

# $\pi^2$ -Power Project



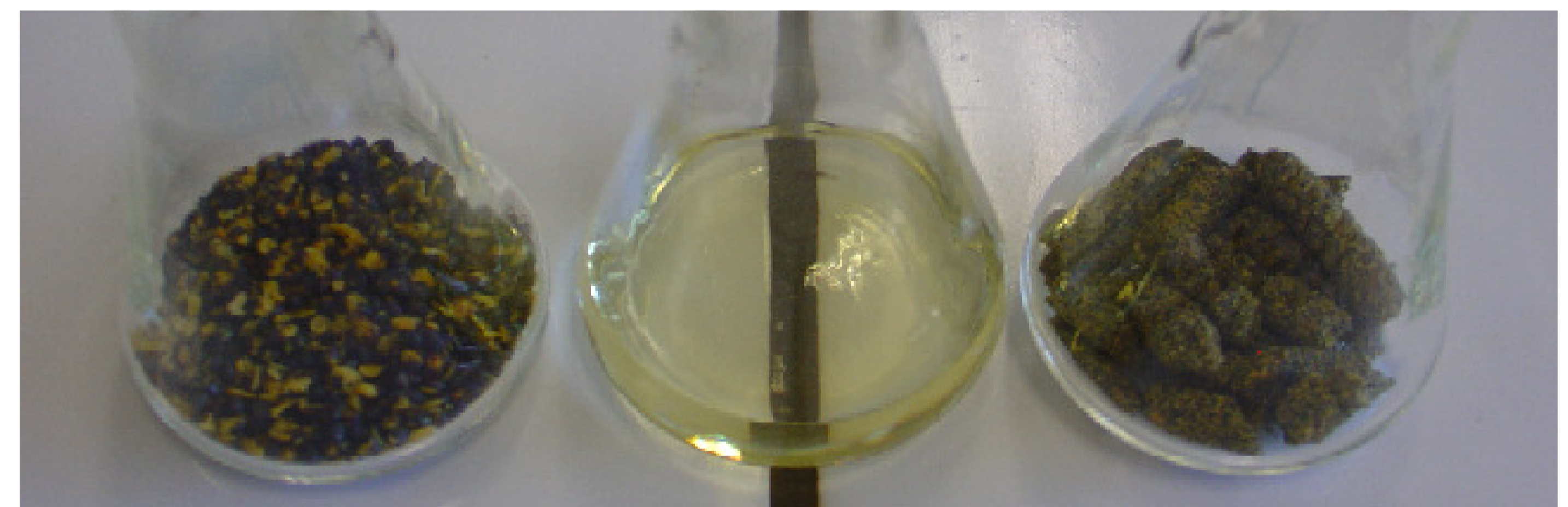
Optimizing yield of bio-oil crops, using advanced extraction and refinery combined with derivatisation.  
Optimized quality bio-oil and biodiesel.

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This project targets maximized yield of bio-oil fuel from oil-generating crops. The actual production yield (e.g. rapeseed) is limited to 75%, of the theoretical oil content since pressing has to be done with care in order to avoid problem inducing contaminants: phosphatides, sterols, ..

Aim is an 20% increase in yield (higher productivity better economics) but also a higher product quality and a wider application area of bio-oil based materials.

