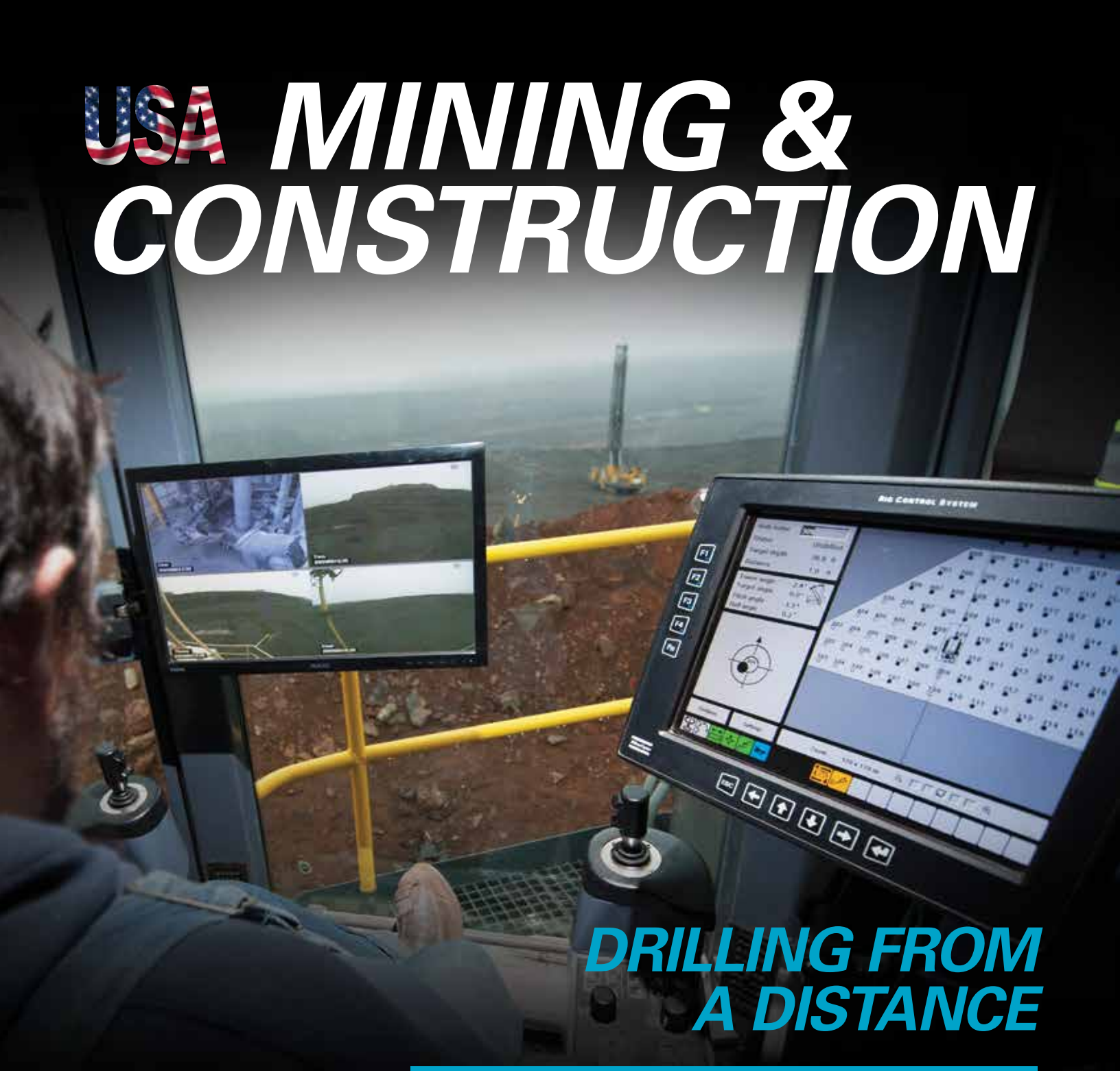
USA MINING & CONSTRUCTION



DRILLING FROM A DISTANCE

MECHANIZED ROCK EXCAVATION WITH ATLAS COPCO

NO. 2, 2016

Atlas Copco

EDITORIAL

"Bring your toughest challenges—we're working daily to be the team you trust."

