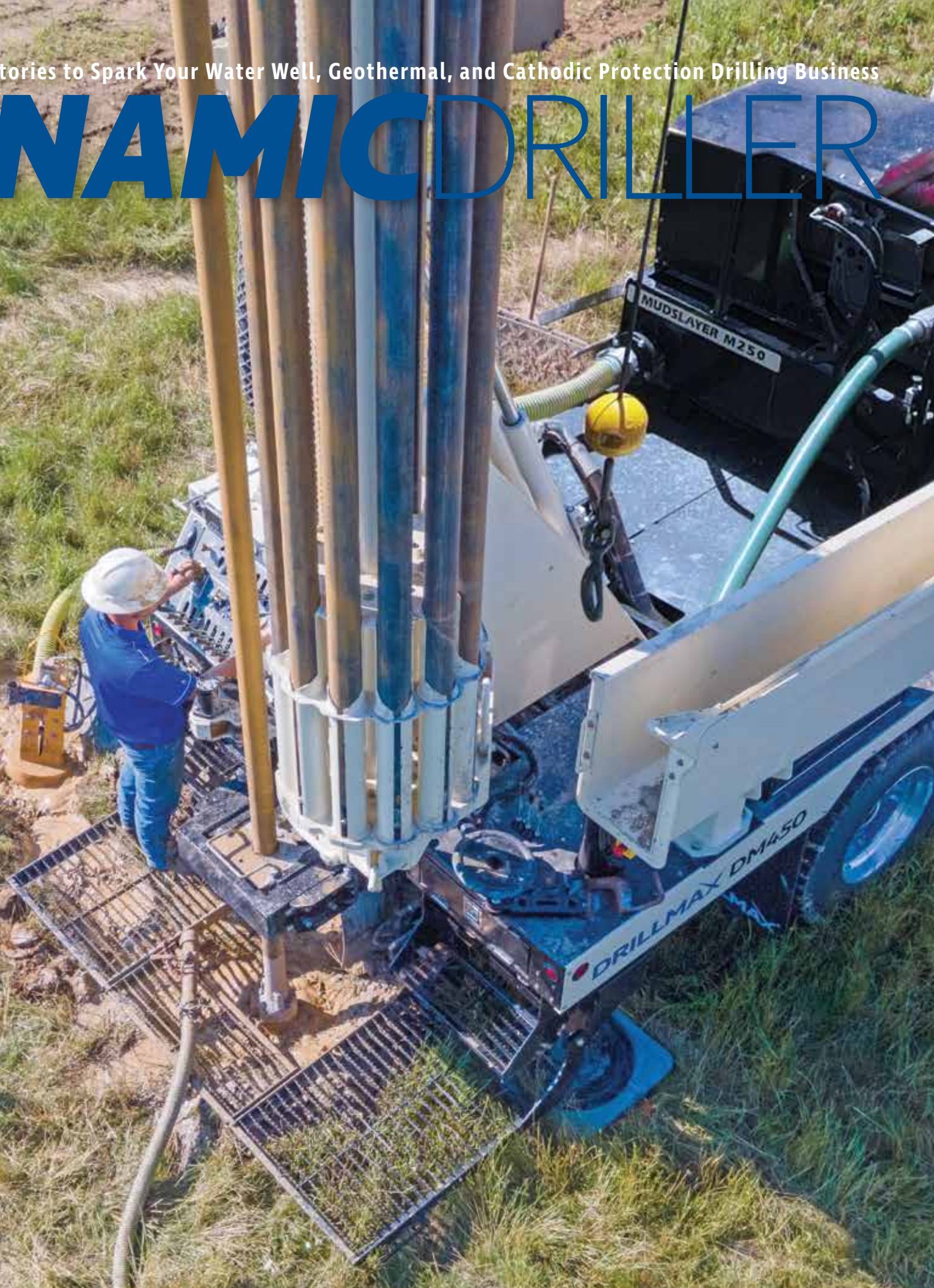


Success Stories to Spark Your Water Well, Geothermal, and Cathodic Protection Drilling Business

DYNAMIC DRILLER

SPRING 2022



DRILLMAX[®]

DM450

Water Well Rig

DRILLMAX[®] DM450 provides remarkable power for its compact configuration. NEW rod carousel options accommodate drill pipe preference while it permits performing one-man operation.

Money Well Spent

Completing primarily residential wells in Grand Rapids and Kalamazoo, Michigan, area, third-generation **KRAAI WELL DRILLING** has been in business close to 60 years. Also drilling commercial greenhouse and trailer park wells and agricultural center pivot wells, the business started doing rotary drilling during 1991.

As the number of small drilling companies in their region diminished, they increasingly picked up more work — completing more than 300 wells per year for the past 25 years. After purchasing a new rig in 2002, they saw a spike in production and began calculating the downtime cost of their aging fleet.

"If we're not wrenching on rigs, we're drilling, which is more profitable," Chad Kraai, owner, said. "It also improves driller retention as they would rather drill than wrench."

Versatile DM250 for Tight Spots

So they began investing in more new equipment — deciding first on a new DRILLMAX® DM250. Several factors contributed to their decision to purchase from DRILLMAX®.

"DRILLMAX® has been putting rigs out there and has a proven track record with testimonials," Kraai said. "Donnie provides an open line of communication and you can trust that if he says he's going to do something, he follows through with it. We weren't getting that same type of customer service from other manufacturers."

Kraai's experiences are similar to the testimonials he encountered.

"The versatility and multitude of jobs the DM250 can do still surprises me," Kraai said. "It can get into small spaces and tight locations."

The DM250's size provides the company a competitive advantage.

"Since the DM250 weighs under 22,500 lbs, we're able to run during frost laws when larger rigs are shut down," Kraai said. "The driver doesn't need a CDL, which is a huge benefit in a tough market for finding workforce."

Efficiency and ease of operation make the DM250 their go-to rig.

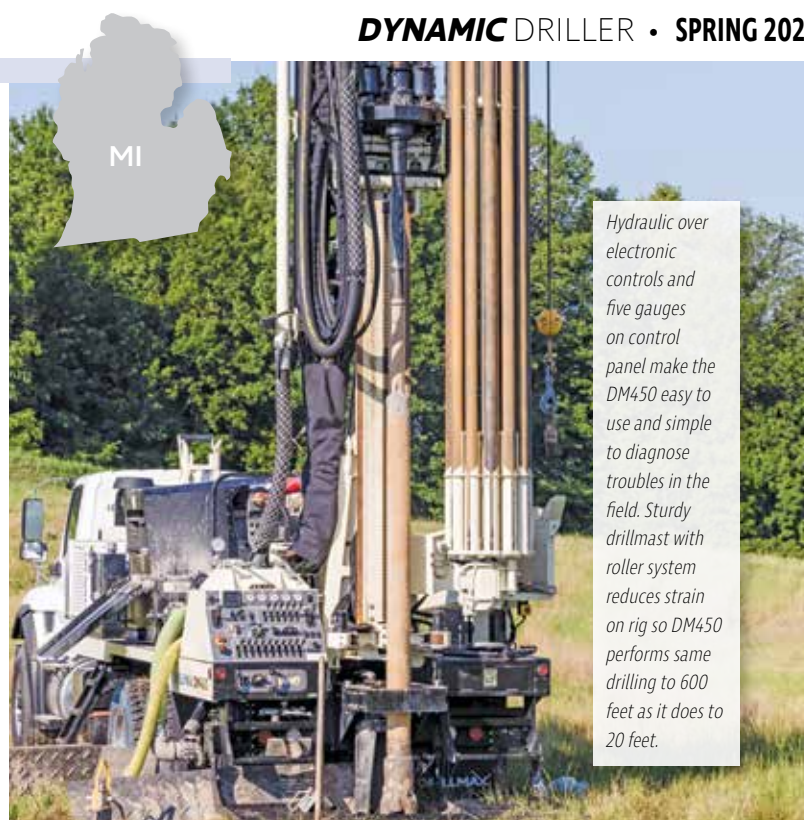
"The DM250 drills deeper wells in tight locations very efficiently. We now use the DM250 on most wells where we would have previously used a cable-tool drill, which is very inefficient," Kraai said. "The ease of operation also makes a smooth transition for drillers."

