




Production Chemicals Optimization on DELFI

Optimize chemical treatment programs with real-time monitoring, analysis, and autonomous chemical injection

-  **Open digital system:**
Compatible with any chemical or ESP provider
-  **Elimination of delays:**
Critical data and analysis of risk status updated as often as every minute, 1,440 times per day
-  **Data-enriched decisions:**
Autonomous adjustment of chemical injection in real time

Applications

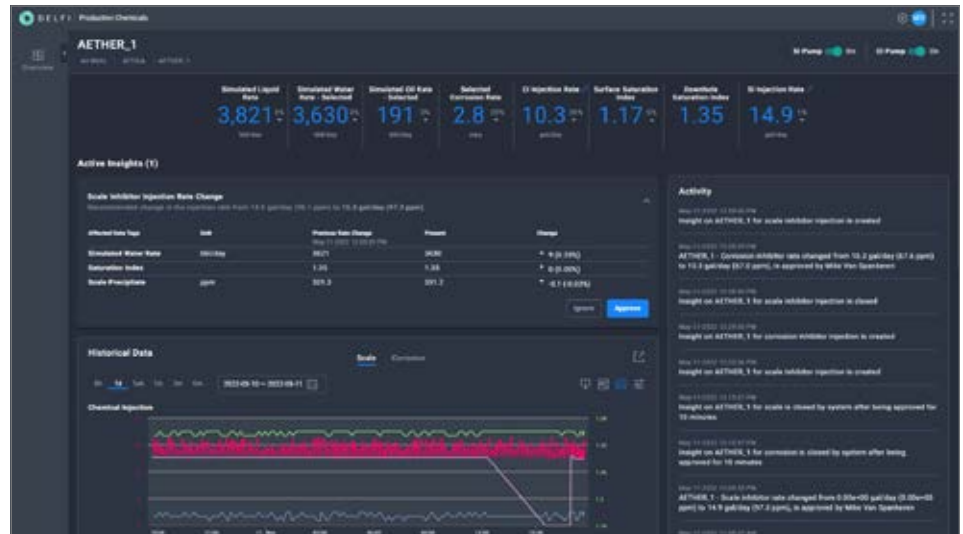
- Corrosion management
- Scale management
- Chemical injection systems
- Artificial lift systems

How Production Chemicals Optimization on DELFI increases ESP uptime

- Optimizes both the timeliness and precision of chemical injection systems for effective and efficient corrosion and scale management
- Controls scale and corrosion to prevent ESP damage, shutting in wells for workovers, and production deferrals
- Performs as a fully autonomous solution to ensure minimal time between insights and actions and the continuous optimization of chemical injection

How it works

By leveraging digital capabilities within the DELFI* cognitive E&P environment and edge intelligence via Agora* edge AI and IoT solutions, Production Chemicals Optimization on DELFI transforms what were previously manual chemical treatment processes into autonomous chemical injection systems. The existing equipment is connected for real-time data acquisition to inform a digital twin of the ESP that uses physics-based models such as a virtual flowmeter, scale and corrosion prediction, edge analytics, and cloud computing. From this contextual basis, Production Chemicals Optimization on DELFI



Production Chemicals Optimization on DELFI makes critical real-time data such as production rates and system risks available as often as every minute.

autonomously generates actionable insights and adjusts chemical injection to continuously optimize chemical injection and extend both uptime and the life of production equipment.

What it replaces

Traditionally, monitoring the effectiveness of a chemical treatment program to combat corrosion and scale is a highly manual process. Field personnel must drive to each well pad to check chemical inventory, record pump rates, and retrieve samples of produced fluids monthly or quarterly and corrosion and scale coupons every 60–90 days for laboratory analysis to quantify treatment effectiveness. Diagnosis of either under- or overtreatment requires a return trip to implement the recommended adjustment to the chemical injection pump, either every time there is a new datapoint or waiting up to 90 days for all the data, which by then is out of date. This time-consuming process limits monitoring activities to a suboptimal frequency. Even updated production rates, a key input in determining the chemical injection rate, are generally available only through well tests at most every 2–3 weeks.