Running and hiking have always been passions of mine. I especially enjoy these two activities as a means to *explore* new cities or better appreciate places I go frequently. I hope you'll have the opportunity to *explore* the Atlas Copco booth at MINExpo (#2121) and see why "The Future of Mining is Now." Remote operation, full automation and use of technology like our EDGE tool monitoring system, will be interactively on display along with a number of new products you will read about in this edition of Mining & Construction USA.

Rock Drilling Tools (RDT) are where production starts in any drilling operation, literally. And given the cost pressures in today's commodities and construction markets, selecting a drill string that best utilizes the capacities of your drill is crucial to minimizing your cost-per-foot (CPF). Our Teamalloy™ drill pipe catapulted ahead of the competition years ago to become the CPF leader in abrasive applications. This year Atlas Copco takes another exponential CPF leap forward with our new bit carbide and face design technology. We call them "Powerbits," and with them you'll see increased penetration rates and longer life in your most demanding operations.

I'm honored to have been named Business Line Manager for RDT in the U.S. It's bittersweet because it comes with the passing of a dear friend and mentor, Gene Mattila, whom you can also remember and celebrate with us in this issue. Like Gene, I'm a hands-on guy. I hope to be able to visit with many of you in the field to see firsthan how we can be a more valuable partner. Regardless of the type of drilling you have to do or the type of rig you're drilling with, our team, working in conjunction with our dealer and store networks, has application specialists who can optimize your production while minimizing your tooling cost-per-foot. Bring your toughest challenges—we're working daily to be the team you trust.

I look forward to visiting with you at MINExpo, and if the action in Vegas doesn't keep you out too late, or you're just in need of a run in the morning, I'll have my shoes....

Shawn Cheney
Business Line Manager—Rock Drilling Tools

CONTENTS

A MAGAZINE FROM ATLAS COPCO MINING, ROCK EXCAVATION AND CONSTRUCTION LLC

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NEWS

ATLAS COPCO AT MINEXPO 2016

With you since 1873 but with an eye on what's ahead — step into the next generation at Booth 2121 in the North Hall.

MINEXPO 2016 INTERNATIONAL

EMISSION-FREE SCOOPTRAM

■ The Atlas Copco Scooptram ST7 Battery load-haul-dump rig allows mines to go deeper without increasing ventilation costs. The battery-powered Scooptram ST7 Battery offers safety, comfort and versatility in a powerful machine. It does not require a cable like some electric units on the market yet still offers quiet operation without heat generation or emissions and comes automation ready. Technology improvements allow the ST7 Battery to run more than four hours on a charge while the battery takes just 10 minutes to change.

SPEED UP PRODUCTIVITY

■ Dimension stone quarries can get set up and drilling faster with the Atlas Copco SpeedROC 2F top hammer drilling surface drill rig. The SpeedROC 2F is built on an excavator-style carrier with full 360-degree range of access. All functions can be controlled through radio remote control, enhancing operator safety. The SpeedROC 2F is also compatible with the new accountability initiatives of Natural Dimension Stone Standard – ANSI/ NSC 373.

STRAIGHT-SHOOTING SIMBA

■ The new Simba S7 longhole drill is so precise that it was used to complete a successful trick shot on a pool table underground. The Simba S7 has modular automation, which allows drillers to choose from a range of features beginning with ABC Regular, a one-hole automation system, Drill Plan Handling and Void Detection, and the Extractor for greater control throughout more of the drilling process in broken rock conditions—even fully automated drilling.