DM450 with Deck-mounted Mudslayer®

Trouble with an older rig and their success with the DM250 led them to purchase a DM450. Being equipped with an on-board Mudslayer® 250 makes jobs easier on the drillers.

"Operators prefer to run the DM450 since they're not shoveling out mud pans," Kraai explained. "We use a dump trailer to haul away cuttings from under the Mudslayer®, making clean up much easier."

The deck-mounted Mudslayer® 250 also increases access and efficiency.



Hydraulic over electronic controls and five gauges on control panel make the DM450 easy to use and simple to diagnose troubles in the field. Sturdy drillmast with roller system reduces strain on rig so DM450 performs same drilling to 600 feet as it does to 20 feet.

"The Mudslayer® allows us to get a bigger rig in closer to homes since we're not carrying or placing a mud pan. Eliminating the mud pan behind the rig allows us to put wells in a better location for the customer," Kraai said. "By utilizing the Mudslayer® we can support the rig with a smaller water tanker with just 2,000 gallons."

The DM450 also has advantages in the cold Michigan temperatures.

"The rig has an electric oil heater, which has been good in the colder climate," Kraai said. "It heats the oil before engaging the PTO, which seems to be much easier on the rig."

The DM450's versatility also makes it viable on a wide range of jobs.

"We've drilled 5-, 6.9-, 8-, and 10-inch wells. We've drilled 800 gallons/minute 10-inch wells and 20 gallons/minute wells. It covers the majority of applications," Kraai said. "We can efficiently drill shallow 100-foot wells or tackle deeper 400-foot wells just as easily."

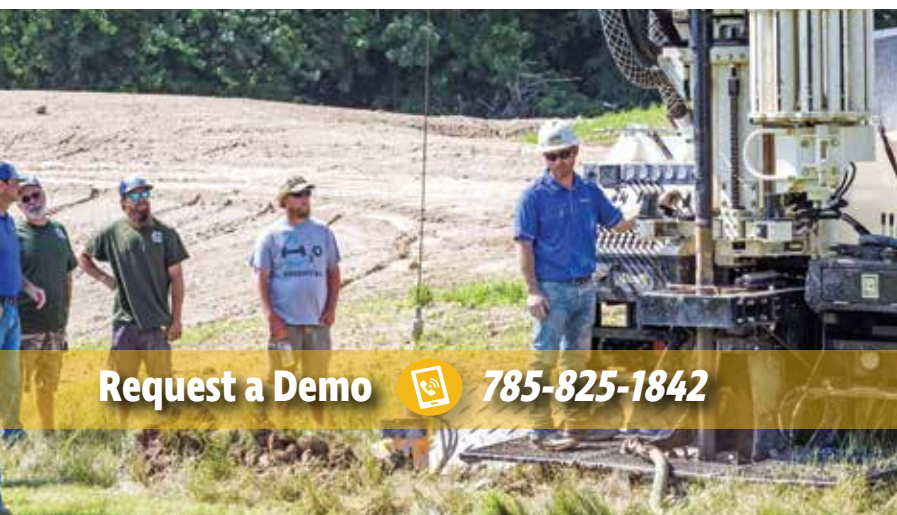
Rigged Up for Success

The addition of the two DRILLMAX® rigs has increased production.

"Since we bought the two DRILLMAX® rigs we've completed 521 wells, which we attribute to reduced downtime," Kraai said.

For Kraai, the hydraulic over electronic controls on the control panel of both rigs — which equate to easier operation and maintenance — plus great service from Donnie and the service department also contribute to the overall advantages of the DRILLMAX® line.

"These rigs were a large investment, but we feel it was money well spent. They put our company in a position to keep a tight schedule due to no breakdowns and lead to employee retention since they prefer running the newer equipment," Kraai said. "We believe we're in a strong position to be successful over the next decade."



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POST AND SELL YOUR UNDERUTILIZED DRILLING EQUIPMENT TO FREE UP CASH.

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Model: DRILLMAX 2400 Year: 2001 For Sale By: \$15,000.00

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On Vacation When Running New Rig

VA

Efficiency, safety, and ease of the 2021 DM450 facilitates completing jobs quickly and training drillers easily.

For more than 30 years, **CHRISTIAN & PUGH WELL DRILLING AND SERVICE** has provided water well construction and pump service around their Smithfield, Virginia, shop. Matt Cunningham took over the business in 2013 and has grown the company — both in number of employees and new equipment. Running older table-drive rigs, he purchased a 2008 DM450 to better equip his crew. Anticipating their workload would continue to grow, they looked to replace an older table-drive rig.

"With our current workload, our experience with the older model DM450, and the capabilities of the new DM450, it made sense with our line of work and geology," Cunningham said.

The 2021 DM450's efficiency compared to the 2008 model surprises him. Unlike their other rigs, they opted for the single rod loader on the 2021 DM450. He describes it as "a new luxury we love."

"It has made our 'day-to-day' easier and life is better for us with the 2021 DM450," Cunningham said. **"We feel like we're on vacation when running the new rig."**

Safety and ease of use also top the list of 2021 DM450 benefits.

"From the driller's platform to controls, it's safer all around," he said. **"And its ease of use is a world of difference. It's easier to teach guys to operate."**

With the 2021 DM450 they knock out the well and move on to the next one quickly and safely. He attributes the increased efficiency to the rotary speed and the 5.5X8 mud pump. They also use the smaller jib to set casing quickly.

"The speed of tripping in and out means we're using it on deeper 600- to 650-foot wells," he said.

Cunningham also praises the reliability, experiencing fewer problems, as another plus for the 2021 DM450's productivity.

"It's more efficient, so we're able to do more wells and increase production," Cunningham said.

Choosing the DM450 also sets them up to expand their service offerings.

"If we decide to take larger wells on, we'd have the ability to do it," Cunningham said.

Overall, they couldn't be happier with their DRILLMAX® experience.

