OVERVIEW

Precision Electrical Resistance Heating, Built Around Your Site

Electro-Thermal Dynamic Stripping Process (ET-DSP™) is VIYA's an in-situ thermal remediation technology. Using electrical resistance heating (ERH), electrodes deliver electrical current directly through the subsurface, generating the heat required to volatilize contaminants in soil and groundwater. Integrated multi-phase extraction (MPE) wells then recover the resulting contaminant vapors, helping prevent migration beyond the treatment zone. Every ET-DSP™ system is sized and positioned using VIYA's conceptual site model, validated with numerical simulation before installation, and monitored in real time once it's in the ground. The result is a system built around a site's specific geology, contaminants, and treatment objectives, not a fixed, one-size-fits-all design.

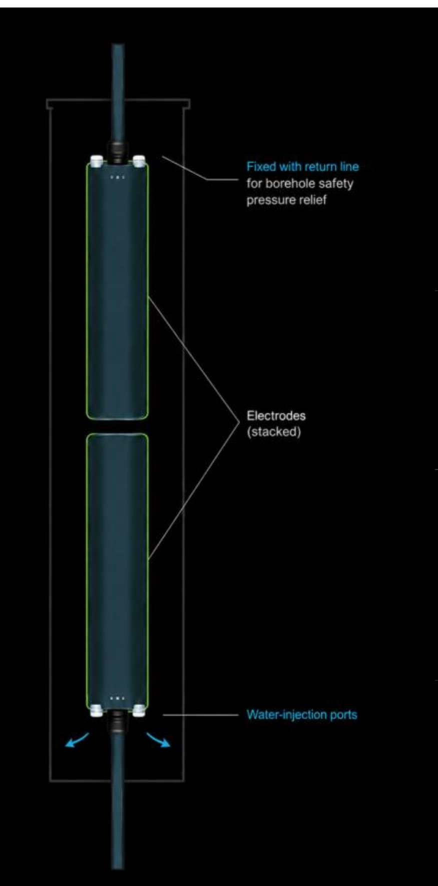
ET-DSP™ SYSTEM: ELECTRODES

Engineered to Maintain the Conductive Pathway

Uniform electrical resistance heating depends on pore water to carry current through the subsurface. Current density is highest near the ends of an electrode, where surrounding water can boil away more quickly.

Without active management, this drying can reduce electrical conductivity and produce uneven energy delivery, localized overheating, and slower, conduction-limited heat transfer.

ET-DSP™ electrodes are designed to manage these conditions directly at the point of energy delivery.



Integrated conditioned-water injection

Conditioned water is delivered directly through the electrode to maintain liquid contact and sustain efficient power transfer as the subsurface heats. Water injection also enhances convective heat transfer, helping distribute energy away from the electrode and promote more uniform heating.

High power density — up to 2.2 kW / linear foot

High subsurface power density supports rapid heating, while independent electrode control allows power to be adjusted by location and depth as conditions change.

Stackable

Finite-length electrodes can be stacked within a single borehole and independently controlled, allowing power delivery to be adjusted by depth and helping maintain more uniform heating across vertically heterogeneous formations.

