// 2026 GUIDE

10
TO WATCH

Groundwater Game Changers

The 2026 Innovation Playbook

A comprehensive guide for water well drillers, pump contractors, well owners, and consulting engineering firms.

AIRBURST®

Published by AirBurst® Well Services
airbursttechnology.com

// A NOTE FROM THE PRESIDENT

Introduction

Ten under-the-radar names worth paying attention to — some brand new, some that have been around a while but are still lesser known.

Although the groundwater industry may not be seeing the same rate of change that we were seeing in the rest of society in 2026 with emerging technology like AI, magical weight loss drugs, and space infrastructure, there are certainly enough new developments that it can be hard for any industry professional to keep track of all of them.

We've compiled a list of 10 under-the-radar names, some brand new, some that have been around for a while but are still lesser known. Whether you are an engineering consultant advising clients on where they can think smarter about their infrastructure or you're on the contractor side looking for new tools to put into your toolkit, these are all worth paying attention to.

DISCLAIMERS

- **This guide is intended to be an informational medium to raise awareness to groundwater products and management concepts that we find interesting. AirBurst has not verified, nor do we endorse, the performance or claims of any of these products. Conversely, the companies here do not endorse AirBurst in any way.**
- Where there is an affiliation between one of the featured products with AirBurst, it is openly noted.
- For all other products, this guide is independent and not endorsed by the companies featured. No one has paid us to plug their product here.
- All trademarks belong to their respective owners.
- We have tried our best with research on the open internet to provide a factual representation of the features, specifications, and performance of the various products listed here. If something is not correct, please let us know and we will make revisions in subsequent versions.

We hope that everyone can learn something new from this playbook that will help advance the cause of sustainable groundwater management and your business.

Michael Kerper

PRESIDENT · AIRBURST WELL SERVICES

AIRBURST®

// 2026 FIELD GUIDE

Groundwater Game Changers 2026

10 TO WATCH

Ten under-the-radar innovations, sorted by the job they do — find, diagnose, monitor, and restore water wells.

Rehab & Repair Services

Restore capacity and structure in aging wells — 2

01 Water Well Solutions — AFFILIATED

CasingGuard™ Casing Repair

Inflatable packer swages a long stainless sleeve over corroded, holed casing or seals problem zones. No diameter loss.

Municipal, industrial, and ag well contractors · utility managers

02 AirBurst® Technology — PUBLISHER

LateralBurst

Powerful, timed nitrogen bursts restore porosity in lateral screens, all while keeping the well in service

Municipal utilities · power plants · riverbank intakes

Pump & Power

Run pumps at peak efficiency and protect the assets — 3

03 Specific Energy

Dynamic Pump Optimizer

Physics-based software auto-tunes VFD speed in real time to perfectly harmonize pumping across your well fields or booster arrays.

Municipal utilities · consulting engineers

04 Lamnaflo, Inc.

Lamnaflo® Suction Control

A permeable media pack that spreads suction across the screen to stop sand pumping and cut drawdown.

Municipal · high-volume irrigation · industrial

05 Danfoss® Drives

VLT® Aqua Drive FC 202

An advanced VFD with built-in pump protections that trims energy 10–30%.

Pump contractors · engineering firms · operators

Sensing & Diagnostics

See downhole and across the aquifer — then diagnose — 4

06 Vista Clara

Harpoon® CPT-NMR Probe

One direct-push probe co-registers soil mechanics (CPT) and groundwater physics (NMR) in a single pass.

Environmental consultants · hydrogeologists

07 BESST, Inc.

Dynamic Flow Profiling

NSF-60 dye tracing to map inflow with high resolution and accuracy, so you can confidently design well modifications and treatment systems

Consultants · mining · municipal engineers

08 Well Inform, LLC

Wellinform™

For "dark" wells with no SCADA, this hardware-software combo streams pump health and aquifer trends and alarms straight to your phone

Ranchers · irrigation · pump services

09 Water Systems Engineering

Complete Profile

An independent lab that uses advanced sampling analysis to pinpoint why a well is fouling, plugging, or corroding, then designs the fix.

Municipalities · consulting engineers

Field Tools

Handle and pull pipe safely at the wellhead — 1

10 RHR Products

PIPE-BITE Non-Coupling Elevator and Clamps

A cam-tooth elevator grips smooth poly or steel pipe anywhere along its length, enabling safe short-stroke lifts under tight overhead clearances.

Pump installers · geothermal drillers · service crews

01

WATER WELL SOLUTIONS · WI & IL

CasingGuard: Inflatable Packer Well Repair

CASINGGUARD®
• WELL REPAIR TECHNOLOGY •
SECURE & RESTORE

AFFILIATED WITH AIRBURST

CasingGuard is a structural well casing repair technology designed to patch breached, corroded, or leaking casings without significantly reducing the internal diameter (ID) of the well. By leveraging custom thin-wall alloys and specialized pneumatic expansion machinery, it efficiently seals off unwanted zones or casing holes. This can be a bridge solution, or in many cases, a permanent fix.

For pump contractors and drillers, a breached casing traditionally meant two things: installing a thick, grouted internal liner that permanently restricted the well's diameter, or abandoning the asset to drill a new well. Downsizing the casing ID forces contractors to use smaller, lower-horsepower pumps, permanently reducing the well's maximum flow yield. CasingGuard preserves the well's original infrastructure, allowing the original pump size and design flow rates to be maintained.