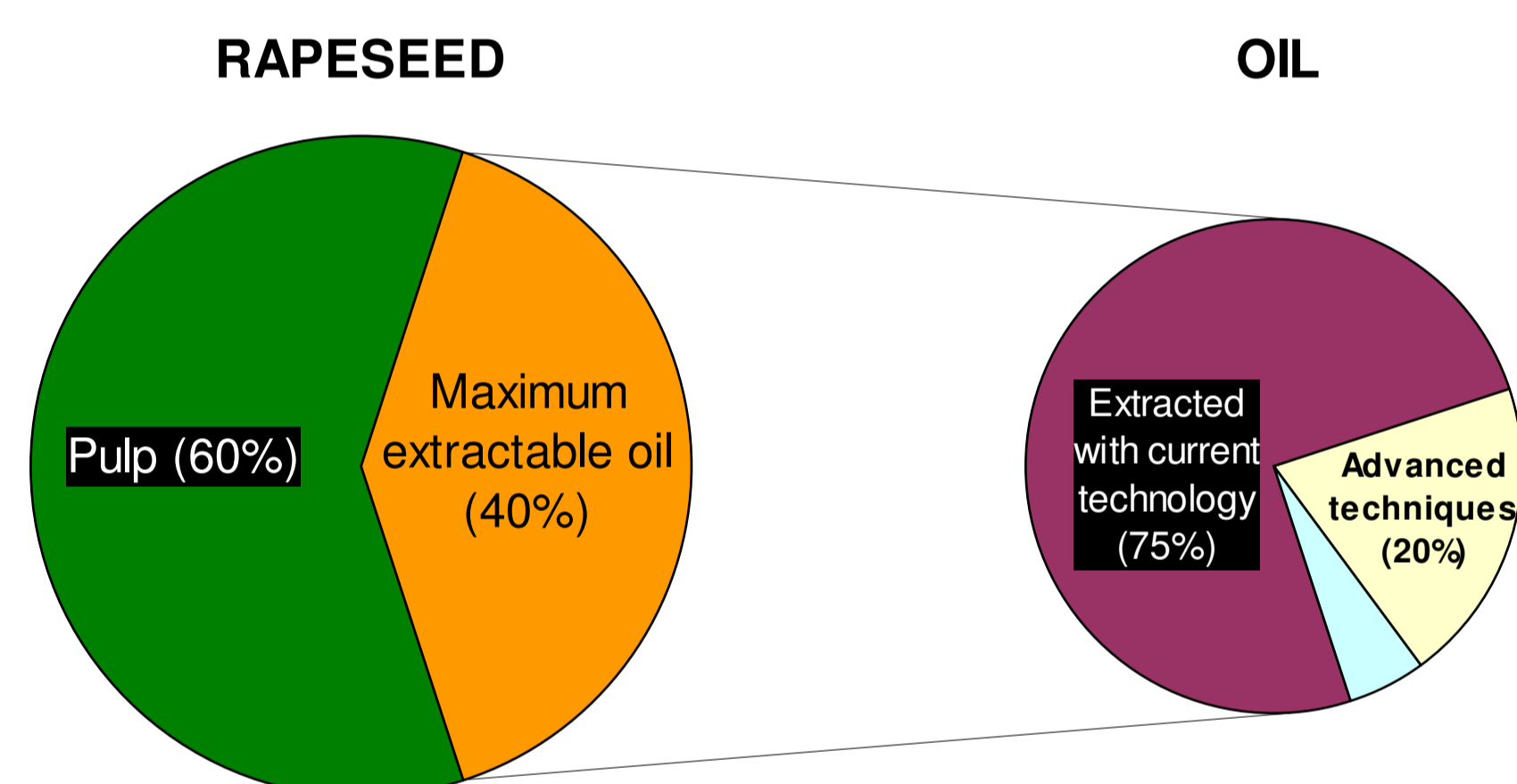
The targetted customer group consists of small to medium sized operations. This project runs in a cooperation between KdG and KaHO St-Lieven ( $\pi^2$ -Power project, 2006-2008, funded TETRA-project by IWT-Vlaanderen).