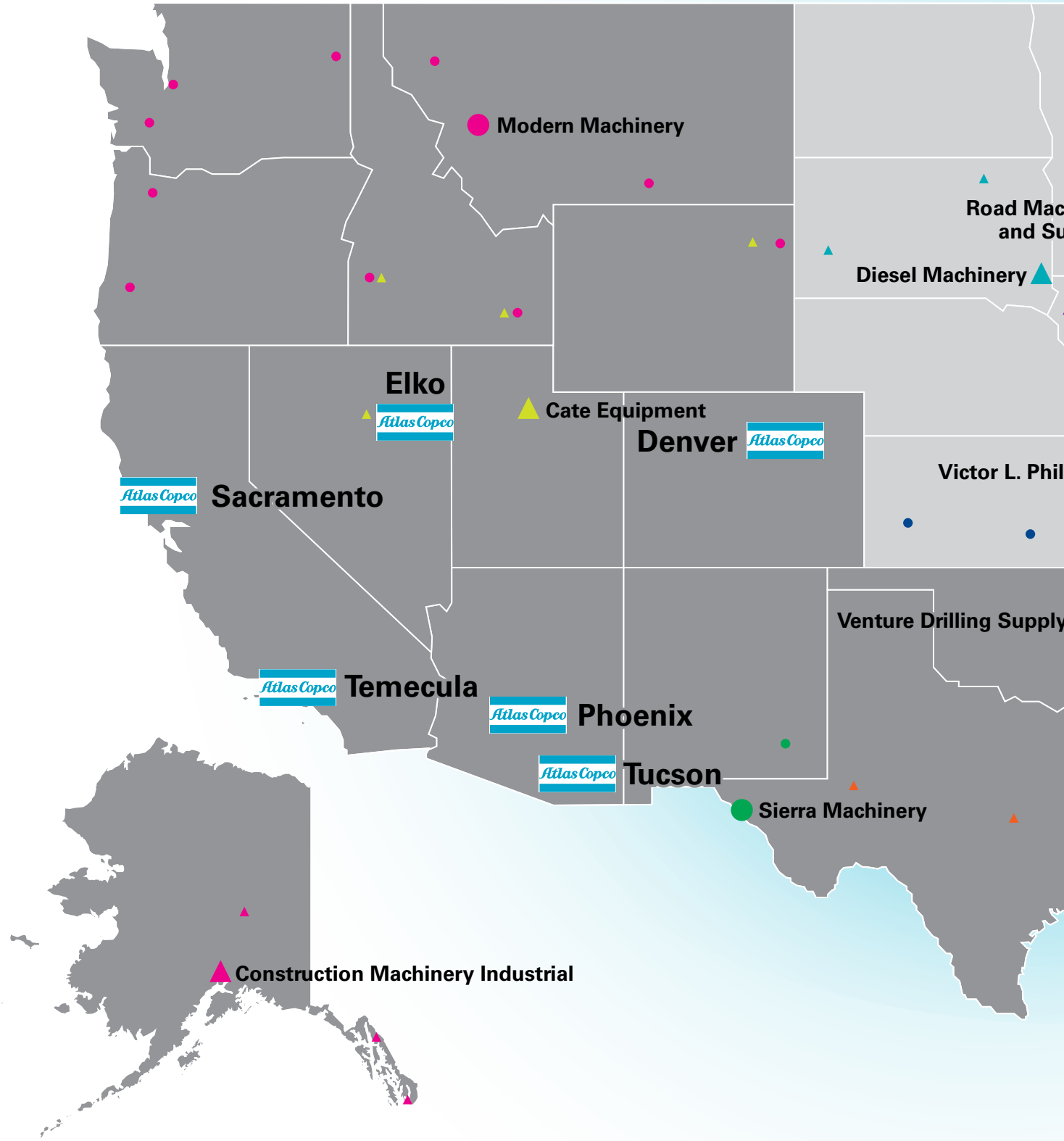
WHERE TO FIND US

Please contact your nearest Atlas Copco Customer Center. See what each location has to offer at **www.atlascopcousastores.com**

STATE	CITY	PHONE
GA	Atlanta	888-762-3745
MD	Abingdon	410-485-3366
PA	Clarks Summit	800-950-1049
CO	Denver	866-466-9777
NV	Elko	775-777-2204
MA	Ludlow	412-589-7439
FL	Miami	954-977-1041
PA	Mt. Morris	724-324-2391
WI	Milwaukee	414-760-1193
TN	Nashville	615-641-3000
AZ	Phoenix	623-780-0200
CA	Sacramento	877-236-0415
CA	Temecula	760-599-9299
AZ	Tucson	520-834-0400

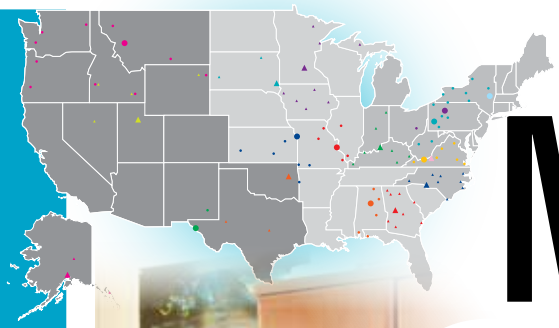
For further information, please visit www.atlascopco.us

ATLAS COPCO STORES



and AUTHORIZED DISTRIBUTORS

To find an Atlas Copco location or authorized dealer
www.atlascopco.us/usus/aboutus/contactus
www.atlascopcousastores.com/



MORE THAN STORES

Atlas Copco Customer Centers and Authorized Distributors offer much more than sales, service

Jim "Jimmy" Crawford, parts manager, Atlas Copco—Abingdon.

