

π^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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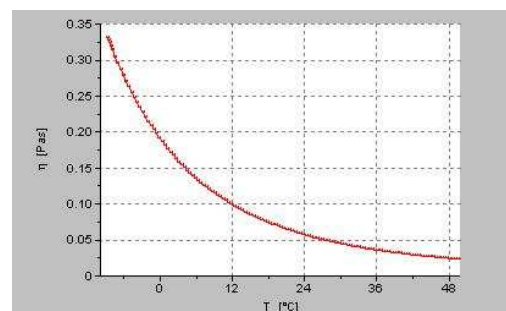
In the first part of the project the main focus of the mechanical research at KaHo is to set up a test stand to evaluate the effect of different press parameters in the production of pure plant oil out of various oilseeds. For this purpose a seed press is equipped with pressure and temperature sensors. Online monitoring of the sensors and the energy flow to the press makes it possible to determine the economically most sound parameter set for each oilseed used.

Up to now, the development of quick tests was the focus of the chemical research at KdG. Quick tests for the determination of the acid value and the water content are now available and quick tests for phosphorus, calcium and magnesium content are under construction. The quick tests for acid value and water content are good/bad-tests, the other tests will probably be working according to quantitative methods (colour comparison).



Quick test for water content : samples 4 to 8 are OK (< 750 ppm water), samples 1 to 3 are not OK (> 750 ppm water)

Next to the quick tests, research has been done on the viscosity of cold pressed rapeseed oil. The influence of the temperature on the viscosity and the crystallisation of the oil (cloud point and pour point) has been studied.



For detailed research into the efficiency of different filter techniques and filter media, not only the amount of contamination is important but also the size distribution of particles is relevant. An optical particle counter is brought into action to deal with that.



In the future, testing of the cold pressed oil in engines is scheduled, starting with a small one-cylinder engine to take a closer look at the wear of the engine after running 100 to 500 hours on pure plant oil. After these tests, experiments are planned on common diesel engines (direct injection and common rail).



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