~10×
FASTER THAN MECHANICAL SWAGING (≈60 VS 6 FT/DAY)

5 ft
SWAGED PER CYCLE IN ONE UNIFORM EXPANSION

65 ft
CONTINUOUS LINER SET IN A SINGLE DAY

5-FT INFLATABLE PACKER, RIG-READY

STAINLESS PATCH SWAGED 360° AGAINST THE CASING

FULL DESCRIPTION

- **Core engineering mechanism.** The process centers on the art of swaging. A round segment of Schedule 10 stainless steel pipe patch (typically only 1/4-inch thick) is lowered downhole to the exact depth of the casing failure. A proprietary, heavy-duty pneumatic inflatable packer is then pressurized inside the patch. This expands the stainless steel patch outward, creating a perfect 360-degree cylindrical compression fit directly against the interior wall of the existing casing.
- **Added value.** A round patch carries a higher collapse rating than a corrugated one (as with traditional, hydraulic swaging), so the repair resists pressure and blowouts better. There are no jagged edges to snag or sever pump wire, far less chance of losing the patch and fishing it out, and no hydraulic oil to leak into the water. Patches run plain in stainless or with an NSF 61-approved neoprene or silicone backing.
- **Operational simplification.** Legacy hydraulic swages only expand 1 to 2 feet at a time and require the tool to be rotated 60 degrees repeatedly to get a semi-uniform seal. The CasingGuard pneumatic system swages five linear feet simultaneously in a single, uniform expansion cycle, significantly reducing downhole machine time.
- **Target audience & applicability.** Use it for compromised casing, failed well-screen joints, blocking off poor-quality water zones, reinforcing cave-ins in open rock holes, and even fishing stuck objects.
- **What it does and does not replace.** The main alternatives are hydraulic swaging with corrugated patches, full re-lining, and drilling a new well. Against mechanical swaging, CasingGuard runs about ten times faster (roughly 60 versus 6 feet per day), seals more uniformly, and carries far less risk.

Real-world validation

Water Well Solutions has successfully deployed this system to resolve complex municipal well failures across the United States. In a notable municipal infrastructure rescue, contractors radially welded three 20-foot sections and one 5-foot section of Schedule 10 stainless steel together. Deployed via the pneumatic inflatable packer system, they expanded a continuous 65-foot liner string inside an 8-inch compromised casing and open borehole section.

The installation was completed in a single day, halting a caving formation and stopping dirty water production. The project allowed the city to re-use its original high-capacity pumping equipment and saved millions of dollars compared to drilling a replacement well.

TRADEOFFS & LIMITATIONS

The host well casing must have sufficient structural integrity to withstand the high radial expansion forces of the pneumatic packer in at least one anchor section. If the surrounding casing is as fragile as paper, the swaging force could further split the casing and fail to establish a good seal.

DEVELOPER
Water Well Solutions (WI & IL)

WEB
casingguard.com

AFFILIATION
CasingGuard, AirBurst & Water Well Solutions — Sylmar Group

02

AIRBURST® WELL SERVICES, LLC

AirBurst: LateralBurst for Collector Wells

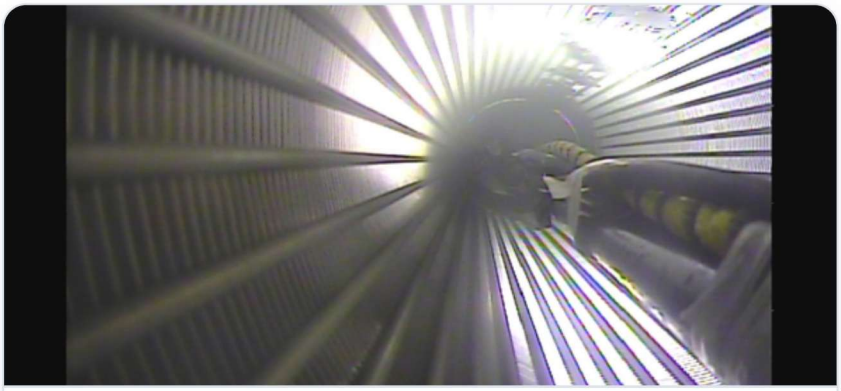
PUBLISHED BY AIRBURST

Horizontal collector wells, often called Ranney wells, pull large volumes of water through screened laterals that reach out from a central caisson. Over time those laterals plug up with mineral scale, biofilm, and fine sediment, and capacity falls off. LateralBurst by AirBurst is the version of the patented AirBurst process built for these wide-diameter horizontal laterals. Delivered by elite dive teams, it brings flow back without taking the well out of service or draining the caisson.

0 / 0
CHEMICALS / EXPLOSIVES USED

In service
PUMP KEEPS RUNNING THROUGH THE ENTIRE JOB

Timed
OPERATOR CONTROLS BURST COUNT, FREQUENCY & PRESSURE



INSIDE A LATERAL SCREEN · BALLARD MARINE CONSTRUCTION

COLLECTOR-WELL CAISSON INSTALL

FULL DESCRIPTION

- **Core engineering mechanism.** AirBurst fires precisely timed bursts of compressed nitrogen inside the lateral. Each burst does three things in a fraction of a second. An explosive pressure wave pushes water out through the screen and into the pack and formation. The collapsing bubble then creates negative pressure that pulls the loosened material back into the bore. A smaller recompression wave keeps working the plugging loose. There are no chemicals and no explosives, and the operator controls burst count, frequency, pressure, and air volume, so every lateral gets its own recipe.

