

MultiScale™ MEG Module

# MEG Module

Prediction of scale formation in wet gas condensate pipelines and in MEG regeneration plants.

- MultiScale with MEG module is a useful tool for calculating water chemistry data, solubility and precipitation kinetics for water/glycol mixtures.
- Multiscale with MEG module gives reliable scale predictions for water / co-solvent system up to 90 wt% co-solvent.

## Background

In an increasing number of fields the gas/condensate is transported unprocessed or partly processed in long multiphase pipelines to the gas treatment plant. For most of these applications the only economical and technological feasible solution has been the use of carbon steel and the use of glycol as a hydrate preventer when the temperature is low.

## Corrosion in the pipelines is controlled by the addition of corrosion inhibitors or pH stabilizers.

The pH stabilization concept has been successfully implemented in several pipelines and there is a growing interest for this technology, particularly in the North Sea and the Persian Gulf. The pH stabilization technique is not suitable when a significant amount of formation water is produced and uncertainties arise with sub-sea separation where the likelihood for carry over of formation water is higher. The salts from the carry over can precipitate together with products released during corrosion, or products added to control corrosion. This can lead to scaling, particles, clogging, fouling, and erosion in the pipeline and the process systems. Carry-over of formation water has large consequences for the regeneration of glycol.

In traditional regeneration systems the MEG solution circulates through a reboiler at 120-140 °C, causing water to flash off. In this process all non-volatile components in the solution remain in the MEG phase and become accumulated. If significant amounts of salt are produced, the MEG has to be regularly replaced unless both MEG and water is evaporated in a reboiler and the two phases are separated in a distillation tower.

In both types of systems, accumulation of additives and dissolution and precipitation of salt become important and will affect the operation and regularity of the systems.

Subsea solutions and fields with long multiphase pipelines make it important to have control over corrosion and scaling in the process systems. In addition, there are several existing fields and onshore plants that today experience problems resulting from pipeline corrosion and particle formation.

- The glycol regeneration process, the carry-over of formation water, the onset of scale formation in pipelines, separators and boilers, and the selection of corrosion rate control methods are strongly interrelated phenomena. Changes in one part of the system will affect the whole process, and the results can be increased scale and corrosion problems as well as problems in the regeneration unit. The problem will increase in the future as sub-sea production makes it even more difficult to control corrosion and scaling.
- The control of corrosion, scale/salt precipitation and hydrate formation is essential for effective gas and condensate production.
- The costs caused by lost production and inefficient operation are considerable.

The MEG Module is an add-on module to the standard MultiScale™ program.

## Contact information, software and courses:

*siv.lie@exprogroup.com or petrotech@exprogroup.com*  
Phone: +47 52 700 700 / Web: [www.exprogroup.com](http://www.exprogroup.com)