

Multi-Flow

green tech molecular disaggregation



Flow assurance can be a constant and crucial challenge when paraffin wax, asphaltene and resin deposition downgrades your pipeline flow rates, flow size, increases drag, significantly increases your production systems spend and disrupts your cash flow.

Common treatments such as Pour Point Depressants (PPDs), polymers, surfactants, solvent washes with shut-in and soak procedures may control wax and asphaltenes for short periods of time, but often with ineffective, short-term results. These traditional applications to control waxes, asphaltenes and resins may develop unpredictable remediation cycles which can severely impact budgeting and scheduling challenges for your operations.

Multiple additives can also be challenging with increased requirements for storage, handling and delivery, ultimately increasing your OPEX.

Traditional additives, solvents and treatments may significantly raise your risk profile around your Health, Safety and Environment concerns.

But a new option is here. A safe, molecular carbon based chemical that fundamentally shakes the traditional reliance on multiple additives, incompatible chemical regimes, bioaccumulating and potentially hazardous applications to the core.

Hydrocarbon Dynamics' innovative Multi-Flow chemical is a green tech molecular disaggregator that effectively controls waxes, asphaltenes and resins at a lower dosage rate whilst dramatically reducing BS&W by rapid in-line separation of the water and oil phases, breaking emulsions and eliminating foam.

Multi-Flow is organic, requires no hazardous chemical handling protocols (with a flash point of 97°C) and can significantly impact on your HS&E concerns and OPEX spend.

Multi-Flow is effective operating at temperatures as low as -40°C.

Contact your Hydrocarbon Dynamics representative to learn more about a more efficient wax, asphaltene, water cut control solution to fit your needs.

Applications

- Offshore
- Onshore
- Subsea pipelines
- Refineries
- Deepwater
- Under Balanced Drilling
- Cold climate
- Umbilical and capillary injection
- Heavy and super heavy oil
- Conventional oil

Single additive

Multi-Flow high performance additive replaces the need for:

- Pour Point Depressants
- BS&W Control Additives
- De-Emulsifiers
- Anti-Foaming
- Anti-Waxing Agents
- Heating - steam & heat exchanger costs can be reduced

Features & Benefits

- Improved wax control
- Improved asphaltene control
- Reduced pour point temperatures
- Thermally stabilises viscosity
- Enables deep water lifting stability
- Reduces product logistics requirements
- Dramatically reduces HSE risk
- Reduces flow line drag
- Reduces BS&W, increasing potential profit taking

All-In-One PPD, De-Emulsifier, Anti-Waxing and Anti-Asphaltene Additive Significantly Reduced BS&W and Lifting Costs

Multi-Flow treatment increased all subsequent off-takes to TAPIS price

Benefits

Facilitated restart of previously shut-down South China Sea platform and major sub-sea transit line

Approximately 60% reduction in pipeline down-time, pigging and shut-in treatments

Multi-Flow treatment dramatically reduced BS&W in produced oil. Subsequent off-takes achieved TAPIS price at market

Produced oil continues to sell at TAPIS price today. Project has been continuously injecting the Multi-Flow additive into flow-lines for two years

Flow assurance and de-watering solution secured pipeline flow and resulted in improved stable reservoir lift

Multi-Flow additive replaced the following additives:

- Pour Point Depressants
- BS&W Control Additives
- De-Emulsifier Additives
- Anti-Foaming Additives
- Anti-Waxing Solvents

Achieved significant reduction in chemical HS&E logistics, storage and handling costs

Significantly reduced and stabilised operator's lifting costs whilst improving reservoir management

Project background and challenges

Decreased production due to high levels of wax and asphaltenes led to asset shut-down of South China Sea platform from 2009 to 2011

Operator unable to restart transit lines due to shear stress challenges

Produced crude had pour point temperature of 41°C with ambient sea temperatures of 27°C

Treatment frequency and related costs were outside the scope of the operator's budget



A major producer operating an offshore platform in the South China Sea, Malaysia experienced a production decrease in many of their wells leading to a two year shut-down of the asset.

Produced crude exhibited high pour point temperatures of 41°C due to significant wax and asphaltene content.

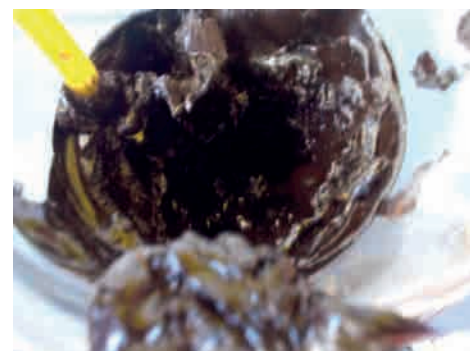
Due to the high asphaltene characteristic and formation of tight water in oil emulsions, BS&W levels were extremely high, resulting in discounted barrel prices achieved at market (85% of BRENT).

Hydrocarbon Dynamics implemented a new cost effective wax / asphaltene inhibition and de-watering program to optimize treatment rates, reduce pigging, enhance production, reduce downtime and significantly reduce BS&W contamination. The success of this treatment program prompted the operator to implement it fieldwide.

Elimination of wax, asphaltene and emulsion related viscosity issues also improved flow rate & flow size of sub-sea transit lines, avoiding shut-in treatments and stabilising production.

Shear stress in restart of flow-lines was avoided, leading to improved production and reduction in down time.

Multi-Flow carbon based additive successfully molecularly disaggregated paraffin waxes and asphaltenes whilst de-watering and reducing foam in a highly problematic crude oil.



Baseline crude sample with competitor's xylene additive at 40°C. Baseline crude exhibited a Pour Point temperature of 41°C



Baseline crude sample with Hydrocarbon Dynamics **Multi-Flow** at 40°C (400ppm). Baseline crude has a new Pour Point temperature of 32°C

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