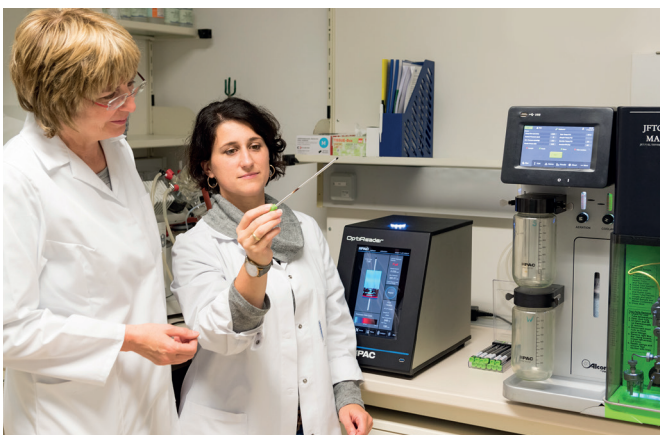


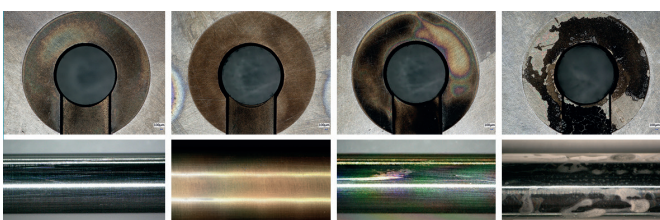
## Fuel and Lube Oil Assessment & Analytics

Fuel and Lubricant analysis is an integral element of many of our research projects. In addition to analytics according to current specifications, we offer the development and validation of new analytical methods for fuels and lubricants. We have many years of experience in the field of assessment of new fuels, efficacy testing of additives, deposit analytics on particle filters and engine parts.

### Investigation and Avoiding of Fuel based Deposits



Increasing demands on modern CR injection systems lead to increasing requirements of fuel composition. We offer different methods for fuel testing regarding to access the deposit formation potential of diesel fuels and deposit analysis. This includes new laboratory test methods to identify precursor substances of deposit formation in fuels, investigation of deposit compositions, ascertaining causes and recommendation of prevention strategies.



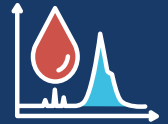
### Fuel Assessment

- Analytics of ash respectively soap forming substances in diesel fuels and gasoline
- Chromatographic or spectrometric analysis of fuel composition

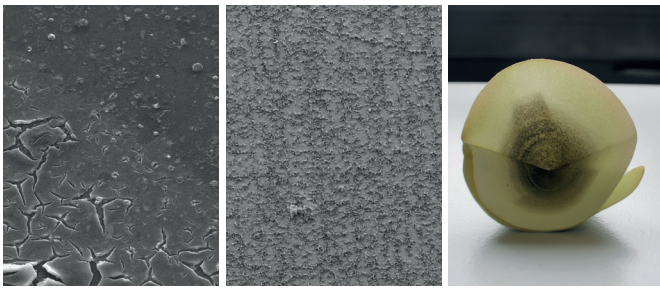


### Lube Oil Monitoring

- Analytics of wear metals, additive elements and contaminants in engine oils
- Investigation of fuel content in lube oils and lube oil entry into the fuel during injection process
- Comparative tests of oil sensors and correlation of electrically measuring values with standard oil parameters



## Optical Analysis Methods



- Surface analysis of deposits, coatings and filter materials with optical methods
- Qualitative composition and distribution of elements
- Structure and roughness analyses
- Particle size determination

## Condensate and Coolant Water Analysis

- Analysis of cooling water regarding of containing ions with different methods of ion chromatography and ICP OES



## Key Benefits for Your Product

- Competitive advantages through precise knowledge of changed composition and new features of future fuels
- Comprehensive recommendations for use of new bio-, synthetic or marine fuels / fuel blends
- Use of tailor-made analytical methods
- Continuous and quick adaption of analytical methods to changes in the market
- Consultation and detailed problem/result discussion
- Fast processing of analyses in case of engine damages
- Close contacts with standardization bodies and fuel networks

**Are you interested in further information?  
Feel free to contact our friendly experts.  
Together we will find a solution for your challenges.**

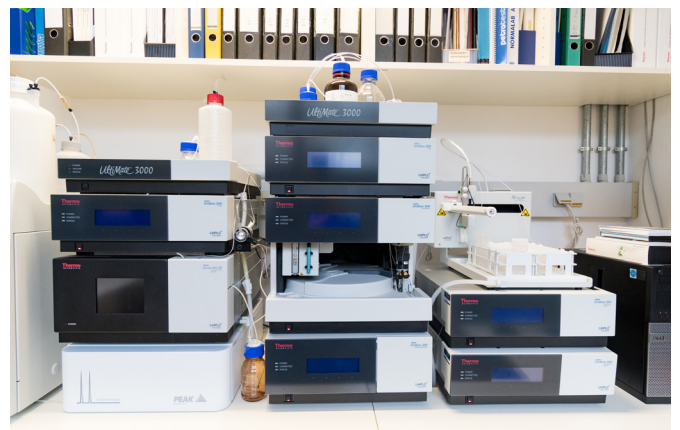
## Rheological analysis methods



- Rheological tests, structure and frequency sweep
- Arrangement/rearrangement tests, amplitude sweep
- Determination of yield limits and gel point

## Ageing Tests of Fuels and Lube Oils

- New developed laboratory ageing tests especially for testing lube oil in biofuel operation and gas engine oils
- Proven methods for monitoring ageing state
- Size exclusion chromatography for determination of molecular weight distribution of ageing products or additives
- GC-MS analysis of volatile ageing products



## Efficiency and Stability Tests of Additives

- Efficiency tests of antioxidants and detergents
- Thermal stability and destruction of additives



## FUELS AND LUBRICANTS

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