"DRILLMAX® has been awesome. We pick up the phone to get parts for the 2008 DM450 and they're readily available," Cunningham said. "DRILLMAX® has been there for us, whether it's parts or information over the phone — we can even talk to an engineer if we're having trouble. We've entered into the DRILLMAX® world and been happy thus far."

Access Both Sides of DM450 Using Jib System

The 2-speed main winch motor on the DM450 provides full pull power when tripping out or with flip of a switch provides full speed, making travel time twice as fast.

For job sites where support trucks won't fit on helper side, **SECOND JIB SWINGS AND EXTENDS** — in the other direction toward the driller's side — to pick up and place smaller objects.

- 2-speed winch motor on main jib for full pull power or full speed with simple flip of switch.
- main 12,000-lbf line pull jib swings and extends over helper's side.
- second 1,800-lbf jib swings and extends over driller's side to cut time setting casing.



drillmaxrigs.com/SECONDJIB



WATCH
second jib swing
and extend



Two DM450 Carousel Options for Pipe Sizes

3-inch Drill Pipe

Carry 15, 3-inch pipes for a total of 300 feet with ability to backfeed carousel as running pipe.

3.5-inch Drill Pipe

Carry 12, 3.5-inch pipes for a total of 240 feet with ability to backfeed carousel as running pipe.

drillmaxrigs.com/DM450CAROUSELOPTIONS

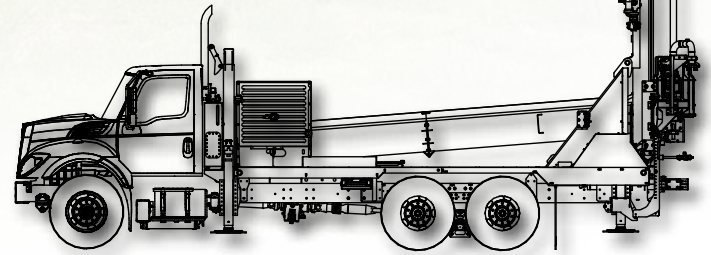
DM450



LIGHTWEIGHT, MANEUVERABLE RIG TO EFFICIENTLY SET UP TO 16-INCH CASING: *commercial water well, geothermal or cathodic protection*

Mud system, top head travel speed, and rotation speed and power combine to quickly conquer clay or cobbles to increase production and profit. Engineered to handle 4-inch to 12-inch wells up to 1,000 feet, tailor the DM450 to your specific geography and drilling preferences from a wide array of drill rig options. Choosing from an assortment of standardized options minimizes maintenance and makes repairing your rig from the field possible with a phone call to our team of expert service technicians.

 drillmaxrigs.com/DM450



Rod Carousel Capable of Backfeeding Drill Pipe

CREATE OPPORTUNITY TO TASK HELPER WITH OTHER SITE CHORES OR RUN A ONE-MAN JOB WHEN YOU CHOOSE CAROUSEL OPTION.

- two safe and easy carousel options based on drill pipe preference — 3 or 3.5 inch — able to backfeed while running pipe.
- simple, durable hydraulic fork at top of carousel operated from control panel holds drill pipe in position.
- pod for each drill pipe contains a cushion spring prohibiting pipe from slamming into pod, protecting drill pipe and creating a quieter job site.



Table Assembly Adjusts to Set up to 16-inch Casing

EASY ACCESS TO TABLE OPENING FROM CONTROL PANEL SIMPLIFIES SETTING VARIETY OF CASING SIZES.

- remove bushings to set up-to 10-inch casing.
- remove center bushings and use control panel to retract table when setting 12-inch casing.
- remove bushings and use control panel to retract table then remove pin and swing open gate to make room for 16-inch casing.



Pipe Spinner System Takes Hands Off Pipe

BI-DIRECTIONAL, HANDS-FREE PIPE SPINNER SYSTEM QUICKLY MAKES AND BREAKS JOINTS WITH LESS WEAR ON DRILLER.

- switch on control panel dictates which direction wheels spin.
- single lever control engages both clamp and spinning function.
- innovative segmented rollers made of staggered, stacked plates with teeth to grab pipe increase performance, longevity, and ease of service.
- threaded fitting adjusts bumpers to optimize pipe spinner grip performance based on size of drill pipe used.



 drillmaxrigs.com/450CAROUSEL



WATCH
rod carousel
with backfeed
capability

 drillmaxrigs.com/450TABLE



WATCH
versatility of
easily accessed
table assembly

 drillmaxrigs.com/450SPINNER



WATCH
hands-free
drill pipe
spinner system

Air to Mud and Back

Spending summers working for his father's drilling business in Virginia, Scott Miller earned an electrical engineering degree and worked for Lockheed Martin in Alabama until his father's controller retired in 2000.

"My father asked if I knew anyone good he could trust to do the position," Miller said. "He never asked or expected me to take over the company. I loved my job at Lockheed, but I was traveling all the time."

Having already contemplated starting his own IT business, he moved back to Virginia, started his business, and for three years did his father's books on the side. He discovered it was no part-time job.

"I did his office work and ran my own business and knew I couldn't continue doing both. I liked working to keep employees happy and employed and knew I could be home in the evenings," Miller said.

So he gave up his IT company, hired a controller, and took over the three department **NORTHERN VIRGINIA DRILLING**. His brother runs their blast hole drilling department while Scott runs the water well and geothermal departments.

"I've drilled, installed pumps, done filtrations, and fused geothermal pipe in the ditch. If it's a large commercial job, I'm usually on site," Miller said. "All my drillers are smoother than me because they're doing it every day, but I'm usually pretty good about helping solve problems if they run into a snag."

The company focused on water well and blasthole when they began in 1988, but around 2006 they got into geothermal.

"This was a blessing when the housing market burst. From 2007-15 we did as much geothermal as anything else," Miller said.

FROM AIR TO MUD ROTARY

The company has 15 drill rigs performing air rotary in rock formations. Increasingly they received requests requiring mud rotary.

"We kept getting requests — too many to continue to ignore," Miller said. "So we started doing auxiliary mud pump, but it wasn't efficient. We needed something affordable with more mud rotary ability. We asked around and most steered us toward DRILLMAX®."

Now their only mud rotary drill rig is a DRILLMAX® DM250.

"We looked at other options, but they were more electric over hydraulic, which to me is just a lot more stuff to fail," Miller said. "They were also more expensive but not more capable."

While they bought the DM250 for its mud rotary abilities, they've found it to be very capable of completing air rotary with an auxiliary air compressor to run the down hole hammer.

"They didn't tell us its limitations, so we've been putting it to the test," Miller said. "We thought we'd only be running it 70 percent of the time, but it has stayed busy every day."

FROM MUD TO AIR ROTARY

They've installed two, 500-foot rock wells — one 6 inch and another 4 inch. The 6-inch well required surface casing, so they did 10-inch mud rotary to 200 feet and set the 6-inch steel casing.

"We just decided to see what the DM250 could do, so pulled in an auxiliary air compressor and used a 6-inch hammer to complete the 6-inch well pulling 12 gallons/minute," Miller said.

They went into the 4-inch well job planning purely mud rotary.

"We'd done the neighbor's well to 200 feet using mud, but when we moved over, there was no water. So we set 280 feet of surface casing and used a 3-inch hammer to drill into the rock with a 4-inch bit," Miller said. "The DM250 could do it every day if we wanted."