Borehole pressure relief

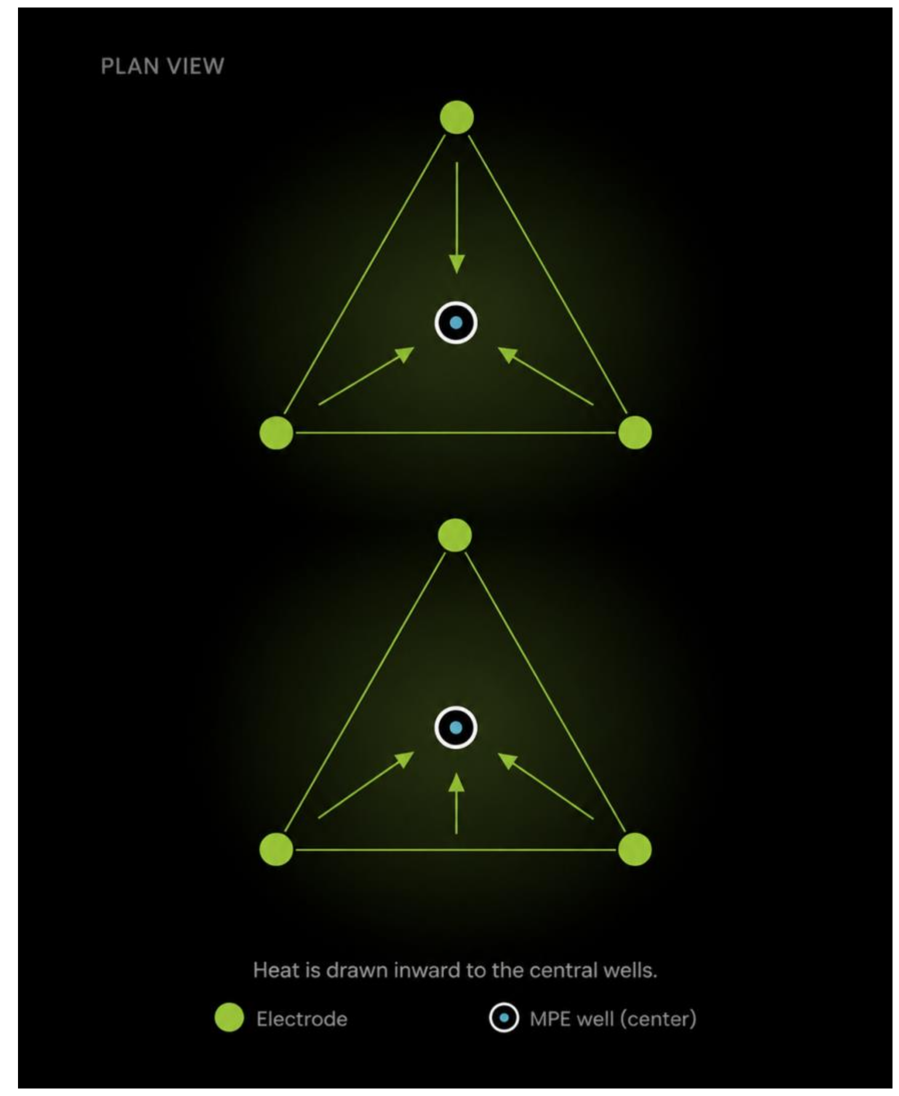
A return line provides a controlled pathway for pressure relief and steam migration, supporting safe borehole operation and recovery through the multi-phase extraction system.

MULTI-PHASE EXTRACTION (MPE) RECOVERY

Designed for Optimal Recovery Performance

Extraction wells are positioned at the center of each electrode array, away from the primary heat sources. This configuration allows applied vacuum to draw steam, vapor, and thermal energy inward through the formation, promoting heat transfer through cooler soil between electrodes while maintaining negative pressure across the treatment zone. Vapors are captured at the extraction wells before migrating beyond the heated area.

VIYA's MPE system is configured to retain heat within the treatment zone and direct vapor flow toward centrally located extraction wells. Each well can recover vapor, groundwater, and mobile NAPL using vacuum, pneumatic pumps, and slurper tubes, while reducing the amount of separate extraction infrastructure required. Temperature and pressure gauges, together with sampling ports at each wellhead, provide well-specific operating data. Extraction is independently controlled at each well, allowing operators to balance flow, maintain hydraulic and pneumatic capture, and adjust recovery as subsurface conditions change.



REAL-TIME MONITORING

Live Data Drives System Control

ET-DSP™ continuously tracks subsurface temperature and electrical performance, allowing power and water delivery to be adjusted by individual electrode and treatment interval as conditions change.

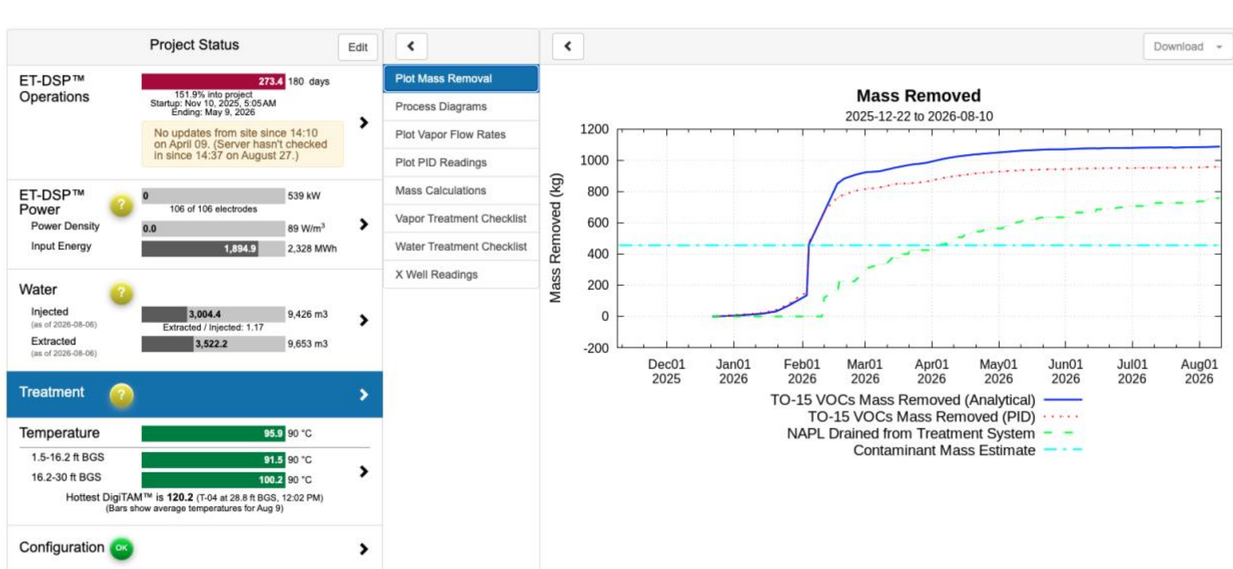
Project data is transmitted directly to VIYA's secure, web-based monitoring platform, giving engineers remote access to system operations and letting stakeholders view key performance metrics in real time, including energy use, system status, temperature trends, and contaminant mass recovery. This feedback helps direct energy where it's needed and reduce power to intervals that have reached target temperature.