FULL DESCRIPTION (CONTINUED)

- **Added value.** Wells produce more water, pumps use less electricity to deliver it, and the rehab buys years of steady performance instead of months. Because divers measure flow and drawdown before and after, owners get hard numbers rather than guesses.
- **Operational simplification.** The pump keeps running through the whole job. That means no draining, no long shutdown, and debris gets carried out of the lateral instead of settling back into the screen. Less downtime, less disruption, and cleaner results.
- **Target audience and applicability.** LateralBurst fits owners and operators of radial collector wells: municipal water utilities, power plants, and large industrial sites that draw from riverbank or lakebed aquifers. If your well has horizontal laterals and falling capacity, it applies.
- **What it does (and does not) replace.** It replaces drain-and-clean campaigns and harsh chemical-only treatments. It does not replace good monitoring, sound pumping practices, or the occasional structural repair. Think of it as the rehab step that makes the rest of your program pay off.
- **The competitive landscape.** Other air-impulse guns look similar but fire on their own timing. When bursts overlap, the energy cancels itself and debris gets pushed right back into the formation. AirBurst's exclusive control over burst timing and force is the difference between a real rehab and a short-lived one.

Case study, cost & limitations

AirBurst crews have restored screen condition and capacity at demanding sites, including a nuclear power station in Mississippi. Cost depends on the number of laterals, their length, and their condition, so pricing is quoted per project after an inspection. AirBurst also offers a Return-on-Rehab estimator to model the payback.

A few limits to keep in mind: laterals need to be safely accessible to divers or a rover, results vary with how long plugging has been allowed to build, and a badly collapsed lateral may need repair before rehab.

PROCUREMENT & CONTACT

LateralBurst is delivered through AirBurst's network of licensed dive contractors, including elite collector-well teams such as Ballard Marine Construction. To scope a project, request an inspection and a prescription, and you will get a per-lateral plan with measured before-and-after results.

DEVELOPER
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03

SPECIFIC ENERGY · GEORGETOWN, TX

Specific Energy: Dynamic Pump Optimizer (DPO)

Specific Energy makes a software platform built to manage the real-time efficiency of municipal water and wastewater pumping systems. The idea is simple: instead of guessing, it continuously calculates exactly how much electricity it takes to move a given volume of water as aquifer levels and grid conditions shift around — and then it acts on that math. The result is a pumping station that more or less tunes itself while giving valuable actionable intelligence to operators and managers.

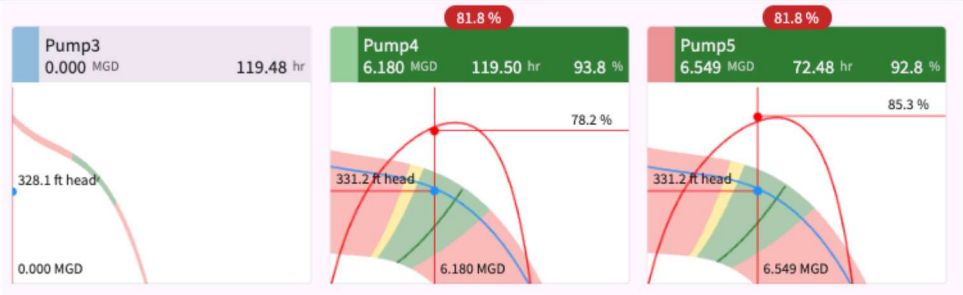
For consulting engineers and pump contractors, this changes how you think about variable frequency drives (VFDs). Rather than running a well pump at a fixed speed, or letting it chase a basic pressure setpoint, the platform maps live pump curves using sub-second sensor data. It then dials in the exact speed needed to keep the pump in its preferred operating range, which trims the power bill and keeps the pump out of the conditions that wear it out. Think of the VFD as the "gas pedal" and Specific Energy's Dynamic Pump Optimizer (DPO) is the autopilot that exercises the pedal.

FROM THE AQUA WATER SUPPLY CORP. CASE STUDY

–28%
ENERGY AT THE WELL, IMMEDIATELY, NO HIT TO OUTPUT

1,100→1,800
GPM AFTER DATA-DRIVEN REHAB

$150K
REHAB VS $2M+ FOR A NEW WELL



FULL DESCRIPTION

- **Core engineering mechanism.** The system ties into a site's existing VFD and instrumentation (flow meters, pressure transducers, and the like) and runs a physics-based digital model of the pump in real time. As drawdown in the aquifer changes and demand on the distribution side moves around, the algorithm micro-adjusts motor speed to stay in the pump's sweet spot, or Preferred Operating Range (POR).

FULL DESCRIPTION (CONTINUED)

- **Added value.** You get real operational clarity, current-state metrics at a glance, a read on pump health as it degrades over time, and early warning on cavitation before it chews up an impeller. Often, Specific Energy can pinpoint the exact issues when its digital twin starts to deviate from reality, including impeller wear and tear, pump clogging, cavitation, and premature motor failure. DPO is even more effective when there is an array of pumps that it can optimize together. The value is not only energy savings but also extended life span of pumps.
- **Operational simplification.** No more manual pump-curve calculations or trial-and-error VFD programming.
- **Who it's for.** It's a strong fit for municipal water utilities and the engineering firms writing specs for high-yield production wells or arrays of booster pumps.
- **What it replaces.** Static SCADA pump-speed rules and "set it and forget it" VFD operation that nobody's really watching.
- **Competitive landscape.** Plenty of generic industrial-automation vendors offer basic flow control. Specific Energy's pitch is that it's a dedicated, physics-driven pump-optimization package rather than a general-purpose tool you have to bend to fit.

Case study — Aqua Water Supply Corporation, TX

Aqua Water Supply Corporation, the second-largest water supply corporation in Texas serving greater Austin, put the DPO on its S8 well. This site has a 250 HP submersible pulling from the Carrizo-Wilcox aquifer. After the Dynamic Pump Optimizer went live, energy use at the well dropped 28% right away, with no hit to production. Digging into the live sub-second data, the system found a better run profile: instead of running the pump 6 hours a day at full flow, it could run at half flow for 13.1 hours and deliver essentially the same volume. This was good for about 81 MWh, or roughly $10,200, a year in power savings.