INCREASED EFFICIENCY

The small DM250 efficiently completes the 500-foot wells.

"We can go that deep with a single axle, non-CDL truck and pull 500 feet of rod," Miller said. "It's small, but can run 20-foot rods. There are other small rigs, but they only run 10-foot tooling."



Purchased for its mud rotary capabilities, the DM250 performs air rotary rock wells in palm-sized cobbles using an auxiliary air compressor.

Accustomed to using 250 gallons of fuel per day with their large air rotary rigs, the fuel efficiency of the compact DM250 is a bonus.

"With mud rotary on DM250 we're using 25 gallons/day. Our fuel bill is a lot less," Miller said. "Plus the compact, 4-wheel drive is easier on and off muddy sites. With no CDL required, any employee can drive it."

SIMPLE SERVICE

According to Miller, universally-sourced parts make for simple service.

"If you need a certain bearing or fitting you can get them locally," Miller said. "Plus it's easy to work on with everything out in the open."

Having a fleet of foreign-made air rigs, Miller said he appreciates the DM250 being manufactured in Kansas.

"It's made in the USA so we're not paying a fortune on parts," Miller said. "You can always reach someone on the phone or via text."

For Miller, parts inventory and support are where other companies come up short.

"We also like that DRILLMAX® has Geoprobe® as a parent company. We knew we'd have somebody to help keep inventory and provide support out in the field," Miller said. "They're established with support infrastructure. I don't care what kind of drill you have, it's going to breakdown so it's about how fast you can get back up and running."



Easily Access Mud and Air Valve Controls

EASILY OPEN AND CLOSE FROM HANDLES POSITIONED ABOVE CONTROL PANEL.

Eliminates stepping down from platform or walking to side of rig to control mud and air flow.



Lightweight DM250 outperforms bigger rigs, using less fuel and increasing maneuverability on tricky sites.

Efficiency Plus Simplicity Equal Performance



A second-generation water well drilling business began in 1985, **ROSENDALL WELL DRILLING** in Michigan realized increased demand for their residential drilling services as new construction took off. A small company with five employees, owner Jeff Rosendall was considering updating his aging rig when Donnie Wood, general manager, stopped by to introduce DRILLMAX®. Other drillers in the area had recently added DRILLMAX® rigs to their fleets, so Rosendall had ready access to reviews.

"I inquired with other local drillers who were happy with their DRILLMAX®," Rosendall said.

Rosendall was no stranger to Geoprobe®/DRILLMAX® equipment. When he decided several years ago to diversify his business to include environmental drilling, he launched this new service line by purchasing a used Geoprobe® 7822DT.

"After three years there was enough demand we bought a new Geoprobe® 7822DT," Rosendall said.

Now he too is among those happy with their DRILLMAX® purchase. He is impressed by the performance that comes from the smaller rig.

"It outperforms our older rig that is three times its weight," Rosendall said. "The faster rotation speed and faster head movement up and down increases efficiency. It's easy to operate — thanks to the layout of the control panel — and maneuver so we do more work in less time."

Fuel usage also contributes to overall efficiency.

"The DM250 uses less fuel which is increasingly important as prices continue to rise," he said.

He's also come to appreciate the efficiency and simplicity of the rod carousel. On his older rig, he would have to look up to watch where the head was on the mast in order to determine when to slide it over to pick up drill pipe out of the rod carousel.

"On the DM250, when head reaches positive stop at top, you know it's time to slide over to pick up the rod," Rosendall said. "It makes it easier to use and takes the guess work out of it for more efficient drilling."

Overall, the DM250's capabilities and ability to access sites have met Rosendall's needs.

"Almost every job we do I'm impressed with how well things go," he said. "It has outperformed the big rig I had with better performance and faster response."



Engineered Carousel Features Save Neck

Determining when top head is in position to pick up or drop off the next rod in the DM250 rod carousel can all be assessed from the control panel without staring into the sky.

- cushion at top of drillmast provides indication you've reached position to slide over to rod in carousel.
- grooves along base of carousel align with arrow to indicate alignment with top head.



drillmaxrigs.com/250NECKSAVER



WATCH
features
eliminating
driller's neck



Technology of self-feed carousel combined with pulldown power and pump result in faster production.

Technology Produces

The 42-year-old, family-owned **AMERICAN DRILLING SERVICES** in Florida, relied on homemade drill rigs to complete primarily 2- to 4-inch residential water wells. With demand increasing, they began looking for newer technology in order to drill more.

"Technology is always changing. We used to drill galvanized steel with cable drilling. Now we're exclusively rotary drilling," said William Diaz, driller, who has been with the company for seven years. "The technology gets better, and things get easier."

They found technology — and speed — they sought in the DM250.

"We used to do one well per day, occasionally two. The DM250 has helped us keep up with the workload by being able to drill quicker," Diaz said. "The pulldown power of the top head is significantly stronger than our previous rigs. With the mud pump, we can clean out the hole a lot faster, which means less waiting around."

With their older rigs constantly breaking down and not having the luxury of taking time off, finding a service center near them eased concerns should they encounter trouble and need a mechanic.

"We're not breaking down all the time, which is a huge advantage compared to our older rigs," Diaz said. "Overall it's a great rig. I recommend the DM250 to anyone doing 2- to 4-inch wells. It makes me happier because I've now got air conditioning, and I love the self-feed carousel. It's a fast, great rig."




Top Head Travel Speed Accelerates Clearing Hole

Minimize time spent standing around waiting on cuttings to rise to top of hole thanks to the top head travel speed on the DM250. The fast travel time up and down the mast increases the uphole velocity pulling mud and cuttings up out of the hole. So rather than wasting time waiting on cuttings to come up out of a 300-foot deep well, you can move on to the next step.

- significantly cut time to clear cuttings from hole with top head travel speed.
- minimize time spent clearing mud and cuttings from hole to maximize production.
- trade less time standing and waiting for more time drilling and making money.

drillmaxrigs.com/250TOPHEAD





Overall power, available options, small size, and bigger jacks on latest DM250 models make slipping into lake lots, leveling up, and drilling through tough formations efficient even during frost laws.

MI

Better and Faster

During five years of business, **KING WATER WELLS** grew from a crew of three, running one rig, to 12-14 employees, running a big red rig and a 2008 DM250 everyday. They continually considered alternatives to more efficiently install residential and personal irrigation wells on lake lots around their Rockford, Michigan, shop.

"We could do cable tool, but prefer rotary," Kegan King, owner, said. "We bought the used DM250 to test whether it had ability to do rock wells through glacial formations."

The 2008 DM250 slipped behind houses and performed well when selective on which holes to send it on. As workload increased and territory expanded, they concluded enhanced efficiency meant investing in a more flexible fleet.

EFFICIENCY

Requiring a small drill rig to still slip behind a house or up on a hill like their legacy DM250, they considered alternatives and observed a couple of DRILLMAX® demos before deciding on a 2021 DM250.