Atlas Copco customers frequently give their top reasons for selecting Atlas Copco as reliability and serviceability of Atlas Copco equipment and the responsiveness of Atlas Copco countrywide network of customer support.

While Atlas Copco will serve you on site anywhere you are, Atlas Copco ensures responsiveness close to where its customers are working through strategically located Customer Centers and partnerships with high-quality distributors.

The Customer Centers share much in common with each other, offering sales, rentals, parts and service. Each function as full service centers with highly trained field technicians. But visiting various Customer Center locations will show how well each is tailored to its customers' requirements, too.

The Atlas Copco Customer Center in Abingdon, Maryland, is a perfect example of how Atlas Copco stores tailor themselves to their customers' needs. Originally located in Baltimore, the store moved 16 miles north to Abingdon in 2011. Abingdon now offers customers easier accessibility and improved capacity from a larger yard and bigger service bay.

The current location at 1303 Governor Court in Abingdon is within a mile of I-95 and state highways 24 and 40. It not only gives customers easy access but the site offers 3,000-plus square feet of office space with an ample lot for our rental fleet and room left over to bring trailers straight in.

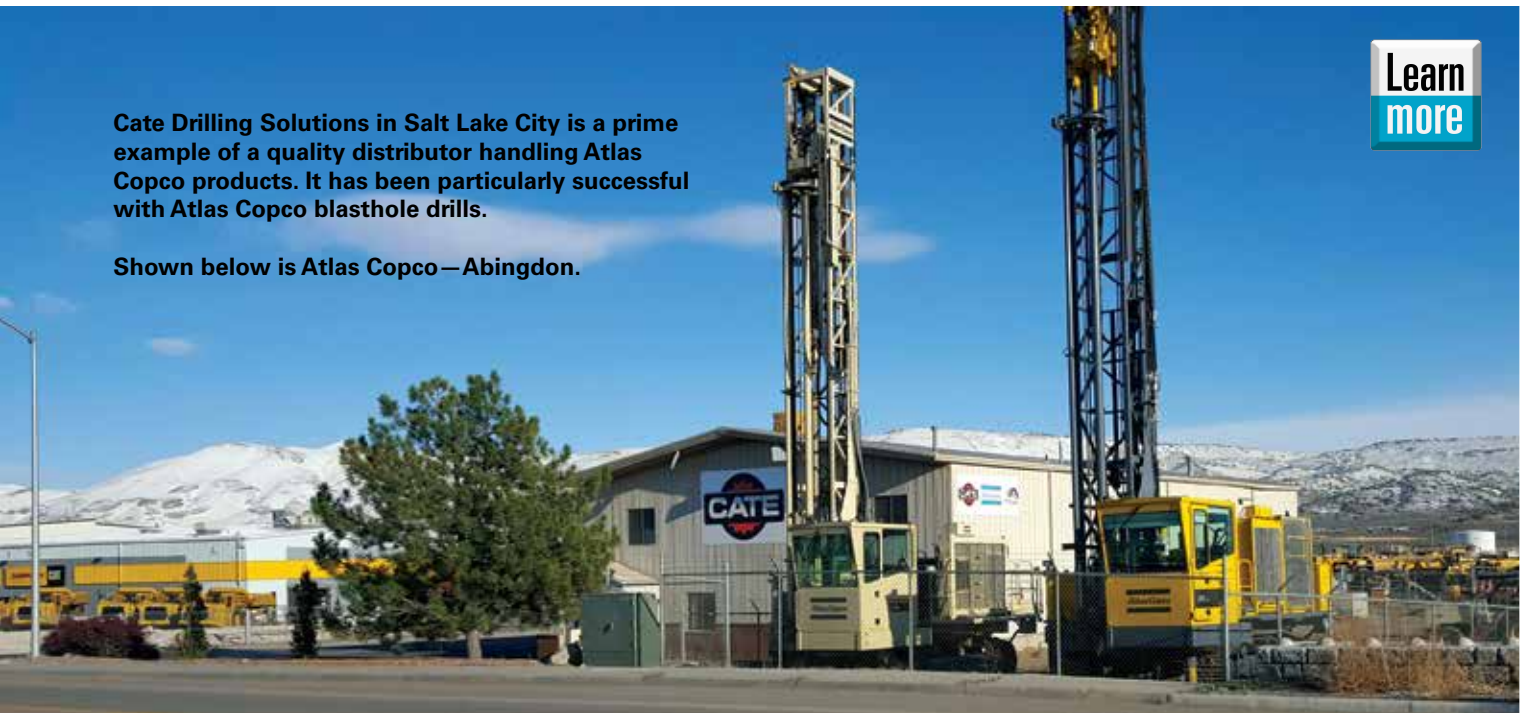
While facilities are important, personnel are the greatest asset to any location. Staff members are all experts in their fields, with interesting histories that seem to have led them to their positions.