The bigger win was capacity. The data the DPO collected gave Aqua's engineering firm the confidence to spec a targeted rehab: a new motor, replacement of portions of the column, and a new VFD instead of drilling a second well. That work, combined with the DPO running the pump at the left edge of POR with maximized net positive suction head, took the well's maximum flow from 1,100 GPM up to 1,800 GPM. Price tag: about $150k versus the over $2m a new well would have cost. Since installation, the S8 pump has logged tens of thousands of run hours and billions of gallons supplied without being pulled once for maintenance.

TRADEOFFS & LIMITATIONS

The platform needs a VFD on the pump, plus reliable, accurate downhole transducers and flow meters to feed the model. It's not the right tool for small residential or constant-head wells where the flow rate basically never changes and there's not much to optimize. Also, while the DPO can give you very advanced diagnostics and early warning for the pump health itself, you still need to consider the overall well system and aquifer health for groundwater wells.

DEVELOPER	WEB
Specific Energy (Georgetown, TX)	specificenergy.com

04

LAMNAFLO, INC. · OCONOMOWOC, WI

Lamnaflo® Suction Flow Control

The Lamnaflo® Suction Flow Control System tackles one of the most stubborn problems in high-capacity wells: sand pumping. Instead of letting the pump pull hard on a small slice of the screen, Lamnaflo spreads that suction energy out over a much larger area of the water-bearing formation. Slow the water down enough and it simply cannot pick up and carry sand into the pump and the distribution system.

For pump contractors and municipal engineers, that matters because high-velocity inflow is what drives a lot of expensive trouble. It drags fine sand into the bowls, wears out equipment, steepens the cone of depression, and forces the pump to work harder for every gallon. By evening out the inflow and holding it in a laminar state, Lamnaflo keeps the water sand-free, reduces drawdown, and stretches the life of the pump and the well.

up to 20%

WIRE-TO-WATER ENERGY SAVINGS REPORTED

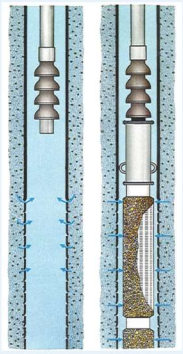
~10 psi

PRESSURE RECOVERED BY REMOVING SAND SEPARATORS

No moving parts

INERT SILICA/EPOXY & PVC MEDIA — NOT A FILTER

FIELD INSTALL THROUGH WATER WELL SOLUTIONS



SUCTION SPREAD ACROSS THE PRODUCING INTERVAL

FULL DESCRIPTION

- **How it works.** Lamnaflo is not a filter and has no moving parts. It is an engineered assembly of permeable bodies, made from an inert silica/epoxy matrix and high-impact PVC pipe, that is placed down in the well and distributed through the water-bearing zone, right along the screen or formation. Engineered slot patterns and flow-control elements restrict and even out the inflow so that suction energy is spread across the whole producing interval rather than concentrated in hot spots. Non-threaded flex couplings let the assembly follow deviation in the well during installation.
- **What you get.** Sand-free water at the pump's full GPM potential, a shallower cone of depression and noticeably reduced drawdown, and better wire-to-water efficiency with energy savings reported as high as 20 percent. Because the water enters slowly and cleanly, you also reduce mineral precipitation and stretch the time between well rehabilitations.
- **Who it's for.** Engineers and operators running municipal drinking-water wells, high-volume irrigation wells, and industrial supply wells, on either vertical turbine or submersible pumps, and on new or existing wells.
- **What it replaces.** Centrifugal sand separators such as Lakos units, which can then be removed to recover roughly 10 psi of pressure loss (and better protect your pump). Lamnaflo is also the direct successor to the discontinued Aquastream system, and the company supplies replacements for former Aquastream customers. Unlike crude "engineered suction" schemes, this one is precisely designed to fine-tune entrance velocities, maximizing success rates.

Real-world use, cost & limitations

Real-world use. Lamnaflo has been specified as a sole-source solution for public water supply wells in Wisconsin. The clearest example is Madison Water Utility's Unit Well 14, where the utility authorized Lamnaflo as a sole-source device installed through Water Well Solutions, LLC. Similar municipal work has been carried out in the Verona, Wisconsin area, though you should confirm the specifics of that project before citing it in detail.

Cost. Lamnaflo does not publish standard pricing, and installation cost depends heavily on well depth and the pump work involved. A full professional install paired with a deep pump re-installation can land in the tens of thousands of dollars, so treat any single figure as a project-specific estimate and get a real quote.

Trade-offs. The assembly adds hardware in the screen and borehole, so an engineer should check casing and screen clearances and borehole straightness to be sure it passes cleanly. Lamnaflo notes that it requires no modification to the existing well and uses flex couplings specifically to handle deviation, but tight or badly out-of-plumb holes still deserve a careful look.

DEVELOPER	PATENTS	WEB
Lamnaflo, Inc. (Oconomowoc, WI)	US 4,624,319 & 6,843,316 · NSF 60 pending	lamnaflo.com

05

DANFOSS® DRIVES

Danfoss: VLT® Aqua Drive FC 202

The Danfoss VLT® Aqua Drive FC 202 is a variable frequency drive (VFD) built specifically for water, wastewater, and deep well pump work. A VFD is the hardware that varies a pump motor's speed, and the FC 202's whole pitch is that it comes preloaded with fluid-handling smarts rather than the bare-bones motor control you get from a generic industrial drive.

