

# Baker Hughes Crude Oil Management Approach

Improve crude diet flexibility and increase your profits



Crude diet flexibility is one of the primary means of improving a refinery's profitability. The ability to process discounted crudes—from light shale oil to heavy Canadian crudes—opens up a window of opportunity for refiners, but it also comes with an array of challenges and risks. With so many unknown factors about crude oil makeup and characteristics, uncertainty in processing is higher than ever.

Baker Hughes can help you overcome these concerns with our comprehensive Crude Oil Management™ approach, which includes a suite of tools and technologies that provide the best feedstock preparation and desalting performance possible to maximize your profitability and minimize your risk. Poor desalting efficiency, uncontrollable emulsions, and other desalting challenges are common when processing lower priced opportunity crude oils and will further impact downstream

operations. Proactively gaining insight into the processing challenges of crude blends allows you to confidently increase your crude diet flexibility without compromising reliability.

## Comprehensive risk assessment

We start by conducting a comprehensive risk assessment to understand how a crude blend may impact your refinery operations. This includes understanding upstream recovery operations and how previous chemical treatments might affect downstream processing. We also evaluate how your refinery is receiving the crude—whether by truck, rail, pipeline, or ship—to gain perspective on storage, handling, and blending activities before it reaches the crude unit. Furthermore, by understanding how your refinery equipment and processes are configured, we can identify and address potential processing limitations that may arise from different crude blends.

## Applications

- Discounted crude processing:
  - Shale or tight oils
  - Heavy, asphaltenic crudes
  - Sour crudes
  - High-acid and high-metal crudes

## Features and benefits

- FLO pipeline drag reducers
  - Maximize efficiency and improve product throughput
- SULFIX H<sub>2</sub>S scavengers
  - Reduce the level of hydrogen sulfide and ensure safe operations
- Wax dispersants
  - Reduce sludge and wax buildup
- Field ASIT services technologies
  - Predict the impact of crude oil blend characteristics
- XERIC heavy oil programs
  - Resolve difficult emulsions of heavy crudes
- JETTISON solids release agents
  - Remove solids with brine during desalting process
- LIFESPAN exchanger fouling control programs
  - Control fouling in preheat trains
- EXCALIBUR contaminant removal technologies
  - Remove contaminants in the desalter
- TOPGUARD overhead corrosion control programs
  - Predict and control the corrosive impact of crude blends and operating conditions
- SMARTGUARD high-temperature corrosion control programs
  - Protect equipment from naphthenic acid and sulfur corrosion

### Proven experience

Baker Hughes has been in the business for 100 years and maintains a global presence across upstream and downstream operations. Our experts, both in the field and in the lab, are driven to find solutions that enable you to increase your feedstock flexibility. We deliver a proactive service model to build partnerships and own the outcome along with our customers.

### Innovative technology

When new crudes come to market, we immediately begin development on new technologies to overcome their processing

challenges, quickly delivering solutions that make newly available crudes profitable for you. We have an extensive portfolio of chemical treatments, modeling platforms, and mechanical service programs to ensure reliable and profitable refinery operations.

Combining our years of experience and latest technologies enables us to take a holistic approach to your desalting operations, so you can take full advantage of attractively-priced crudes. Contact your Baker Hughes representative to learn how our Crude Oil Management approach can help you confidently process more opportunity crudes and increase your bottom line.

	Processing Location	Challenge	How to Solve it	The Baker Hughes Solution
Transportation	Pipelines, barges, trucks, and rail cars	Presence of H <sub>2</sub> S	H <sub>2</sub> S scavenger	SULFIX™ H <sub>2</sub> S scavengers
		Wax build-up	Disperse wax, reduce sludge	Baker Hughes wax dispersants, sludge reducers
		Throughput	Pipeline drag reducers	FLO™ pipeline drag reducing agents
		Blending compatibility	Monitor crude compatibility	Field ASIT services™ technology
Storage	Crude tank farm	Wax and solid build-up	Disperse wax, solids, reduce sludge	XERIC™ pre-treatment program Baker Hughes wax dispersants, sludge reducers
		Asphaltene destabilization	Stabilize asphaltenes	XERIC pre-treatment program
		Presence of H <sub>2</sub> S	H <sub>2</sub> S scavenger	SULFIX H <sub>2</sub> S scavengers
		Blending	Monitor and increase compatibility	Field ASIT services technology XERIC blending aids Baker Hughes wax dispersants
Processing	Cold train/Hot train	Fouling	Antifoulant treatment	LIFESPAN™ heat exchanger fouling control programs
	Desalter	Emulsion build-up	Break/resolve emulsion	EDDA testing XERIC pre-treatment and demulsifier programs Baker Hughes wetting agents, wax dispersants and asphaltene stabilizers
		Presence of amines and other contaminants	Contaminant removal	EXCALIBUR™ contaminant removal program
		Presence of solids	Solids removal	JETTISON™ solids release agents
	Slop oil movement	Emulsions, solids and BS&W	Pre-condition slop oil	XERIC demulsifiers
	Crude unit	Anime salt build-up	Remove in desalter	EXCALIBUR contaminant removal program
		Anime salt build-up	Corrosive environment simulations	TOPGUARD™ Ionic Model TOPGUARD corrosion risk monitor
		Increased naphthenic acid and sulfur corrosion potential	Determine mitigation strategy via risk assessment	SMARTGUARD™ high temperature corrosion control program
	Wastewater treatment plant	Presence of oily solids	Oil and grease removal	XERIC pretreatment program JETTISON solids release agents
		Presence of contaminants	Contaminant removal	EXCALIBUR contaminant removal program
		Presence of solids and organics	Pre-condition solids and organics	XERIC brine treatment

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