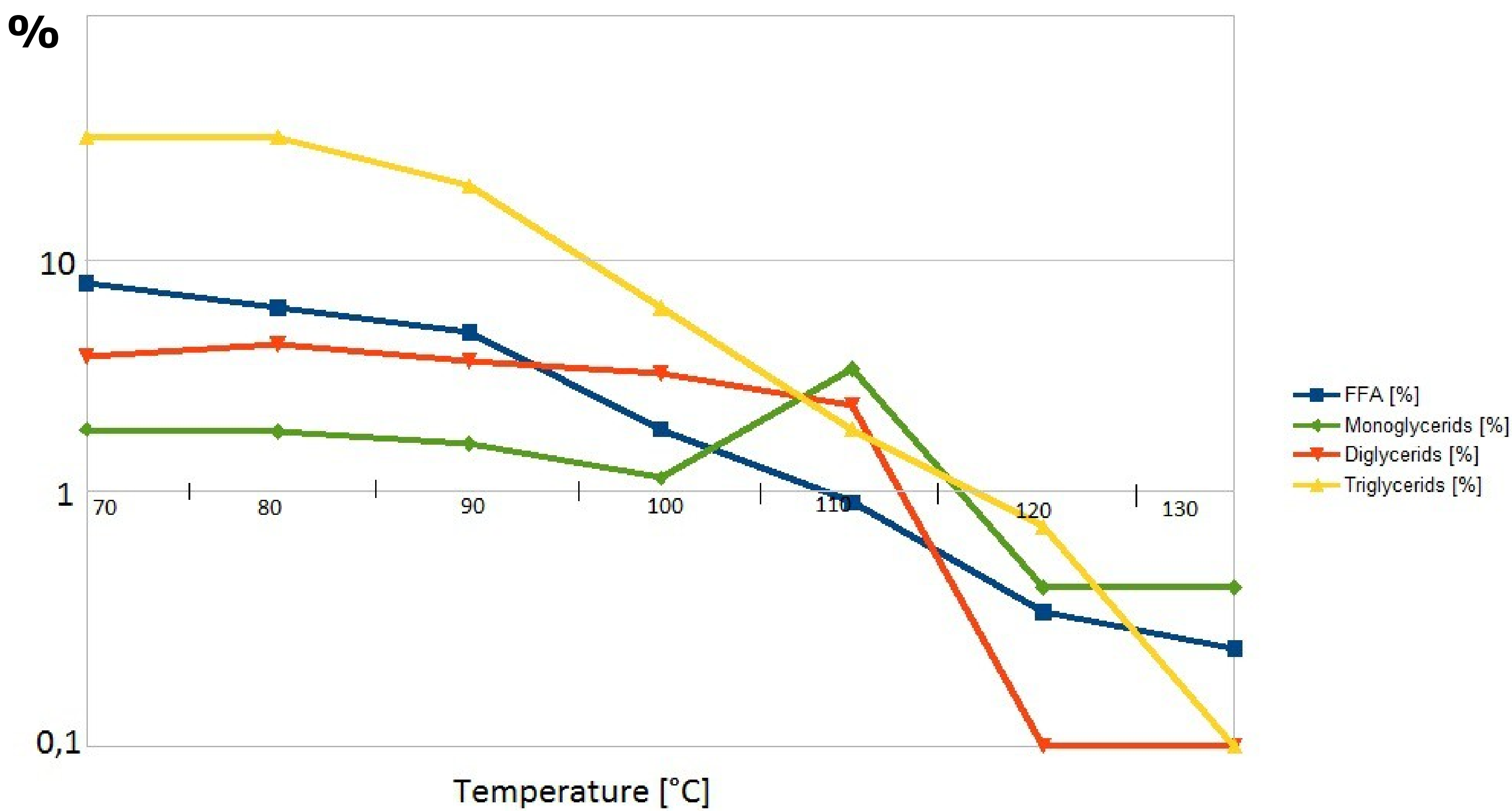
Acid Oil 50% FFA + 30% Methanol + 2% MSA70, 2h reaction time