That distinction matters more than it sounds. Drop a standard industrial VFD on a water well and it has no idea what is happening downhole, which is how you end up with water hammer in the pipeline, uncontrolled back-spin, and dry-run trips that fire too late to save the motor. The FC 202 bakes pump-specific protections straight into its firmware, so contractors can protect expensive submersible and vertical turbine pumps while trimming operating costs.

10–30%
FIRST-YEAR COST SAVINGS VS A TRADITIONAL DRIVE

+3–8%
EXTRA ENERGY SAVINGS VIA AUTOMATIC ENERGY OPTIMIZATION

⅓ HP → 1 MW+
ONE PRODUCT FAMILY, FRACTIONAL TO PIPELINE SCALE

FULL DESCRIPTION

- **Core mechanism.** The drive continuously fine-tunes output frequency and voltage to match the pump's speed to whatever the system is asking for. On top of that, its Automatic Energy Optimization (AEO) squeezes out another 3 to 8 percent in energy savings beyond ordinary variable-speed control by trimming the motor's magnetic flux when it is lightly loaded.

FULL DESCRIPTION (CONTINUED)

- **Built-in pump protections.** This is the part that sets it apart from a generic drive. A few of the standouts:
  - **Check valve ramp** — controls how the motor slows down so downhole check valves seat gently, heading off the shockwaves that cause water hammer.
  - **Pipe fill mode** — fills an empty water column at a controlled speed so you do not spike the pressure and crack a pipe.
  - **Dry run and low-flow detection** — watches the motor's torque-to-speed relationship to spot an un-watered pump stage or a dry well, then shuts down fast to prevent burnout.
  - **End-of-curve detection** — catches a sudden loss of backpressure from a major leak or line break and stops the pump before it runs itself out and damages field assets.
- **Smart thermal design.** A back-channel cooling architecture vents about 90 percent of the drive's waste heat straight out the back of the enclosure. In a hot pump house, that can meaningfully cut what you spend on air conditioning to keep the electronics happy.
- **Clean power.** Integrated DC-link chokes and a built-in, scalable RFI filter come standard to cut harmonic distortion and electromagnetic interference fed back to the grid, which keeps the drive from fouling nearby instrumentation.
- **Who it's for.** Pump service contractors, water supply engineering firms, and municipal water plant operators.

How it compares to Specific Energy's DPO

Complementary by design. The FC 202 is the drive — the muscle that physically changes motor speed. The DPO (covered earlier) is a software-and-edge brain that sits on top of a drive and a PLC, models the system and pump curves in real time, and commands the optimal speed while tracking pump health. The DPO needs a VFD to do anything, and that VFD can absolutely be an FC 202. In a full setup, the DPO decides the target and the FC 202 carries it out.

Where they overlap. Both offer energy optimization and pump protection. For a user whose only goals are basic protection and some energy savings on one pump, a well-configured FC 202 alone may be enough.
Where the DPO goes further: continuous best-efficiency-point optimization as aquifer levels and demand shift, pump-health tracking, multi-pump and fleet-wide optimization, financial repair recommendations, and cloud dashboards. For anything beyond one well, they are partners, not substitutes.

VALIDATION & LIMITATIONS

The FC 202 is widely specified across public water supplies, irrigation systems, and industrial processing. It scales from small fractional-horsepower circulation pumps (around 1/3 HP) up past 1 MW, so well beyond 1,000 HP on large pipeline motors, all from one product family. The trade-off: it costs more up front than a generic off-the-shelf industrial drive, and getting full value out of the specialized pump protections means having a technician who knows how to set them up properly at commissioning. Configured by someone who does not use the pump features, it is just an expensive standard drive.

DEVELOPER	WEB
Danfoss Drives	danfoss.com

06

VISTA CLARA INC.

Vista Clara: The Harpoon® Integrated CPT-NMR System

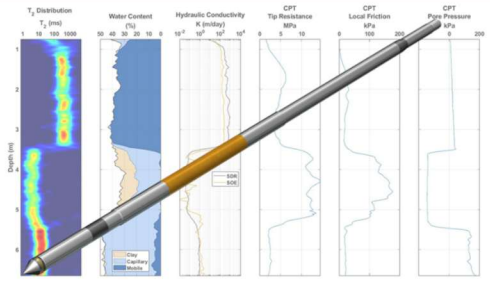
The Harpoon® is a direct-push tool that does something nobody had pulled off before: it packs geotechnical Cone Penetrometer Testing (CPTu) and hydrogeological Nuclear Magnetic Resonance (NMR) sensors into one high-load logging assembly. In other words, you map soil mechanics and groundwater physics in a single trip into the ground. Combining the two in one tool is a genuine first.

For consulting engineers and environmental consultants, that means no more running two separate logging campaigns and then trying to line up the results. Instead of estimating fluid transport from soil density, or stitching together logs from two different boreholes, the Harpoon gives you perfectly correlated CPT and NMR data, at 5 cm vertical resolution, from the exact same vertical profile. The numbers come from the same hole, so they actually match.

