Case Study

Chemical Program Optimization



For the customer experiencing operational challenges related to low producing, high operating cost assets implementation of an effective chemical program is essential. As wells deplete and various lift type methods are used to keep wells producing challenges can be faced in trying to extract the most oil and gas out of a well to maintain maximum profitability. Often overlooked is the cost of chemical as the well matures system parameters change.

Coastal took over a chemical program that had not been fully optimized. In the early life of the wells, a more robust and aggressive chemical strategy was implemented. However, as the wells matured and production rates declined, chemical dosages and applications were not adjusted accordingly, leading to unnecessary costs for the operator. Emulsion breaker testing revealed that in some locations, treatment was no longer required, as longer retention times allowed the emulsion to break naturally. Corrosion treatment strategies were revised based on lift method, production rates, and the severity of corrosion-related issues. While treatment challenges are present throughout a well's life cycle, their nature and intensity often shift with changes in system conditions and fluid composition.

PROBLEM IDENTITY

Often when a new well is brought online a chemical program is recommended based on the current conditions and sample analysis. A chemical company may adjust rates as production declines over the first six to twelve months but eventually limitations on a pump is reached and a minimum injection rate is set. No further optimization occurs, and the company continues at a pump minimum costing the producer to spend more money than required to properly treat the asset. As wells decline acid gas corrosion potential can decline and underdeposit corrosion becomes more prevalent. Regarding demulsification, chemical companies may not proactively reevaluate the need for product as retention times increase usage can be decreased and, in some circumstances, discontinued. Scale can also become an issue as lift types change and are not identified until after production decline has occurred.

SOLUTION

Coastal utilizes predication modeling tools to aid in analyzing assets as parameters change. These tools are used anytime lift methods, production, temperatures, pressures, or analytes change. This practice guarantees that the chemical program designed is optimized with the correct treatment type and application. By doing so Coastal Chemical reduces unnecessary cost through application optimization and eliminating treatments that may no longer be warranted when the well was new.

BENEFITS

- Selection of treatments suitable for batch versus continuous application.
- Select the most cost-effective products tailored to each well's conditions. For instance, a two-year-old well with low water production may still require continuous treatment with a product designed for those conditions, rather than a concentrated product resulting in overtreatment.
- Apply appropriate corrosion control strategies, including solids and bacteria mitigation, particularly when flow rates drop below limiting velocities.
- Identify cost-efficient emulsion breakers that align with production characteristics and available retention time.
- Discontinue chemical treatments no longer necessary, such as emulsion breakers in wells where emulsions can now be resolved mechanically.
- Logistics & Sustainability Gains: Reduced chemical usage led to fewer deliveries, improving health, safety, and environmental (HS&E) performance and lowering the overall carbon footprint.
- Cost Reduction: Treatment optimization achieved estimated savings of $4,500 per month, totaling approximately $54,000 annually across 37 wells.

COASTAL CHEMICAL SOLUTION

EMULSION BREAKER FIELD TRIAL:
Upon being awarded a field near Dewees Texas Coastal conducted emulsion breaker bottle testing. Each well was tested using Coastal's emulsion breaker and paraffin dispersant product lines. The benefit of testing dispersant chemistries is that they can provide a cost savings when compared to traditional demulsifier chemistries. Upon completing the test Coastal successfully reduced the demulsifier product usage from 26.5 gallons per day to 10 gallons per day. This was possible by identifying products that work at a manageable dose rate and discontinuing treatments on select wells that did not show a severe emulsion tendency. The new program has been in place for over 90 days with no adverse effects to the system. Below is an example of one of the locations tested with the results provided by cost and performance.

DEMULSIFIER TESTING – WELL A 1H

- Emulsion Breaker testing conducted on site with live oil
- Results show **Pro-Flow 33** and **4128-E** provided quickest water drop at 75 ppm.
- However, within 5 minutes, most products including the blank dropped the majority of the entrained water
- As a result, **Coastal would recommend discontinuing the current injection** of competitor chemical and monitoring BS&W to ensure oil maintains spec.
- All injections on pad were shut off for 2 days and then oil samples were taken from each separator to evaluate BS&W.
- Each well showed all oil to **remain in spec <0.1% BS&W.**

T = 1 MIN



T = 5 MIN



T = 15 MIN



In the event Chemical is needed, Coastal would recommend:

PRO-FLOW 54X AT 75PPM

Based on Performance and Economics

Location Name	Lift Type	BOPD	BWPD	TFPD	Product Name	Price ($/gal.)	Dosage (ppm)	Usage (gal/day)	Cost ($/day)	Cost ($/month)	Cost ($/Yr.)
Well A 1H	Rod Pump	67	68	135	4128-E	$25.95	75	0.5	$12.98	$394.66	$4,735.88
Well A 1H	Rod Pump	67	68	135	Pro-Flow 33	$16.12	75	0.5	$8.06	$245.16	$2,941.90
Well A 1H	Rod Pump	67	68	135	Pro-Flow 54x	$14.67	75	0.5	$7.34	$223.11	$2,677.28
Well A 1H	Rod Pump	67	68	135	4067-E	$15.65	75	0.5	$7.83	$238.01	$2,856.13

27%
COST SAVINGS

38%
REDUCTION IN USAGE

NO
SYSTEM ISSUES

COASTAL CHEMICAL
A BRENNTAG GROUP COMPANY

Contact Coastal Chemical today and get the Energy LEADER on your side.

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