"The 2008 DM250 was nice, but the 2021 DM250 is better and faster. The efficiency of the 2021 DM250 means we do jobs in a day where the older rig couldn't," Mitch Briggs, driller, said. "It does everything so quickly. We timed it, and from pull in to drill was 12 minutes."

King agreed, "Overall power on the 2021 DM250 — mud pump, air compressor, top head — means we don't worry what job we send it on. It has the power to get through the formation. It minimizes water and additives used so we save a day or more on production and keeps up speed of big rig."

OPTIONS

The 2021 DM250 offers options they desired when investing in a rig.

"It's been huge to have the power to get through tough formations doing 50- to 300-foot wells. The legacy model had a 4.5X5 piston pump. The 2021 model has a 4X3X13 centrifugal," King said. "With the 2021 DM250 we don't have to pick and choose based on drilling formation. If it's a tight spot, we send the DM250."

On lake lots where they otherwise would have used a cable tool, the 2021 DM250 is tailored to meet their needs.

"The 2008 DM250 would struggle when we got into cobble-sized gravel. The 2021 DM250 has so many different options on it, we have always found a way to make it happen," Briggs said. "The 2021 DM250 blows me away every time we take it out."

COMPACT SIZE

The small size makes the DM250 their go-to rig on most jobs.

"Some places we just can't get big stuff in and cable tool is time and labor intensive, so now we use the DM250," King said. "We can run a smaller tender truck and don't run as much water."

Compact size combined with the larger jacks on the 2021 DM250 simplifies matching rig to job.

"On a recent lake job there was no way we could get a full-size rig in, and cable rig couldn't get level on the terrain. Because of the bigger jacks on the smaller DM250 truck, we could get between houses and level up," King said. "All these spots have landscaping or retaining walls. Rather than saying you need to move this or that or attempting to get a big rig in and waste a day of labor, it makes my job easier to just send the DM250."

The lightweight DM250 delivers advantages during frost laws and savings in overall operation.

"With frost laws, many have a hard time getting on jobs, but this rig is under weight. It gets around so well that for 90 percent of jobs we just back in, drill, pull out. Takes less manpower than moving mats," Briggs said. "It just travels well on or off road. Even if it's a big rig job, this rig drills so well we use it and save on fuel."

COST SAVINGS

Fuel efficiency is just one way the DM250 reduces operation costs.

"The DM250 costs half as much as full-size rig, but capable of doing 90 percent of holes," King said. "We spend less on tires, fuel, CDL-licensed employees. Payback is quicker than a big rig."

Not requiring a Class A/B CDL offers additional advantages as well.

"Being non-CDL is advantageous in today's labor market," King said. "Truck drivers don't make good drillers. They just like to drive."

SERVICEABILITY

Simplicity of servicing the DM250 also makes the list of advantages.

"The DM250's open deck means everything is simple, clean, easy to access. Can get deck plates off and service the rig," King said.

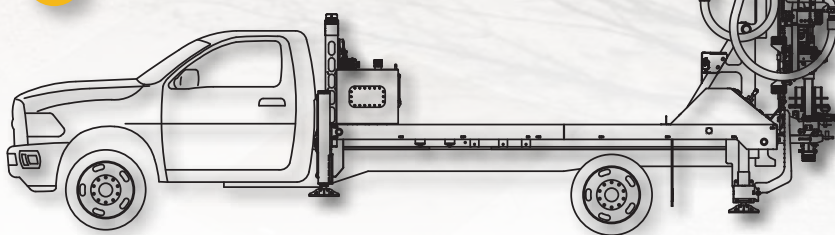
Briggs agreed, **"If there's something wrong, it's simplistic enough you can handle it on your own. What takes four to five hours to fix on the big red drill takes five minutes on the DRILLMAX®. Everything about it is quicker — driving, set up, drilling. It's just user-friendly."**

DM250

BIG RIG IN A SMALL PACKAGE UNDER CLASS A/B CDL FOR POWER ON TIGHT JOB SITES: residential water well or geothermal

Simple operation and surprising power provide fast production with 22-foot stroke. Designed for 2- to 6-inch shallow wells, choose from a wide range of options, tailoring your DM250 to your geography and production needs. Selecting from standardized options reduces hassle of routine maintenance and makes possible repairing your rig from the field with a phone call to our team of expert service technicians.

 drillmaxrigs.com/DM250



342 in.

396 in.

Safe Carousel Option Promptly Pays for Itself

ELIMINATE WORRY WHETHER HELPER WILL CALL IN SICK WHEN YOU CHOOSE CAROUSEL OPTION THAT SHOWS UP EVERYDAY.

- create opportunity to task helper with other site chores or run a one-man operation.

- pipe locks into position within pod canceling chance pipe falls out.

- rotate carousel to place indicator arrow between grooves on base, push handle, and lock carousel into position for safe travel.



- mechanical alignment of top head with rods using indicator arrow and grooves on base eliminates need for electrical sensor that could malfunction.



Table Affords Access to Casing from Controls

TABLE OPENING POSITIONED OUTSIDE RIG PERMITS PLACING CASING WITHOUT BODY CONTORTIONS.

- easily access table opening positioned at back of rig rather than struggling to reach inside rig.
- contact casing while remain at control panel.
- remove bushings to set up to 12-inch casing.

Top Head Carriage Rollers Make Travel, Service Smooth

ROLLERS FOR TOP HEAD CARRIAGE CREATE QUIET, SMOOTH HEAD TRAVEL WITH SIMPLE MAINTENANCE.

- long-lasting rollers are easily adjusted.
- rollers permit fast and safe top head travel.
- easy maintenance keeps rig performing like new.



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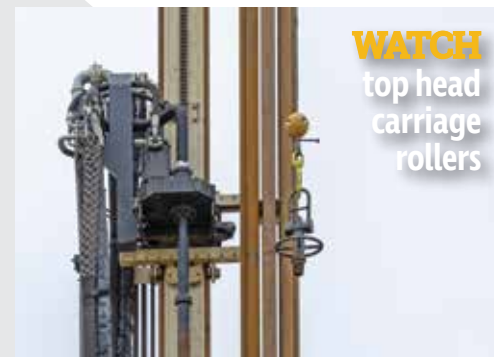
WATCH
rod carousel



WATCH
easily accessed
table assembly



WATCH
top head
carriage
rollers



INNOVATIVE RIGS *plus*



DRILLMAX® Drill Pipe: Now Available in Multiple Sizes

Expanded offerings of DRILLMAX® drill pipe accommodate different applications performed by water well drillers across the country. Designed as part of the whole system — drill rig and tooling — there's a primary rod for each specific DRILLMAX® water well rig. However, they're engineered to be able to be used on any rig in the DRILLMAX® line.

"It takes both a drill rig and a tool to make a hole," Mike Carlin, tools engineer manager, said. "We offer a better overall system with ability to react to feedback from drillers on both sides of the system."

Higher-grade material for the mid-body strengthens pipe for increased durability. Engineers also added a stress-relief groove where pin end meets body for additional durability. The radius spreads the load on the rod to increase fatigue life of pipe. Higher hardness tool joints also facilitate longer wear life.



