

FLOW REBORN: THE DEWAXER FLOW ENHANCER

A Patented, Chemical-Free Downhole Thermal Rescue System for Flow Assurance

1.0 THE CRITICAL CHALLENGE OF PARAFFIN DEPOSITION

In mature vertical and deviated onshore wells, organic paraffin wax precipitation is a persistent and costly bottleneck. As reservoir temperature drops below the Cloud Point, paraffin molecules crystallize and stick to the inner tubing walls, restricting flow, killing pump efficiency, and causing severe, unplanned well shut-ins. Historically, operators have been forced to choose between crude mechanical cutting which leaves wax residue, and high-frequency hot oiling or heavy chemical solvents that can permanently damage fragile reservoirs, degrade fluid compatibility, and incur astronomical monthly OPEX cycles.

2.0 THE DEWAXER FLOW ENHANCER (DFE) METHOD

The Dewaxer Flow Enhancer (DFE) is an internationally patented (U.S. Patent No. 12,448,868 B2) downhole intervention technology engineered to restore waxy wells without chemical injection or production shut-ins. Deployed directly into live wells under pressure using standard electric-line (E-line) wireline, the DFE delivers intense, localized heat directly adjacent to the paraffin restriction. By targeting only the wax-steel interface, the DFE liquefies and mechanically sweeps blockages out of the wellbore, achieving a perfect 'thermal and physical reset' of waxy tubing.

How It Works: An internal solid-state electromagnetic induction coil generates a controlled thermal envelope of **130°C to 170°C** directly at the paraffin face. This targeted temperature is engineered to rapidly liquefy organic wax, while remaining safely below typical wellbore hydrocarbon gas flash points of **220°C to 280°C**, guaranteeing absolute, inherent safety during live-well interventions.

3.0 THE FOUR COMMERCIAL PILLARS OF THE DFE

Fragile Reservoir Protection

Traditional thermal treatments force hot oil or water downhole, pushing melted wax into the formation face and causing permanent skin damage. The DFE uses zero fluid injection, melting and removing wax in-situ, leaving waxy formations completely pristine.

ESG-Driven & Eco-Sensitive Operations

By eliminating bulk chemical solvents, dispersants, and transport truck emissions, the DFE helps operators meet strict environmental mandates. Our non-invasive thermal sweep is the ultimate green compliance solution for waxy play interventions.

Severe & Emergency Blockages

When wells are 100% choked by cold paraffin blockages, conventional chemicals fail because they cannot penetrate. The DFE applies continuous, localized heat to melt through severe blockages, physically retrieving deposits to a surface swab tank.

Data-Starved Mature Fields

While active downhole, the DFE behaves as an intelligent logging platform. Integrated sensors stream high-frequency wellbore diagnostic data, including temperature, pressure, fluid flow velocity, and viscosity, straight to the surface logging computer.

4.0 TRUCK INTEGRATION & OPERATIONAL PLUG-AND-PLAY

A primary operational hurdle for new downhole tools is logistical complexity. The DFE is designed with absolute simplicity in mind, ensuring it integrates immediately with any standard cased-hole wireline provider in the United States, Canada, or Mexico without custom engineering or specialized truck mobilization. The entire tool string disassembles into three highly portable segments (Deployment Head, Heater Barrel, and Bull Nose Guide Tip) and weighs under 30 lbs in air, allowing easily manageable on-site handling by a two-person wireline crew.

Operational Interface	Standard Configuration	Field Compatibility & Sizing
Upper Toolbus Thread	1 3/16"-12 UN (GO 'A' Connection)	Plugs directly into standard U.S. E-line logging trucks.
Toolstring Sizing Profile	Modular Slimline Construction	Engineered for high-clearance passes inside standard waxy well tubing.
Telemetry Standard	Surface-Regulated DC Signal Bus	Handshakes with standard surface acquisition panels and logging software.
Live-Well Deployment	Dynamic Pressure Lubricator	Run under pressure through dynamic stuff boxes; zero production shut-in.

5.0 ECONOMIC IMPACT & WORKFLOW RESTORATION MODEL

Valcor Services positions the DFE not merely as a replacement for mechanical wax cutting or chemical treatments, but as a **complete wellbore reset tool**. Over time, waxy wells become increasingly resistant to standard chemical inhibitors because the existing hard wax barrier prevents chemistry from contacting clean steel. The DFE completely liquefies and sweeps the waxy restrictions back to a bare steel base. This allows subsequently injected chemical inhibitors, dispersants, and solvents to contact the metal face directly, making maintenance programs perform at their maximum designed efficiency and drastically reducing total ongoing chemical volume and spend.

The Economic Value: By replacing weekly hot-oiling cycles or high-footprint coiled tubing interventions with a single, highly targeted E-line thermal sweep, operators can dramatically lower total lease operating expenses (LOE). The DFE requires **zero well kill-weight fluids** and operates with **zero commercial shutdown downtime**, allowing continuous cashflow from the well during active treatment. Let us model your specific well parameters to design a customized pilot program.

6.0 SAFETY CRITERIA & fail-SAFES

Safety is paramount during live-well E-line interventions. The DFE contains redundant structural fail-safes: (1) A pre-calibrated mechanical weak link inside the cablehead that shears cleanly at a designated tension in the event of downhole wedging, leaving a standard fishing neck profile for quick retrieval. (2) Strictly limited tool speed parameters designed to prevent mechanical shock or tubing damage. (3) An electronic safety cap regulating internal temperatures well below wellbore gas hydrocarbon flash thresholds, ensuring a secure and hazard-free operational environment.