Jim Crawford, parts manager in Abingdon, described why being part of the Atlas Copco team is so satisfying to him. "For one, it's so much more personal than where I've worked before. I'm not just a number here. And every day here is different, challenging. Many of our customers are drillers. It's a demanding industry. They count on us to keep them up and running every day."

Crawford turned to answer a phone. A customer needed to place an urgent equipment order, but the person who normally takes those orders was out. "I can do that for you," Crawford said. Off the call, Crawford said, "We do whatever it takes for our customers who sound a little desperate when they call. He was facing $10,000 a day in penalties. I can't really tell you the feeling I get, every day, when I tell a customer. 'Don't worry. We have your solution.'"

Atlas Copco also allies itself with distributors rather than duplicate services in a localized market. Atlas Copco may choose to support a competent dealership that has an excellent record of customer service. Atlas Copco remains directly accessible to the customers, as always, but defers to those authorized dealers when that is the best arrangement for its customers.

Reasons a distributor partnership



Cate Drilling Solutions in Salt Lake City is a prime example of a quality distributor handling Atlas Copco products. It has been particularly successful with Atlas Copco blasthole drills.

Shown below is Atlas Copco—Abingdon.

Learn more

can be a value vary greatly, said John Stinson, business development and aftermarket manager for Cate Drilling Solutions in Salt Lake City, Utah. One of three Cate sister companies, Cate Drilling Solutions specializes in blasthole drilling and surface mining in the Western United States.

Some of the Atlas Copco–distributor alliances evolved over time, based on existing dealer-customer relationships. "Here at Cate Drilling Solutions, we think it is our passion for drilling that sets us apart. Recently Cate changed the business name from Cate Equipment to Cate Drilling Solutions. We need to focus on the process and the result, rather than just the equipment."

Stinson said it also has a lot to do with simplifying things for the customer, reducing the number of people they have to deal with, improving efficiency: "Overall our goal is to have the proper parts, in the proper locations and backed with people with the proper skills. This will provide the greatest value to the customer. Coming to us, we can do it all for them. Our technicians all have Atlas Copco OEM-specific training. It all comes down to what provides greatest value to the customer. Cate Drilling Solutions appreciates the confidence our customers place in our products and people."

The network of Atlas Copco Customer Centers and authorized distributors means there's product support for Atlas Copco equipment wherever your job takes you. ■

Mike Wiand, field service technician, Atlas Copco—Abingdon, conducts a RigScan audit on a rental fleet FlexiROC T35, ensuring it performs to OEM standards for the next customer.

Proof of concept

Minntac takes Pit Viper Teleremote for a test drive

United States Steel Corporation has been undergoing a transformation of its core business processes amid challenging markets since 2013 with a series of a program strategies they are calling "The Carnegie Way."

Located on the Iron Range, a formation of taconite in northern Minnesota, U. S. Steel's Minntac Mine is looking to technology. Teleremote-drilling operations touch upon many of the company's values, supporting continued sustainability through increased efficiency for gener - tions to come.

The teleremote capability of the Atlas Copco Pit Viper 351 rotary blasthole drill rig was introduced to the Minntac operation so the company could see how it integrated into its existing operation. Remote operation of a drill rig generally gives mines safe access to areas that are otherwise difficult to drill or muck. It can also give a single driller the ability to operate multiple rigs simultaneously from one operating platform. This improved performance, greater productivity and enhanced safety are key principles of The Carnegie Way initiative.

