

Laboratory Services

Challenge us with your operational problems!

In addition to qualification of our topside products, we offers characterization of petroleum fluids and multiphase systems. We intend to be a problem solver for petroleum operators worldwide.

Strategy

It is well recognized that fluid characterization is of great importance for understanding the aspects of petroleum processing.

We have however realized that there is a missing link between petroleum research done by universities and decisions taken during operation.

For that reason we has formed a lab to perform applied science within the field of separation technology. Fluid and interfacial characterization in our characterization lab is complemented with a workshop for large scale separation tests.

Moreover, the experiments in the laboratories are supported by modeling and CFD activities in our multi-disciplinary group.

With our experience and hands on approach to operational problems and challenges we intend to meet the requirements for relevant petroleum tests and ultimately improve the predictability of separation phenomena.

Examples of application

Any separation model must take into account the final approach of droplets, followed by film thinning, rupture and coalescence. The lack of quantification of the coalescence step is usually what complicates the estimation of separation efficiency.

The unique droplet manipulator module allows us to quantify the time for coalescence, due to accurate drop control and drop location.

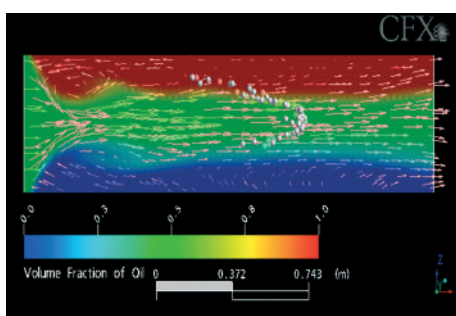
The emulsion drop size distribution greatly affect the formulation properties like viscosity and stability to sedimentation and coalescence. A separation model or fluid dynamic considerations during emulsion transportation should take into account the viscosity of the emulsion, not only that of the separate oil and water phases.

Factors that affect the overall viscosity of the system are: amount of dispersed phase, droplet size distribution, shear rate, viscosity of individual phases etc. The inline DVM (droplet video microscopy) instrument from VIPA counts droplets/particles by shape considerations and provide droplet size distribution of the emulsion systems.



The emulsification of water droplets in the crude oil dramatically changes the viscosity of the multiphase system.

These results can then be incorporated in models of separation phenomena by CFD analysis. Figure 6 shows catastrophic gas entrapment in a viscous emulsion layer in a separator.



Catastrophic gas entrapment in a viscous emulsion layer in a separator.



Test portfolio

WE offers customized or standard experiments both offshore and in our laboratories:

- Surface/interface characterization
 - Coalescence time by droplet micro-manipulation
 - Dynamic interfacial tension
 - Interfacial dilation relaxation
 - Contact angle determination of solid interfaces
- Emulsion droplet size determination – DVM
- Demulsification with VIEC®
 - Ambient pressures, high temperatures
- Dielectric properties of crude oil
- Advanced flow properties of crude oil or emulsions
 - Shear rate [\pm , 1000] 1/s
 - T = [0,180]oC
- Viscosity
 - T = [0,100]oC
- Density (API)
 - T = [0,100]oC
- Asphaltene stability - precipitation/deposition onset
- Spectroscopic identification/ comparison - IR, NIR
- Residual water quantification - Karl Fisher
- Inorganic solid quantification by pressure filtration
- Asphaltene quantification
- Water analyses, pH, Chloride, Residual oil, Charge or size of water dispersable particles

Hamworthy Technology & Products is a product supplier for the oil & gas industry's with focus on increased production with minimum effect on the environment. Hamworthy T&P aims to be a leader in the development of environmentally friendly technology

Hamworthy T&P is a Norwegian supplier of equipment and systems to oil and gas installations worldwide and are specialized on oil, water and gas processing. Our technology focus on the separation of oil and water as well as gas recovery, gas conditioning and gas conversion. Our main technologies are patented, such as our technology for electrostatic coalescence (VIEC), zero continuous flaring on oil- and gas production plants and zero emission technology for floating production units.

Hamworthy Technology & Products AS

Visit adress: Solbraaveien 10, NO-1383 Asker, Norway
Postal adress: PO. Box 144, 1371 Asker, Norway
Tel: +47 815 48 500, Fax: +47 61 815 48 510,
E-mail: htp.sales@hamworthy.com, Internet: www.hamworthy.com