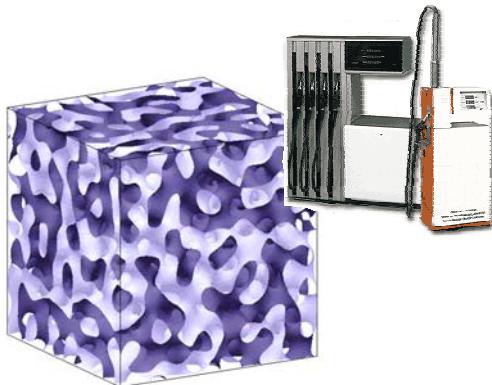


hydroFUEL

**Stable Water/Diesel Microemulsions
> 95 % Reduction of Particulate Matter**



hydroFUEL – the first water/fuel microemulsion

Water/Diesel emulsions have been intensively discussed as potentially beneficial fuels with respect to reduction of noxious exhaust gases – mainly particulate matter (PM) and nitrous oxides (NO_x).

So far, however, these emulsions were thermodynamically unstable and only low amounts of water could be emulsified. Thus, water/fuel emulsions are currently limited to niche applications, and other options for reducing PM and NO_x are under development. All these methods are costly, increase fuel consumption and require delicate engine management systems.

hydroFUEL in contrast is an **absolutely stable** microemulsion. hydroFUEL is the first thermodynamically stable water/fuel microemulsion – stable over an extremely wide range of temperatures and operating conditions, if needed.

hydroFUEL is a bicontinuous microemulsion – i.e. both the oil and the water components form continuous domains within the liquid. hydroFUEL significantly saves surfactant and the water/fuel ratio can be freely varied.

Engine bench tests show a reduction of particulate matter of over 95 %.

hydroFUEL developed by



University of Cologne

Exclusively promoted by



PROvendis GmbH • Eppinghofer Straße 50
D-45468 Mülheim/R • Germany

Licensing Opportunity

A German patent application has been filed for hydroFUEL in July 2003. A PCT application was filed in 2004. All options for national filings are open.

hydroFUEL has been tested both in the laboratory and on engine test benches.

We offer licenses and technical support for the commercialisation of hydroFUEL to innovative companies.

a unique opportunity for establishing water/fuel microemulsions as low-emission fuels!

Benefits

- microemulsions form spontaneously
- significant surfactant savings
- water content freely adjustable
- wide temperature/stability window
- clean and efficient combustion
- no temperature peaks during combustion (⇒ NO_x reduction)
- significant PM reduction
- simple implementation
- easy to handle
- works for Diesel, RME, kerosene and gasoline

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