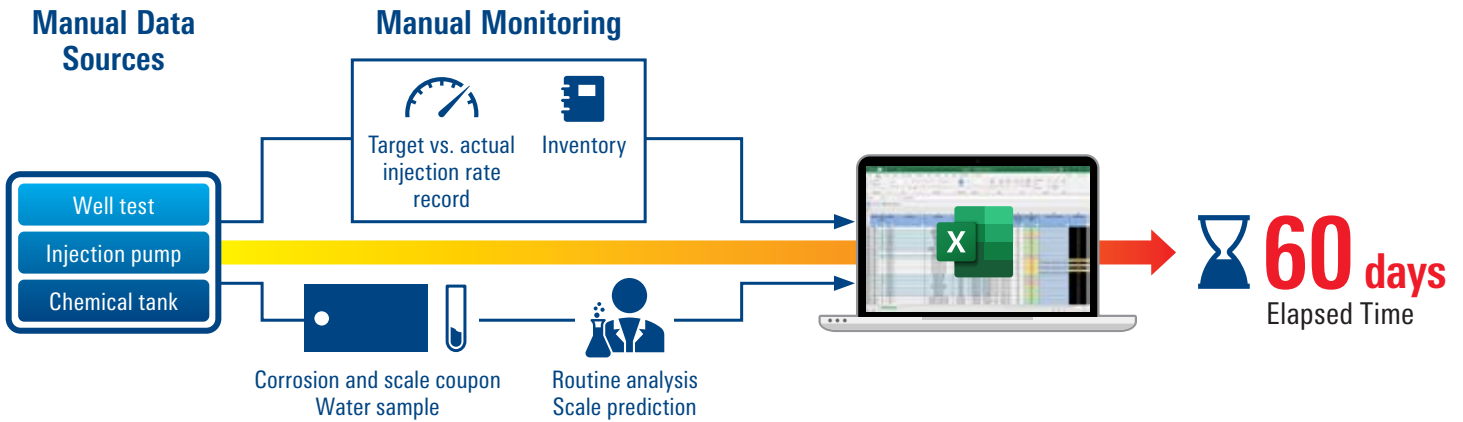
Production systems are dynamic by nature, but this conventional manual process assumes steady-state well conditions between data updates. The result is that most wells are properly treated only about 50% of the time. The resulting under- and overtreatment lead to wells failing and requiring intervention. These shutdowns across multiple wells can incur costs totaling millions of dollars for unplanned workovers and lost production revenue.

The takeaway

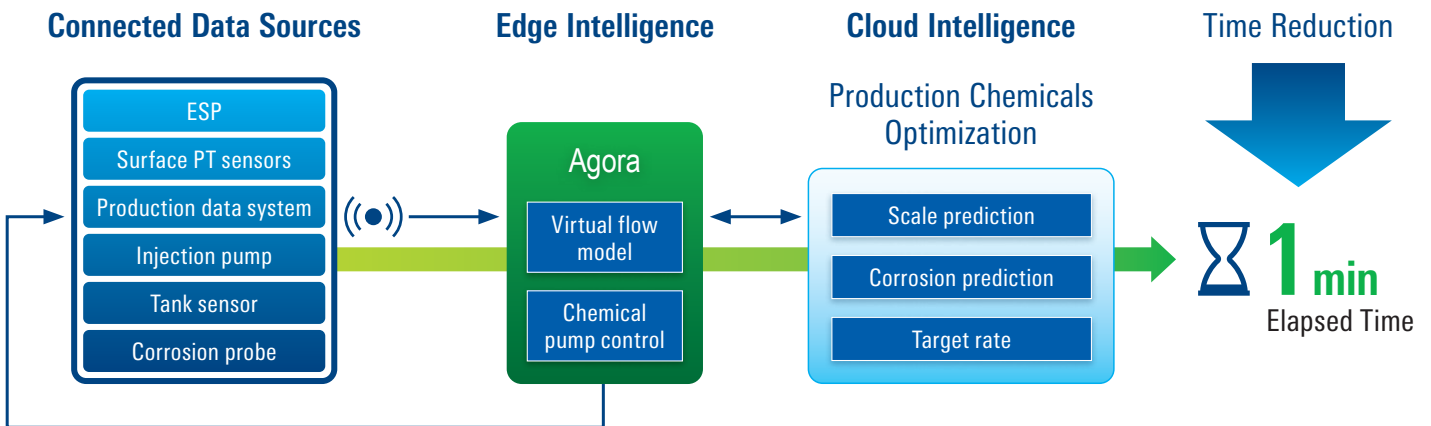
Production Chemicals Optimization on DELFI connects existing equipment with a digital twin and inline use of real-time physics-based modeling to generate contextual chemical injection recommendations that are autonomously implemented by the chemical injection system. Field visits are reduced by >75%, lowering CO₂ emissions and driving-related risk exposure. The time from insight to action is as short as one minute, ensuring continuously optimized chemical injection and an always-protected well.

Production Chemicals Optimization on DELFI

Traditional Monitoring Process



Autonomous Optimization with Production Chemicals Optimization on DELFI



Production Chemicals Optimization on DELFI seamlessly integrates the well's chemical injection system with digital capabilities. Conventional low-frequency manual assessment and adjustment are replaced with real-time monitoring, analysis, and autonomous chemical injection to efficiently manage corrosion and scale.

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