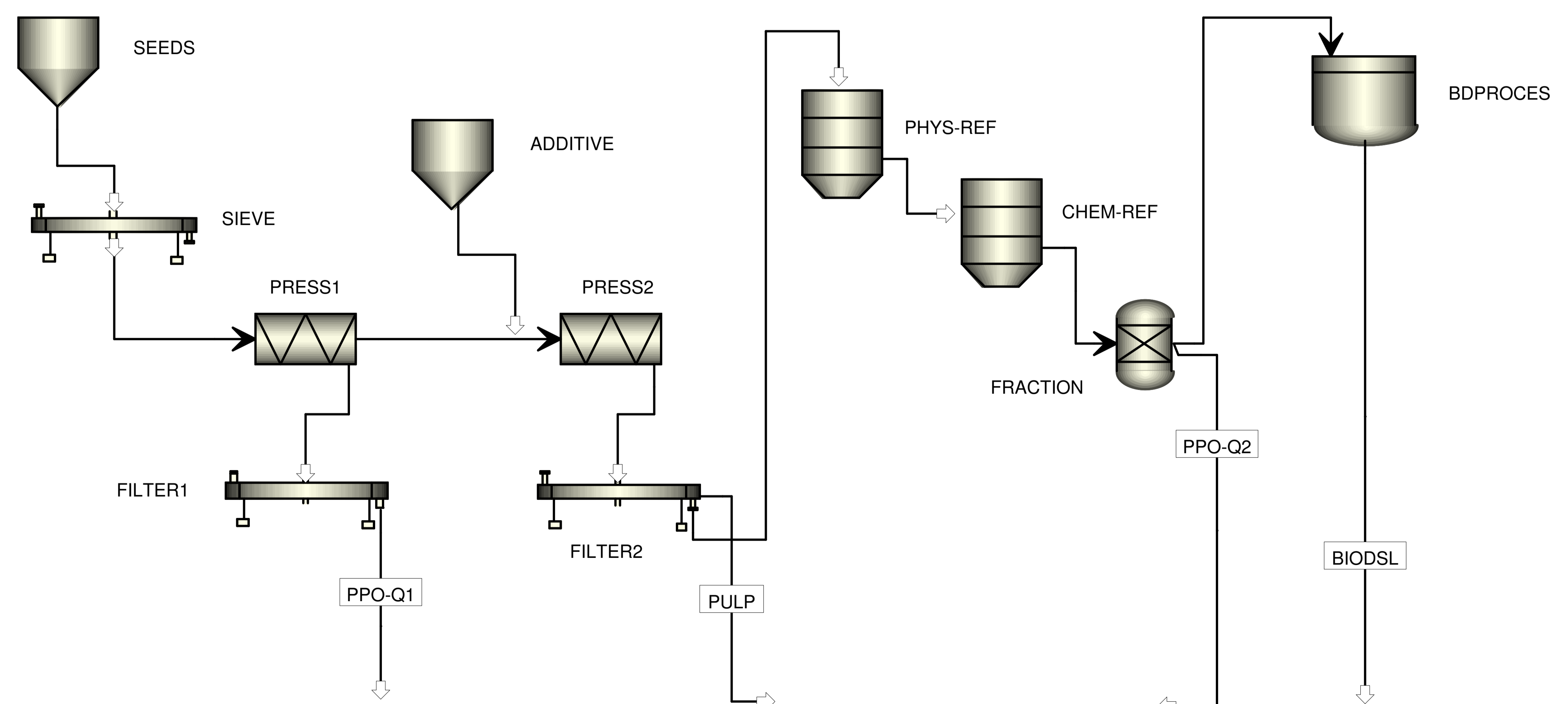
Left to right: Rapeseed, rapeseed oil and rapeseed pulp

Dedicated filtration converts the first stream to quality bio-oil. For the second stream this filtration has to be complemented with a refinery combining both physical and chemical techniques. The refinery is minimized and tuned to the final specifications.

Oily sidestreams are derivatized by transesterification methods, based on KdG's research on biodiesel production from low grade oils and fats (HAGAR-project, 2003-2006, funded HOBUS-project by IWT-Vlaanderen). This technology involves the use of a specific catalyst, procedure and an adapted molecular design. Depending on the specifications the product can be used directly as biodiesel or as chemical raw material.



Advanced pressing techniques are used to obtain different oil-streams. Optimized conditions for the first and second pressing, the latter using stimulated extraction with bio-oil based materials, yields a clear increase in yield.



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