- *Stronger: higher-grade material and engineered stress-relief radius enhance durability*
- *Increased Flow Capacity: 30% more on 2 3/8 MR*
- *Lightweight: compared to legacy steel drill pipe offerings*

	Legacy MR	DRILLMAX® 2 3/8 MR	DRILLMAX® 2 3/8 MJ	DRILLMAX® 2.0 IF	DRILLMAX® 2 3/8 IF	DRILLMAX® 3 1/2 IF	DRILLMAX® 2 7/8 IF
Tool Joint OD	3 inches	3 inches	3 inches	2.375 inches	3.5 inches	4.5 inches	4.5 inches
Tool Joint ID	1.5 inches	1.75 inches	1.5 inches	1 inch	1.75 inch	2.68 inches	2.125 inches
Weight/20-feet	178 lbs	142 lbs	176 lbs	128 lbs	198 lbs	319 lbs	319 lbs

Multiple sizes available in 20-foot length.

Mayhew Regular — More than 15% Lighter. More than 15% Stronger. More than 30% More Flow Capacity.

DRILLMAX® Drill Pipe Saves Production Time, Rig Wear

CHRISTIAN & PUGH WELL DRILLING AND SERVICE in Virginia constructs wells by running a smaller diameter screen through casing. Since using DRILLMAX® engineered and manufactured drill pipe on their 2021 DM450, production times have decreased.

"The drill pipe helps us telescope the smaller screen much faster," Matt Cunningham, owner, said. "It's lighter, and the ID of the drill pipe is larger, and allows us to get more flow."

The significant difference in production rates prompted them to purchase a second set of pipe for their legacy model DM450.

Pulling drill pipe out of deep holes with the winches also becomes easier thanks to the lightweight pipe.

Prior to using the DRILLMAX® drill pipe, a company drilling 500-foot geothermal holes had to use the top head to pull the first three of the total 25 rods because the winch wasn't strong enough. Now they can use the winch to pull the whole string, ultimately saving wear and tear on their rig.

"The same through hole but less weight means carrying more pipe on the machine without negative impacts to drilling process," said Dillon Sickler, regional rig sales and service specialist.



Vertical flats machined into pin end of pipe allow it to rest in alignment on the carousel for more efficient drilling.



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WATCH engineered features of DRILLMAX® drill pipe

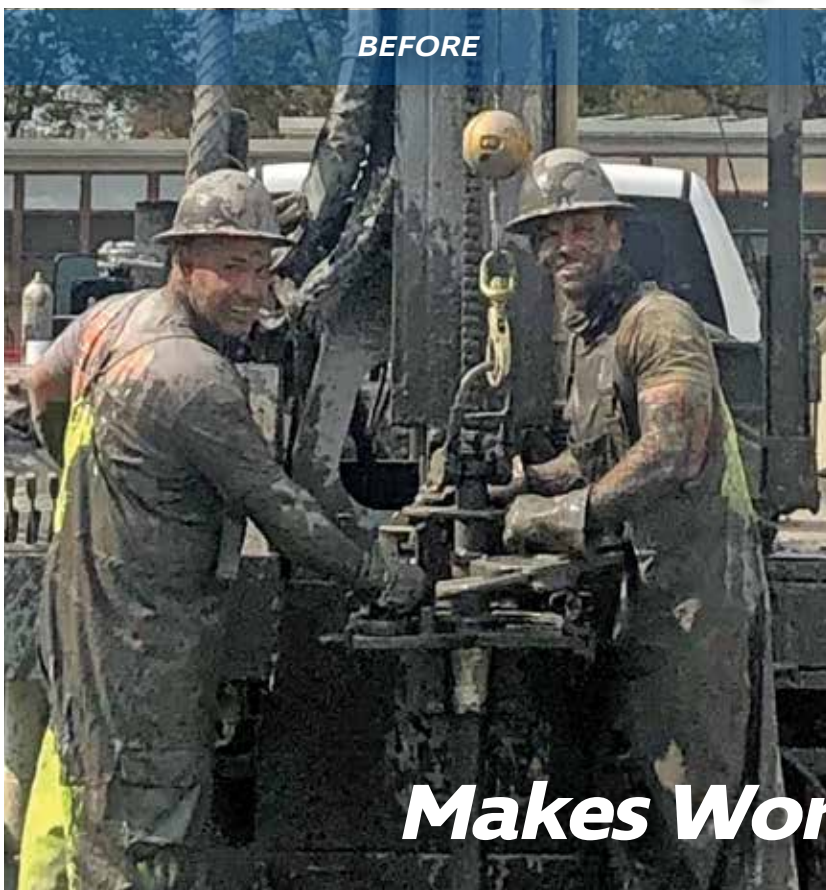


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INNOVATIVE TOOLS equals DRILLING SUCCESS



Makes Work Less Work

Tripping heavy rods dripping with mud out of deep geothermal holes was a messy, difficult undertaking until co-founders Joseph Dalba and Ryan Maletta of **ISLAND GEO DRILLERS** in New York tried the DRILLMAX® spring assisted swivel hoist plug.

"The mud weight made the rod heavy and we were having to use a pipe wrench to unthread them and then quickly try to put the wrench down to shield ourselves from spewing mud," Joe Dalba, president, said. "The spring in the spring assisted swivel hoist plug takes the weight of the rods so you can spin them by hand and not use the pipe wrench. This makes it easier to deflect mud and stay cleaner."

Simply staying clean comes in a close second to faster, safer production for the geothermal drilling company.

"It increases speed of tripping out by 15 percent, and in geothermal mud rotary you have a ticking clock for that hole before it collapses," Dalba said. "The spring assisted swivel hoist plug allows us to get the rod out faster and get the loop in sooner, minimizing chance for hole to collapse. The faster production gives us extra time to get the loop in safely."

Standard hoist plugs would bind up in freezing conditions Dalba explained. The additional swivel action on the spring assisted swivel hoist plug keeps the cable from winding up and trying to sling the rod back

in the hole. Steve Simmons, owner, **ROY SIMMONS & SON WELL DRILLING** in Michigan, agrees the spring assisted swivel hoist plug is a lot more user-friendly.

"They're a lot easier and a lot faster — not scrunching the line up when tripping out," Simmons said. "It pulls up on the line the whole time so you just give it a twirl and pop you're done."

Both appreciate how the spring assisted swivel hoist plug minimizes effort required to unthread and return rods to the box.

"It's a lot easier on the wrist when spinning off rods to put in rod loaders," Dalba said.

The spring assisted swivel hoist plug applies just the right amount of tension to make rods unscrew easier.

"It takes the effort out of what the driller and helper have to do, making job easier and better," Simmons said. "Anytime you buy a tool that makes life a little easier, it's a good value. Just makes work not so much work."

Dalba concurs the tool is a good value.

"It paid for itself in the first day," Dalba said. "It's definitely a good buy, I just wish they had made them sooner."

Spring Assisted Swivel Hoist Plug

Bears rod string weight for efficient removal of rods from tool string.