CPT + NMR
CO-REGISTERED IN A SINGLE PUSH — AN INDUSTRY FIRST

5 cm
VERTICAL RESOLUTION FROM ONE PROFILE

10,000 ft/day
IN-SITU HYDRAULIC CONDUCTIVITY (K) CEILING



FULL DESCRIPTION

- **Core engineering mechanism.** The tool works on a simple down-and-up sequence. You drive it into the ground with a standard high-capacity direct-push rig (a Geoprobe®, for example) using up to 100 kN of force, and on the way down the 15 cm^2 tip reads tip resistance, sleeve friction, and pore water pressure. On the way back up, the internal dual-frequency NMR sensor scans the formation at 5 cm increments.
- **Added value.** This is where it moves past educated guesswork. CPT ratios can only infer soil type; the NMR array directly measures the hydrogen atoms in water molecules. That lets it quantify total volumetric porosity, pore size distribution (the split between bound and mobile water), and in-situ estimates of hydraulic conductivity (K) up to roughly 3,000 m/day (10,000 ft/day).
- **The hidden advantage.** Any direct-push probe creates a zone of disturbance, a thin shell of compacted, sheared soil right around the tool. The Harpoon's NMR array is built to push its sensitive zone out to a diameter of 12.5 cm to 15 cm, so it reads past that disturbed shell and measures the native, unaltered formation.
- **Target audience & applicability.** Environmental consultants mapping contaminant plumes, hydrogeologists building Conceptual Site Models (CSMs), and civil engineers designing coastal or nearshore foundations, including offshore wind.
- **What it does and does not replace.** It replaces separate, independent CPT and direct-push logging runs, and it cuts down on physical core extraction and lab permeameter testing. It does not replace deep wireline logging tools built for consolidated bedrock, since the Harpoon is strictly a direct-push system for unconsolidated materials.

Validation & limitations

The Harpoon is a new tool, launched in 2025, and it has already been put to work on offshore wind site investigation, including a single-push CPT+NMR survey for an undersea cable route. Its applications span groundwater, environmental remediation, and geotechnical design. The big practical win is that it collapses two separate logging campaigns into a single push, which eliminates a second mobilization and the multi-crew coordination that usually comes with it. It also sidesteps the spatial errors you get when you try to match data from separate, adjacent boreholes, because everything comes from one profile.

It is limited by how deep a standard direct-push rig can go, so it cannot punch through hard bedrock or thick cobble layers. And like any NMR instrument, the downhole electronics can be thrown off by severe external electromagnetic interference (EMI) or highly magnetic mineral matrices.

DEVELOPER
Vista Clara Inc. — works with standard direct-push rigs (e.g. Geoprobe®)

WEB
vista-clara.com/harpoon

07

BESST, INC. · SAN RAFAEL, CA

BESST: Dynamic Flow Profiling (Dye Tracer System)

BESST's Dynamic Flow Profiling is a non-mechanical way to map where groundwater actually enters a well and how flow is distributed across the screened interval. Run under an exclusive license from the U.S. Geological Survey, it tracks pulses of dye while the well is pumping, so it can pinpoint preferential flow paths and the zones most likely to carry contaminants.

Here is why that matters. The old-school mechanical impeller (spinner) logs tend to fall apart at low flow velocities, and they get thrown off by the turbulence swirling around a high-volume pump intake. BESST's method has no moving parts downhole, so it gives you clean vertical-profile maps. That means permanent screens, packer arrays, and remediation systems get designed on real flow data instead of guesswork.

No moving parts
STAYS SENSITIVE WHERE SPINNER LOGS GO QUIET

NSF 60
CERTIFIED RHODAMINE DYE TRACER

5–50 ft
SCREEN INTERVALS RESOLVED WHILE PUMPING

FULL DESCRIPTION

- **How it works.** The tool goes in through the well string or an interior access tube. With the well pumping at a steady state, it releases tiny, precise doses of NSF 60 certified rhodamine dye at set depths and measures the dye's return and transit response to work out how much water each zone is contributing. No test pump required, and the well keeps running normally the whole time.
- **What you get.** A clear picture of vertical inflow. You can see exactly which screen sections, whether you are looking at 5-foot or 50-foot intervals, are pulling their weight and which ones sit stagnant or deliver poor-quality water.
- **Who it's for.** Environmental consultants chasing deep contaminant plumes, mining operations tracking chemical transport, and municipal engineers designing multi-screen public supply wells.
- **What it replaces.** Mechanical impeller spinner meters, heat-pulse flow logging, and the estimated zone modeling people fall back on when they do not have solid field data.

Track record & trade-offs

Track record. BESST has applied the method across environmental and mining-sector groundwater work, including projects at the Sierrita site in Arizona. The practical edge over spinner logs shows up most in deep, low-velocity profiles, where impellers slip or simply fail to register small changes in flow. Because the dye method does not rely on a spinning rotor, it stays sensitive where mechanical tools go quiet.

Trade-offs. The well has to be actively pumping and in hydraulic equilibrium during the test. And since the sensing is optical, heavy turbidity, lots of suspended solids, or strong background mineral color can interfere with the fluorometer readings.

DEVELOPER	WEB
BESST, Inc. (San Rafael, CA)	besst-inc.com

08

WELL INFORM, LLC · PASO ROBLES, CA

Wellinform™: Cloud-Connected IoT Well Surveillance

For wells without an existing SCADA connection, Wellinform™ is the hardware plus software solution that gives you real-time, remote visibility into how your water wells are producing, how your pumps are holding up, and which way your aquifer is trending. It was built for ranchers and farmland managers, and the whole idea is to turn an isolated field pump into a connected asset that actually tells you what it is doing.

Historically, keeping tabs on a well meant either driving out to the site or paying for a complicated, expensive industrial PLC/SCADA setup. Wellinform takes a simpler path: a multi-carrier cellular system (with Starlink satellite and Ethernet options) feeding a clean dashboard you can pull up on any device. You can watch flow rates, specific capacity, and pump efficiency from your phone, and catch a small problem like a well starting to run dry before it snowballs into a pump you have to pull.

