

A world first in dam remediation

Hybrid water/sonic drill rig improves safety, saves time, costs less.

With approximately 5,000 embankment dams over 40 years of age, utilities and local governments in the eastern United States have their work cut out for them.

With a full slate of dam stabilization work at hand, Alabama Power thought they could realize efficiencies by combining water and sonic drilling technologies.

“With today’s technology, we knew that a combined drill rig was possible,” recalls Eric Manning, Geostuctural Services Supervisor with Alabama’s Southern Company’s Hydro Services/Dam Safety division. “The numbers we put together showed that it would save on capital, time, add precision and improve worker safety.”

MEDATech Engineering came forward with a winning proposal, and 18 months later the water/sonic drill rig is complete. Dubbed the WS6000, the track-mounted drill rig is capable of drilling 6-inch nominal diameter holes, the first hybrid drill rig that incorporates both high pressure water down-the-hole (DTH) and sonic drilling technologies. Switching between the two drilling methods is a seamless process. See it in action here: <https://medatech.ca/rodbot>

The rig is capable of delivering very granular geotechnical data in real time anywhere on the globe. An additional feature is a fully autonomous robotic rod-handling system that can move both casing and rods separately or as one in and out of the mast. “This provides a much greater degree of safety and greater productivity,” notes Robert Rennie, MEDATech President, “than we see anywhere in the industry today.”

Safety first

The WS6000 was purpose-built for the Logan Martin embankment dam in Vincent, AL. “Drilling is an essential part of dam stabilization because using the wrong technique can destabilize overburden,” explains Rennie. “Water hammer in combination with sonic drilling is the safest, most efficient method of drilling on embankments.”

Fast drill-head switching

The hybrid rig is a new prototype based on known, proven technology. MEDATech started with the tried-and-tested Wassara hydraulic water DTH hammer drill built by Sweden’s LKAB Wassara AB. They added a sonic drill head built by Sonic Drill Corporation based in British Columbia, Canada. The operator can switch drilling methods with the click of a button when drilling each embankment hole.

“Karst contains lots of angle fractures and voids,” explains Rennie. “The water hammer drill bit will follow the path of least resistance, so you can end up with unacceptable deviation from the intended path. Normally you have to switch rigs to correct that, which is not a fast process. With a combined drill rig, you can quickly switch between drilling heads to keep the borehole straight. That alone will save a tremendous amount of time.”

Real-time drill data

The WS6000 has a native ability to deliver drill data useful for mapping geotechnical formations. It can show them on any computer, anywhere in the world, in real time. “With karst especially, you need to know what you’re drilling into,” explains Rennie. “Having that geotechnical information in real time helps on many levels.”

Remote connectivity is also at play for drill rig maintenance. MEDATech can log in remotely to access rig system parameters and make adjustments as needed, including optimizing robotics and other rig functions.

Rod-handling automation: safe and productive

Most drill rigs require two to three crew members to operate the rig and insert drill casings and rod. The WS6000 requires a single operator, since the rod-handling system, dubbed the rodbot, is fully robotic and can handle drill rod and casings—a feature unique to MEDATech.

Safety was top of mind in creating the rod-handling system, since technicians’ handling of heavy casings and rods by hand has been known to cause severe injuries. “Most rigs need a lot of handling, but this one keeps personnel out of harm’s way,” says Rennie. “The rodbot feature demonstrates the level of safety put into this drill rig. Eliminating that danger was critical.”

It’s also faster. With a traditional rig, workers typically manhandle 5-foot sections of casing and rod into the mast, which adds up to 24 sections of casing for a 120-foot hole. The WS6000’s automated system reduces that to 6 sections of 20-foot casing and rod. More productivity, less worker danger. A true win-win and a big leap forward for embankment dam remediation.

About MEDATech

MEDATech has been designing and building custom mobile heavy equipment since 2003. Our clients are in the Mining, Construction, Waste, Transportation, and Energy sectors all over the world. The one thing they all want is machines that are more efficient, safe, durable, precise and environmentally friendly. So that’s what we deliver.

MEDATech has 3 divisions:

- *Engineering services* – from consulting to engineer/design/build to industrial software development
- *BORTERRA* – advanced drilling equipment
- *ALTDRIVE* – all-electric powertrains

The people at MEDATech are not just engineers. They have worked in mines and in other industries where they operated the kinds of heavy equipment that the company builds. This has allowed MEDATech to become expert in building great machines, and in consulting on the solutions clients need.

Media Contact

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