- eliminates need to bump controls to keep winch tight
- reduces use of pipe wrench to break threads
- minimizes wear on threads thanks to less binding
- lessens frustration and strain on driller and/or helper
- 12,000 lb in-line working load limit
- available in multiple rod sizes



drillmaxrigs.com/HOIST





Happy Collision of Geoprobe® & DRILLMAX®

DRILLMAX® joining Geoprobe® in 2017 created the opportunity for Geoprobe® engineers to increase focused investments on water well and geothermal rigs and tooling innovations. Interestingly, factory engineers have long been using Geoprobe® rigs (direct push, sonic, rotary) and tooling systems to test creative ways to install water wells and geothermal loops. In fact, you may be surprised to learn our main R&D building in Kansas utilizes geothermal HVAC with vertical loops installed many years ago using Geoprobe® equipment.

We like when customers are creative and open to chat about new innovations. Our engineers enjoy evaluating customer needs; considering rig features, tools, or

techniques to help them be successful; and then engineering cost-effective solutions to make difficult field work faster, easier, and safer.

We get excited when customers stretch the capabilities of their equipment to get projects done. Here are a few examples of customers successfully using Geoprobe® equipment in non-traditional ways. If you have specific drilling challenges you would like to discuss, please contact us.

View the complete line of drilling rigs at:



geoprobe.com/DRILLING-RIGS

Ventures into Water Wells with Geoprobe® 7822DT

EICHELBERGERS INC., Mechanicsburg, Pennsylvania, was approached by a municipal client who needed to do some exploratory water supply well drilling in a remote, environmentally sensitive area in northern Pennsylvania. No rubber-tired vehicle access was permitted at this wooded location. After considering a variety of options to install these wells, the decision was made to use one of the company's Geoprobe® 7822DT machines.

The crew tracked the 7822DT through the steep, mountainous terrain following a crude path and weaving between trees so as not to cause any damage. Once the machine was maneuvered to the site, the crew assembled 500 feet of 2-inch air line from a high pressure auxiliary air compressor to transport the supply of air to the 7822DT for the air hammer drilling.

All tooling, casings, and water supply tanks were moved to the well location with a track skid steer.

The crew began the job by augering a 12-inch hole through the overburden to a depth of 35 feet to accommodate the installation of the 10-inch steel surface casing.

"I thought that installing the 10-inch string of casing would be the most challenging part of the project," Ted Gayman, executive vice president, said. "But the Geoprobe® machine performed flawlessly to complete this portion of the job."

Following the installation of 35 feet of 10-inch casing, a nominal 9-inch diameter hole was drilled to a depth of 60 feet using a percussion air hammer. The crew then installed 60 feet of 5-inch steel casing with a drive shoe. After seating the casing into the bedrock, a nominal 5-inch open rock hole was advanced to a final depth of 182 feet using a percussion air hammer.

"The crew did an outstanding job as we ventured into the water well market with the 7822DT machine," Gayman said.



Connor Neely, driller (left), and Chris Chronister, field superintendent, add a drill rod during the 5-inch air percussion drilling.

7822DT Goes Geothermal

During the last 23 years, Tony Poulter, vice president and co-owner of **RAZEK** in Louisburg, Kansas, has operated a Geoprobe® machine. And it seemed to him the second question he was asked every day was, "How deep can that thing go?" And the answer has always been, "until we hit rock or run out of rods!" Poulter said. "Of course the first question was, 'Y'all drillin' for oil?'"

The answer to both questions has now become more complicated for Poulter and the company.

Poulter attempted to drill a 6-inch boring to 150 feet for the installation of geothermal loops at their headquarters in Kansas. They spent time researching whether they could even attempt rock drilling with their 7822DT, and many experts told them they were foolish to even try. According to Poulter, "they said rock drilling must be done with a larger rig with more weight, more torque, and higher rotation speed." But, as Poulter found out, the 7822DT outperformed all of the 'experts' and created a very lucrative niche market for their firm.

Direct push refusal at the property is around 8 feet, and at 12 feet they encountered clay overburden with intermittent layers of weathered limestone and some shale. During the first 30 minutes of air rotary drilling with the 7822DT, they passed 50 feet and felt "very confident," Poulter said. Limestone bedrock was encountered around 80 feet, and the drilling rate slowed. As they advanced deeper into the boring, and the rock became tougher to penetrate, the 7822DT never slowed down.

"We passed 100 feet at the 90-minute mark and ended up at 162-feet below ground surface, just 3.5 hours after beginning (give or take a few breaks along the way)," Poulter said. "We could have kept drilling deeper but, as history has proven, we could only go until we ran out of rods!"

They drilled 6-inch diameter borings to install 15 geothermal loops at their facility to upgrade the company's furnace and air conditioning systems for ground source geothermal heating and cooling.

Tripping out in 5-foot increments was no small task, but the hydraulic break-out system worked flawlessly on every joint.



Installing geothermal loops in 6-inch diameter, 150-foot deep bores with a 7822DT using an industry-standard drill rod with a side-port swivel connected to rotary head. An external air compressor was used to clean cuttings out of boreholes and activate downhole hammer.



Factory Tour Seals Deal

Fourth generation **Hintzke Well Drilling** will celebrate its 125th year from the same New London, Wisconsin, address where they began installing wells and servicing pumps from in 1896. Jason Hintzke, owner, and his two brothers now run the business his Great Grandfather started, building the company's first steam engine well rig in 1901. Progressing to a 5-horse, hit-and-miss engine rope rig, and then in 1953 to a cable-tool rig, they still run the 'old girl' along with two 'big rigs'.

"It was time to replace the cable rig. It takes too long," Hinzke said.

While in Nashville, Tennessee, for the National Ground Water Association show they first laid eyes on the DRILLMAX® DM250. Then they ran into the guy who had purchased the DM250 on display.

"He told us how impressed he was," Hintzke said. "After the show we stuck around to see it run. Donnie invited us to come to the factory to see it."

While at the Kansas factory, they toured the production facility and interacted with engineers and service technicians.

"There's not a crumb of dirt on the floor. You could do surgery in the place. Everything is organized with parts barcoded. That's why they keep the rigs the same color, so they can send parts the same day," Hintzke said. **"They showed us on the computer every conversation about a rig so service technician knows exactly what rig schematic, its serial number, and the history so he knows what he's talking about when you call."**

They also put their hands on the controls to test run a DM250. He and his brother were convinced it would do the job.

"The trip sealed the deal, looking at the factory and putting hands on controls," Hintzke said. **"We were nervous about spending that kind of money if we weren't sure it could do job. But drilling into hard shale there, it did wonderfully. The 8.75-inch bit went through clay and shale like butter."**

They were impressed with rig speed for its size and also the fuel efficiency.

"The DM250 uses seven gallons of fuel when our cable rig uses at least 14, 23 with air," Hintzke said. "With fuel prices the way they are now that's important. It'll get 9 miles-per-gallon where our big 72,000-lb rig gets 3 to 4 mpg to drive down the road."

They did additional research chatting with members of a social media group confirming they weren't having any rig troubles.

"We don't want to be wrenching on a rig all the time. We want to be drilling. It's a well thought out piece of equipment," Hintzke said. "Having console on driver's side scared me a bit, but once we pulled 160 feet of rod out of the ground in three minutes, I knew I would get used to the controls in no time."