Any device

REAL-TIME DASHBOARD OVER CELLULAR, STARLINK OR ETHERNET

Up to 3

SURVEILLANCE DEVICES PER FIELD ENCLOSURE

120V / solar

RUNS OFF LINE POWER OR SOLAR, BUFFERS THROUGH OUTAGES

FULL DESCRIPTION

- **How it works.** A certified installer sets up the Wellinform controller and wires in your compatible sensors and meters. The field enclosure runs off 120V or solar, currently supports up to three surveillance devices, and buffers and forwards data during outages so nothing gets lost. From there it tracks water pressure, real-time flow, total consumption, pump runtime, water level, and even oil-drip lubrication rates.
- **What you get.** The dashboard turns raw readings into something you can act on. It surfaces long-term water level drawdown, shifting specific capacity trends, and true pump efficiency by combining flow, level, pressure, and power data, so you can see your well's refresh rate and whether the system is still performing the way it was designed to.
- **Who it's for.** Ranchers and farmland managers first and foremost, along with irrigation operators and pump-service teams handling long-term maintenance. The reporting also makes it easier to stay on top of groundwater district compliance in places like California.
- **What it replaces.** Hand-sounder water readings, paper log sheets, manual oil-drip checks, and the basic unmonitored pump box that only tells you something is wrong after it has already failed.

Cost, value & limitations

Pricing. Wellinform does not publish standard rates; pricing for hardware, installation, and the cloud subscription is quoted per project, so the right move is to contact their team for a current estimate for your sites.

The value case. Pulling and reinstalling a commercial vertical turbine or large submersible pump can run well into five figures in field labor alone, so anything that catches trouble early pays for itself quickly. By flagging issues like a well running dry, falling specific capacity, or a drop in efficiency before they cascade, the system helps you schedule a planned fix instead of paying for an emergency one and extends the useful life of the pump.

Trade-offs. It needs reliable cellular or satellite coverage to push real-time alerts, so a site with no signal at all is a poor fit unless you add a connection like Starlink. Well owners will also need to invest in the standard sensors such as transducer and flow meter for the platform to be useful.

DEVELOPER	WEB
Well Inform, LLC (Paso Robles, CA)	wellinform.com

09

WATER SYSTEMS ENGINEERING, INC. · OTTAWA, KS

Water Systems Engineering: Investigative Water Diagnostics & Rehabilitation Consulting

Water Systems Engineering (WSE) is an investigative water consulting firm and diagnostic laboratory, based in Ottawa, Kansas, that figures out why a well or water system is fouling, plugging, corroding, or losing capacity, and then tells you what to do about it. Think of them as the lab and the detective rather than the crew with the rig.

For drillers, pump contractors, and consulting engineers, this fills a real gap. When a well loses yield or a heat exchanger scales up, the usual coliform test tells you almost nothing about what is actually happening downhole. WSE profiles the water biologically and chemically, identifies the specific fouling or corrosion mechanism at work, and then helps design the disinfection, rehabilitation, and maintenance plan to fix it and keep it from coming back.

Vendor-neutral

INDEPENDENT LAB — NOT A PRODUCT OR CHEMICAL SELLER

Chem + micro

CHEMISTRY, MICROBIOLOGY, MICROSCOPY & CORROSION UNDER ONE ROOF

Diagnose → fix

INTERPRETS RESULTS AND DESIGNS THE REHABILITATION PLAN

FULL DESCRIPTION

- **What they do.** WSE runs an in-house diagnostic lab specializing in microbiology and inorganic chemistry, and the interplay between the two. Core lab services include inorganic chemical analysis, scale deposit analysis, filtration media evaluation, full bacterial identification, corrosion studies, and in-depth microscopic examination. The point is not just numbers on a page; it is interpreting what those results mean for your specific well or system.
- **The added value.** Their consulting team pairs with the lab to turn findings into action. They review data and specifications, perform onsite inspection and project supervision, and even do remote site investigation. They are most often called on for the fouling and remediation of potable water wells, where pinning down the exact mechanism. Determing whether it is iron-related bacteria, mineral scale, biofilm, or microbially influenced corrosion can be the difference between a rehabilitation that lasts and one that fails within months.
- **Who it's for.** Municipalities, consulting engineers, and contractors, both nationally and internationally, plus industrial operators dealing with heating, cooling, and water-handling systems. Essentially anyone who needs to know what is happening inside a water system rather than guessing at it.
- **What it replaces.** Basic compliance-only testing and trial-and-error rehabilitation. It also mitigates the conflict of interest you get when the company diagnosing the problem is the same one selling you the chemicals or the new well, since WSE is not a product vendor.

COMPETITIVE LANDSCAPE

The market for independent, interpretation-focused well diagnostics is small, and WSE sits in an unusual spot within it.

- **Field test kits (Droycon / BART).** Droycon Bioconcepts, maker of the BART biological activity reaction test, is the best-known name in well biofouling detection. BART kits are inexpensive and run in the field, which is great for screening and trend monitoring, but they tell you a reaction occurred without the deeper microscopy, chemistry, and expert interpretation WSE layers on top. Many practitioners use BART for routine checks and send the hard cases to a lab like WSE.

COMPETITIVE LANDSCAPE (CONTINUED)

- **Specialty microbiology labs (e.g. ECHA Microbiology).** Firms like the UK-based ECHA offer microbially influenced corrosion and water-system microbiology testing with industry-standard methods. They overlap with WSE on the corrosion and microbiology side but are oriented more toward industrial and built-environment systems than the potable-well-and-aquifer focus WSE is known for.
- **Commercial and certified water labs.** Standard drinking-water labs handle compliance testing such as coliform and metals at scale. They are essential for regulatory work but generally do not diagnose downhole biofouling or interpret why a well is plugging.
- **Rehabilitation chemical and service providers.** Companies that sell well-cleaning chemistry or rehabilitation services (Cotey Chemical, Johnson Screens, and large service contractors among them) often provide some lab support, but their recommendations are tied to their products and services. WSE's edge here is independence.