The platform captures, organizes, and visualizes this data throughout remediation, giving project teams a clear view of system performance and changing site conditions. This allows potential issues to be identified earlier, operating parameters to be adjusted quickly, and complete, audit-ready records to be maintained throughout the project lifecycle.

Built to support complex, multi-site projects and large environmental datasets, the platform provides the timely, accurate, and traceable information required for engineering decisions, regulatory reporting, and project oversight.

Key Monitoring Data

- Subsurface temperature profiles
- Power density and cumulative energy input
- Water injection and extraction volumes
- Contaminant mass recovery
- System performance and operating trends
- Regulatory and compliance records



Demo ET-DSP™ Project Website

Optimize ET-DSP™ Performance Before Installation

Numerical Site Modelling

Every remediation site has unique subsurface conditions that influence heat transfer, energy demand, treatment duration, system performance, and cost. A conceptual site model, built from site geology, groundwater, and contaminant distribution, defines the system layout, including electrode spacing, depth, treatment intervals, and extraction layout. Thermal simulation modeling then reduces uncertainty in that design before field implementation.

Using site-specific geological, hydrogeological, thermal, and operational data, VIYA simulates how heat will move through the subsurface and how the remediation system defined by the conceptual site model is expected to perform. The results help engineering teams identify potential performance risks and confirm that treatment objectives can be achieved.

By testing design assumptions before construction, thermal modeling provides a defensible technical basis for system sizing, operating strategy, and project planning, supporting a more efficient and predictable remediation program.

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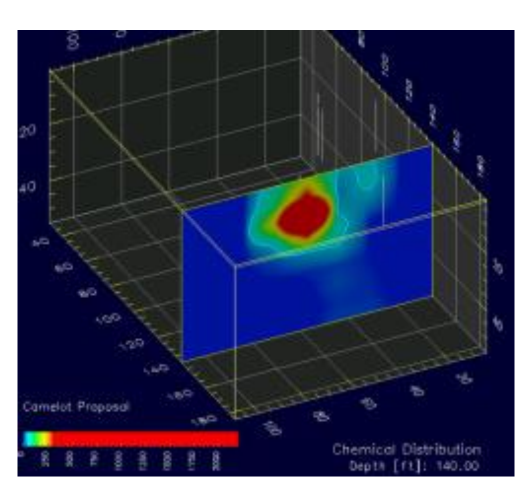
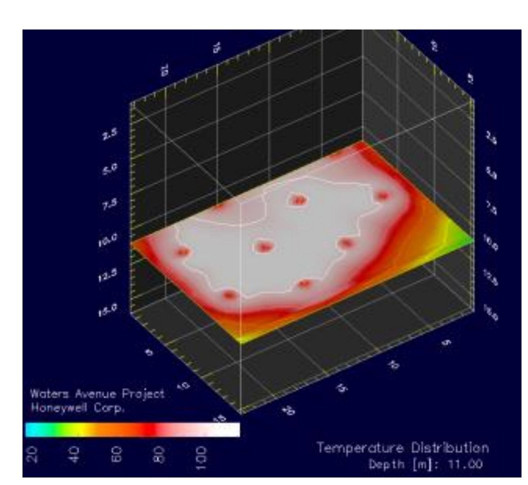
What We Simulate

- Total energy requirements
- Heating duration and subsurface temperature distribution
- Water and vapor extraction rates
- Contaminant mass recovery over time
- Distribution of heated and under-heated zones
- Heat losses to surrounding formation



Site Temperature Distribution Simulation



Site Contaminant Distribution Simulation