Service technician Merlyn Andres, left, and engineer Larry Screen, right, put their heads together to solve a DM450 top head issue, beginning disassembly at 6 a.m. to get customer on road by 5 p.m.

Service Backed By Engineers

Drillers praise their DRILLMAX® rigs for reduced downtime and simple maintenance. Drillers also acknowledge peace of mind knowing their DRILLMAX® rig is backed by stellar service support.

"I don't care what kind of drill you have, it's going to breakdown so it's about how fast you can get back up and running," said Scott Miller, vice president, **NORTHERN VIRGINIA DRILLING**.

Randy Shepler, owner, **SHEPLER WELL DRILLING**, experienced an air compressor leaking oil. DRILLMAX® promptly diagnosed and fixed the problem.

"Service after the sale is everything, especially with the new technology on these rigs," Shepler said.

One day **KING WELL DRILLING** noticed a hydraulic oil leak from transfer case. DRILLMAX® responded quickly to resolve the issue.

"It's been great ever since. They will take care of service you need to keep going. They don't just sell it and forget it," Kegan King, owner, said.



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SOUTHEAST SERVICE CENTER



Maintaining a Bustling Business

Service Technician Hays Browning rebuilds a top head from a legacy DM2500.

With roots in the drilling industry back to his Grandfather in South Carolina, Kenny Baker, owner, **KENNY BAKER WELL DRILLING LLC** in Florida relies on his fleet of three DRILLMAX® rigs to get the job done. A legacy 2006 DM350, a legacy 2016 DM350, and a new 2022 DM250.

"I'm 60-years-old, so I don't drill anymore. My sons do the domestic and center pivot wells," Baker said. "We do 60 wells a month and are 200 wells behind. Lehigh is 10 square miles of nothing but wells."

According to Baker, people are moving to the area from far and wide with homes sold within days of going on the market. So they were scrambling when their primary drill rig — the 2016 DM350 — was sucked into a sinkhole.

"We were needing something to back up our 2006 DM350 while the 2016 DM350 is repaired," Baker said.

The solution was adding the DM250 to their fleet.

"The new DM250 has larger plumbing and a big pump compared to the older model DM250s, which directly impacts production drilling," Baker said. "The DRILLMAX® machines are just good machines."

LEGACY PRODUCT SUPPORT

Components of the 2016 DM350 are now being rebuilt. This will be the second time the 2016 DM350s carousel, which was built prior to Geoprobe® purchasing DRILLMAX®, has been reworked.

"When I purchased the 2016 DM350, the carousel wasn't the same as my 16-year-old DM350. So instead of drilling four wells a day, I could only drill one," Baker said. "Ryan Kejr, engineer, came down, watched us drill, reviewed the 2006 DM350 carousel, and reworked the 2016 DM350 carousel."

Baker was pleased with the service timeline and results.

"Ryan asked to have the 2016 DM350 for two weeks. We got it back in 12 days," Baker said. "The day he drove it back we drilled two wells."

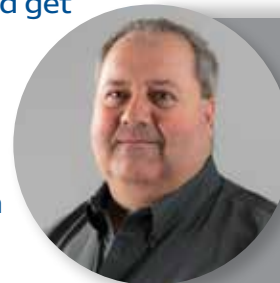
The attention to customer concerns solidified the value of Geoprobe®/DRILLMAX® service in Baker's mind.

"I didn't know anything about Geoprobe®, but it was impressive they came to the table to make it right," Baker said. "Shows they're in it for the long haul."

SERVICE AND PARTS SUPPORT

Baker has come to rely on the Geoprobe®/DRILLMAX® Southeast Service Center for keeping his rigs operational — whether it's routine rig maintenance or more extensive repairs and service.

"Anytime I need anything, I give Todd a call. If I need a top head rebuilt, I just give them a call," Baker said. "We don't have time to be down, so it's important to get parts quickly and get it fixed. We lose \$10,000 a day if we're down. I'm real happy with the service from the Southeast Service Center."



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Right Guys, Right Skills for Rig Refurbish

Getting started in geotechnical drilling, by the mid-90s **CHESAPEAKE GEOSYSTEMS** in Maryland grew into geothermal.

"For the past 10 years we've focused on larger commercial geothermal projects along the East Coast," Chris Blanchet, owner, said.

With a fleet of nine drill rigs primarily comprised of Schramm rigs, Blanchett was disappointed in available rig options when he began looking to upgrade his fleet. So instead he looked to the team at the Geoprobe®/DRILLMAX® East Coast Service Center (ECSC) to refurbish his Schramm T450WS in 2018-19.

"We needed a track-mounted, deck engine geothermal rig focused on speed, efficiency, and ease of maintenance. We wanted a manufacturing-affiliated service option within 100 miles. If service isn't there, the rig is basically useless," Blanchet said. "There was no viable alternative rig to do what we do or substitute what we had. We decided to make new what was old."

Blanchet was so pleased with the results he has had two more rigs refurbished by the team and has a fourth one in the shop now.

"In my opinion the team is comprised of all the top former Schramm service techs and engineers who sought a way to provide good support to water well market when Schramm focus turned to oil and gas," Blanchet explained. "They provide the best quality maintenance and service and are skilled in caring for the customer."

He describes the work as "successful" and "seamless."

"They put in the time and effort to solve the problem or point the customer in the right direction if they can't figure it out themselves," Blanchet said. "They went over the rig with a fine-toothed comb to identify issues and repair them."

Blanchet believes the rig looks and operates better than new.

"I've probably started up to 12 new rigs, and they all had time-consuming issues right off the bat," Blanchet said. "The refurb was put together perfectly and ready to roll into the field right away."

Blanchet feels confident taking any of his fleet to the ECSC team.

"They understand how drill rigs work and are open minded to working on all types of rigs," Blanchet said. "They provide a different level of service than any other service company I've used. They have all the right guys with the right skills. They know what they're doing and talking about and care about their customers. They're extra cautious not to cause downtime and are open and honest about what is going on. You can feel confident the right thing is being done."

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- July 31-Aug. 1 — Myrtle Beach, South Carolina
South Atlantic Jubilee
- Sept. 16-17 — Savannah, Georgia
Georgia Association of Groundwater Professionals
- Dec. 6-8 — Las Vegas, Nevada
National Groundwater Association



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“Donnie provides an open line of communication and you can trust if he says he’s going to do something, he follows through with it.

— Chad Kraai, owner,
Kraai Well Drilling, Michigan

“Dillon takes care of customers and has been straight up with us. We’ve built a great relationship and he’s been very responsive.

— Bart Cushing, owner,
Cushing & Sons, New Hampshire

CALL DONNIE OR DILLON

DONNIE WOOD, based at the Southeast Service Center in Ocala, Florida, puts his more than 20-years of experience to work helping new drillers with their setup and training. He leverages his mechanical skills, desire to help others, and easy-going communication style to consistently put customers' needs first.

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DILLON SICKLER, based at the East Coast Service Center in Oxford, Pennsylvania, spent more than a decade in the Schramm organization supporting mud rotary and air rotary rigs around the world. He enjoys spending face-to-face time with water well rig owners evaluating their needs and solving problems.



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