Credibility, cost & net differentiation

WSE staff are active in industry education and standards work through groups like the National Ground Water Association, the American Water Works Association, and AMPP (corrosion professionals), and they regularly publish technical guidance on well microbiology, corrosion, and rehabilitation in trade outlets such as Water Well Journal. WSE does not publish prices — laboratory work runs off a fee schedule available on request, and consulting is scoped per project. Because this is a diagnostic and advisory service, not a field crew, the actual well work is still carried out by your contractor, and samples shipped to the lab add turnaround time to a project schedule.

Net, WSE's differentiation is the combination of an independent, vendor-neutral diagnostic lab (chemistry plus microbiology plus microscopy plus corrosion) with an experienced consulting team that interprets the results and designs the fix.

DEVELOPER
Water Systems Engineering, Inc. (Ottawa, KS)

CONSULTING
785-242-5853 ×2

LABORATORY
785-242-6166 ×1

WEB
h2osystems.com

10

RHR PRODUCTS LLC

RHR Products: Pipe Bite Non-Coupling Elevators

The Pipe Bite is a pipe elevator and safety clamp that grips smooth-walled pipe anywhere along its length. RHR Products bills it as the first non-coupling elevator that also doubles as a clamp, and that single idea is what makes it matter: instead of needing a coupling or a shoulder to catch under, it locks onto bare pipe wherever you put it.

To see why that is useful, picture pulling a pump out of a well. You are lifting a long string of pipe with a heavy pump hanging off the bottom, and to grab it crews normally use an elevator, a clamp that catches under a coupling where two pipe sections join. That works fine on threaded steel with couplings every twenty feet, but it breaks down in the two situations pump installers hit most. A lot of modern wells use smooth polyethylene (poly) pipe, which is slick plastic with no couplings to catch on, and even on steel the couplings sit far apart, so you can only grip at fixed points. The Pipe Bite locks onto bare pipe instantly, so crews can raise or lower the string in short increments and keep a secure hold on slick poly.

Anywhere

GRIPS BARE POLY OR STEEL ALONG ITS FULL LENGTH

1”–2”

CURRENT SIZES; LARGER DUE OUT IN 2026

Self-tightening

THE HARDER IT PULLS, THE TIGHTER THE CAMS BITE

FULL DESCRIPTION

- **Core mechanism.** The tool uses multiple sets of hardened stainless steel cam teeth. Lower it over a pipe and it slides freely down the bare outer wall and passes right over standard couplings. The moment you lift up with a winch line or rig hook, the cams rotate and bite into the pipe wall. The harder the hanging string pulls, the tighter it grips, and the multiple tooth sets spread that load across a wider surface to keep from scuffing the pipe.
- **Added value.** This is where the safety case comes in. Because you can only grip coupling-based elevators every twenty feet, you have to hoist a full section up and out before re-gripping, which means raising pipe high into power lines, tree limbs, or low structures, and that is exactly where crews get hurt. On slick poly, the old tools can also slip and drop the whole string back down the hole, an expensive fishing job. Gripping at any point lets crews work in short, controlled strokes that stay clear of overhead hazards, gives the ground crew a hands-free hold, and takes away the risk of dropping pipe downhole.
- **Who it's for.** Residential and commercial water well pump installers, geothermal loop crews working with poly, and anyone servicing poly or steel drop lines.
- **What it replaces.** Traditional shoulder-only elevators that need a coupling to work, manual friction clamps, and the genuinely hazardous habit of rigging a direct rope or chain hitch around the pipe.

Sizes, cost & limitations

Sizes. The Pipe Bite is currently offered in 1-inch through 2-inch sizes, with larger sizes due out in 2026.

Cost and load ratings. RHR sells the Pipe Bite through its online store, but published pricing and rated safe working loads should be confirmed directly with the company before quoting specific numbers, since they are not listed in independent sources. Contact RHR for the current model lineup, prices, and load ratings.

Trade-offs. Each tool has to be matched to the right pipe diameter and weight rating, so you size it to the job. It is built for standard water well pump service and is not a substitute for the heavy hydraulic rig slips used on massive oilfield casing strings.

DEVELOPER	WEB
RHR Products LLC	rhrproducts.com

// ABOUT THE PUBLISHER

About AirBurst®

AirBurst® is a patented well rehabilitation and development process that utilizes precisely timed, high-pressure pulses of compressed air or inert nitrogen gas to clean well screens and restore aquifer porosity. It avoids the use of hazardous chemicals, acids, or explosives.

For well drillers and pump contractors, this technology provides a safe, controlled method for handling severe mineral encrustation, bacterial biofilm, and mud-cake clogging. Traditional chemical rehabilitation requires chemical handling safety protocols, long contact times, and expensive neutralization and hazardous waste disposal procedures. AirBurst mechanically breaks down downhole blockages using physics, minimizing site downtime and protecting well assets from chemical corrosion.

Patented & precise

An operator-controlled, electronically timed air impulse generator fires repeatable high-energy pressure pulses — burst count, frequency, pressure, and volume all dialed to the well.

Green by design

No chemicals, no acids, no explosives. A clean mechanical process that supports aquifer health and regulatory compliance.

Universal

Effective across all geologies and aquifers — screened wells and open rock holes, vertical and horizontal collector laterals alike.

Proven & supported

Restores wells to full pumping capacity, sustained for years, and delivered through a network of licensed contractors with white-glove support — field to front office.

AIRBURST®

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