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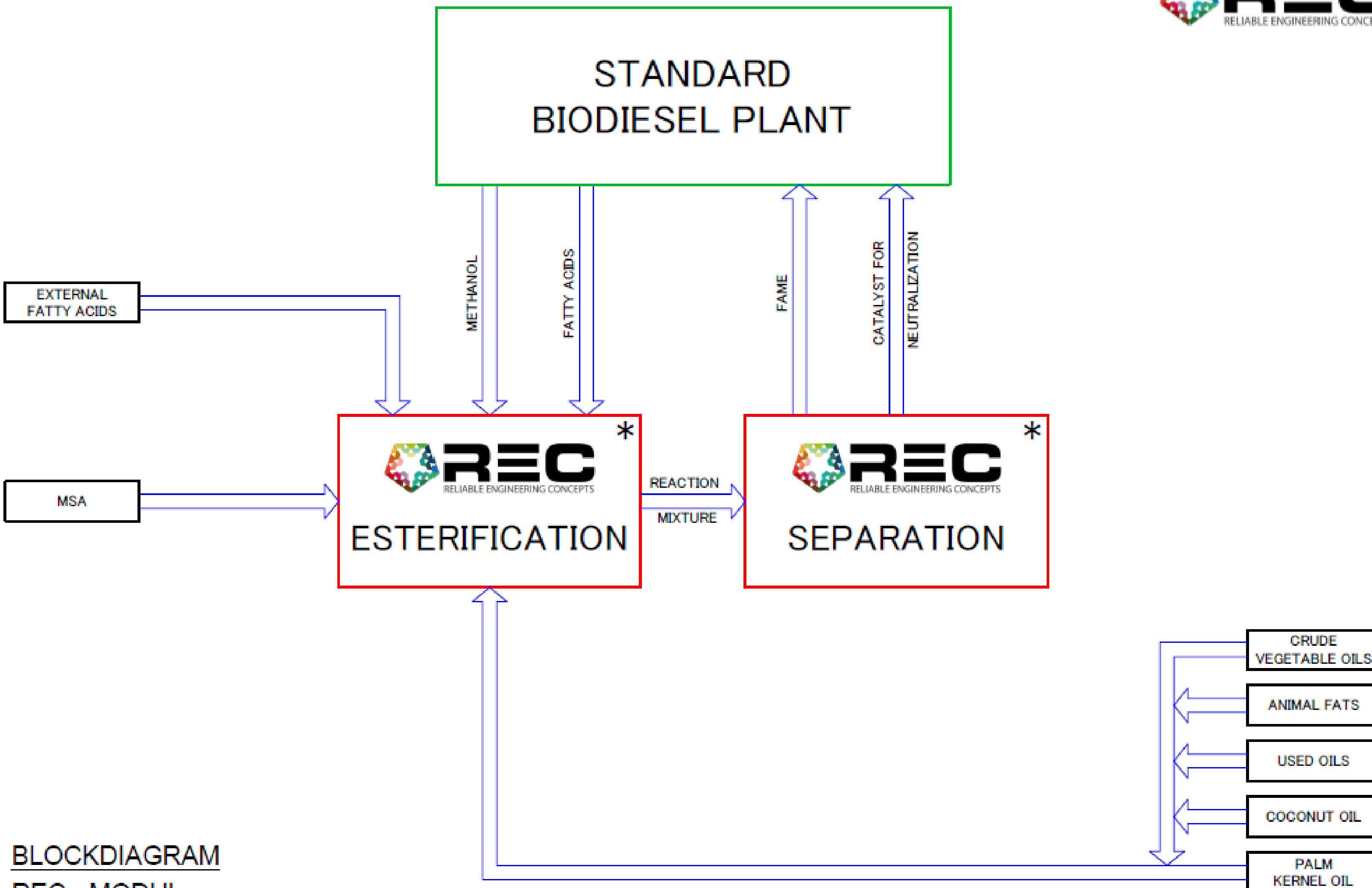
REC RELIABLE ENGINEERING CONCEPTS



BLOCKDIAGRAM

REC - MODUL

* IN COOPERATION WITH InaChem GmbH (PATENT TO BE GRANTED BY Q3 2014)

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Thank you for your attention