SNF Oil Field Division

Range of Products

- **FLODRILL**: products for water based drilling fluids. It comprises fluid loss agent for mud and cement, viscosifiers, thinners, shale inhibitor, bentonite extender.
- **FLOJET DR**: products for drag reduction and hydraulic fracturing.
- **FLOPERM**: products for reservoir stimulation (gels, microgels), sand control, and well conformance.
- **FLOPAM, FLOQUAT, FLOSPERSE**: products for scale inhibition, coagulation & flocculation, OIW and TSS reduction, oil sands MFT dewatering.
- **FLOPAAM**: products for Enhanced Oil Recovery (EOR).

SNF manufactures products either in liquid (water in water or water in oil emulsion) or solid form (powder) to meet implementation requirement and facilities.

Products for EOR and their Stability

The quality of the polymers for EOR and the range of applications have been greatly improved over the past 10 years. Today, polymer flooding is a viable technology which can be implemented even with hard reservoirs conditions; products are available for temperature up to 120°C, with saline water and low permeability (10 mD).

SNF has developed a full range of polymers for polymer flooding applications. With our expertise, we are able to determine the best polymer to fit any reservoir conditions. We also developed the know-how to implement such a technology successfully in the field, avoiding chemical, thermal and mechanical degradations of the polymer.

The range of polymers comprises anionic PAM for low salinity and low temperature reservoirs, sulphonated co- and terpolymers to resist up to 100°C. In addition, SNF has developed the Superpusher series for temperatures above 120°C and low permeabilities reservoirs. When higher viscosities and salt tolerance are needed, associative polymers should be considered. The latest innovation is the FLOCOMB series that have a high tolerance to salt water including significant amounts of divalent cations such as calcium and magnesium.

F3P - FLOPAAM Protected Polymers Package

SNF expertise in polymer technology has allowed the development of protection packages that will prevent polymer degradation by the frequent contaminants found in field operations such as temperature, oxygen, iron and H2S.

Produced Water Treatment

The treatment of produced water is an evolving discipline in which SNF constantly acquires knowledge and new skills to tackle the degradation of the back-produced polymer. Because not all the polymers are degraded, it is necessary to implement specific treatments, preferentially after the Oil/Water separation so as not to affect the quality of the crude produced, to cut the remaining polymer backbones and therefore decrease the water viscosity. Among the possible treatments, chemical and mechanical are the most used.
Full Service
SNF provides the full range of expertise required to support the need of EOR as evidenced by a recent large-scale multi-year contract for the engineering and construction of a polymer flooding project in the Marmul field in the south of Oman. SNF can provide:
- Reservoir engineering
- Monomer integration
- Polymer selection design
- Polymer manufacturing
- Polymer storage and dissolution equipment
- Injection equipment
- Treatment of injection and produced water
- Engineering and system design
- Training, start-up and commissioning

SNF has developed an efficient process to ensure the quality of injection, it starts by establishing overall engineering guidelines of process design and FEED using SNF’s patented technology such as the FLOQUIP™ PSU Polymer Slicing Unit, the in-line high pressure viscometer FLOQUIP™ VDH, our in-line high pressure sampling device or even our newly developed non-shearing Linear Pressure Reducer.

In order to minimise costs and delays we have developed a standard pre-engineered skid package called the FLOQUIP™ PIU 300 composed of 3 modified maritime 40 foot containers, the first containing 16 Big Bags of powder polymer, the second serving as the dilution-maturation center and the third as the high pressure injection hub of the system.

Naturally, fields and polymer flooding operating conditions differ widely from one reservoir to the next and SNF provides customised large turn-key polymer preparation/injection systems in which the scope can also include water treatment and oil separation.

"Standard Polymer Injection Unit equipped with the patented FLOQUIP™ PSU 300 capable of dissolving up to 300 kg/h of polymer"
While SNF makes reasonable efforts to ensure the information is accurate and up-to-date, SNF makes no warranties or representations, express or implied, as to the accuracy, completeness, or any other aspect of the information on this document and assumes no liability in connection with any use of this information. Nothing herein shall be construed as a recommendation or license to use any information found that conflicts with any patent, trademark or copyright of SNF or others, and SNF makes no representations or warranties, express or implied that any use of this information will not infringe any such patent, trademark or copyright.