Matt Luoma, Area Manager of Mine Engineering and Development at Minntac, said: "We just don't have the safety issues some other mines are faced with. We have competent rock and good drilling conditions throughout our mine. So we wanted to look at the teleremote Pit Viper as proof of concept regarding increased efficiency: Will it increase productivity?"

Teleremote operation eliminates some of the crew's non-drilling duties, such as inspecting the area around the rig prior to tramming, raking the cutting pile, plugging the hole, etc. Patterns can be completed faster since drilling is controlled from a distance. Tasks are reduced that allow the driller to operate multiple rigs at one time, whether the rigs are on the same pattern or in separate pits.

This is already being done in a Canadian operation, where drillers are operating two rigs from the same teleremote control station. And in one Australian mine, a driller operated an Atlas Copco Pit Viper drill rig from his remote operating station 1,347 kilometers (837 miles) away from the rig. In theory, a rig could be teleremotely operated from a control station anywhere in the world.

Minntac first wanted to see how well their experienced drillers would adjust to operating a rig without physically being in it. "We expected some pushback," Luoma said. "But actually, our drillers are all for it."

Minntac driller Casey Sunsdahl had no problem making the adjustment, though he admitted he was at first apprehensive. "Drillers get used to drilling 'by the seat of their pants,'" he said. "Eventually they begin to rely on feelings and sound, so they are unsure what will happen without those sensations. I was worried about it, too, at first. When the bit starts to bind, the string wants to bounce around. You can feel that in the rig. But I learned right away the cameras

and gauges more than make up for those sensations."

The mine committed two weeks for the demonstration period, allowing each driller three days to operate their diesel-powered Pit Viper 351 drill rig from the remote station. Although the teleremote unit was on loan from another mine and had been customized to its specifications, the system is compatible with other rig models and was adapted for use with Minntac's PV-351 without any problem.

Sunsdahl said teleremote drilling might have even refreshed his drilling skills. "In teleremote operation, you really have to rely on your gauges more. But that's not new. You were always supposed to be watching your gauges. When I try to compare it, I think the difference is, before I would watch my gauges to get a second opinion about what I believed was happening. In teleremote, gauges are primary, not backup."

"Just look at the views you get from these cameras." Sunsdahl zoomed in on the drill string until the revolving pipe nearly filled his screen. " ou can't see it this well from the rig's cabin."

Then he panned up the drill string to the rotary head. "And you can't see up the tower from your cab seat, either." He panned around the rig, then out to survey the entire bench. "I can see in all directions, so I know for sure no one is on the bench. I can see any possible obstacles before propelling the rig."

As for drilling operations, "It's basically the same," Sunsdahl said. "The only thing I had to learn was synchronizing the rig."

Sunsdahl said it's simple to synchronize the remote platform with the drill. First he boots up the remote station, and then goes to the rig to boot up. By the time he's done with his pre-shift inspection and back to the teleremote cab, the drill is ready to go. He said, "If someone else was there to do the pre-shift inspection and boot up the computer, I wouldn't have to go to the rig at all."

To test the operation of the teleremote unit at Minntac, line-of-sight radio signals were used for simplicity. Atlas ▶

Driller Casey Sunsdahl says operation of the Atlas Copco PV-351 is no different from 100 feet above and 1,000 feet away from the rig than if he were in it. At first he orried about not feeling the vibrations and hearing the sound from the rig cabin. "I learned right away the cameras and gauges more than make up for it."

Minntac cordons off the drill site during the demo. The sign reads, "Remotely operated equipment—Authorized personnel only," followed by the radio channel to contact the operator.

Copco drill trainer Bryan Scoggin, who was on site throughout the two week test period, said mining operations would typically run teleremote over their own wireless network, bandwidth permitting. Alternatively, mines can set up a separate wireless network dedicated to teleremote operations.

The teleremote control cabin set up for the test was the newest style of Pit Viper cabin mounted on a trailer. "The only thing it doesn't have that would make it totally self-contained is a bathroom," said Luoma. The cabin offers a larger, roomier interior with plenty of storage space, audio, power and climate controls. The remote operating station can be made to order.

Scoggin said, "One mine wanted its station set up in a pickup truck. So we removed the passenger side seat for the displays and control and put a little generator in the bed. That operator can drive down, do the rig inspection, boot up its computer, then drive back up to his remote location far from the drill."

Atlas Copco drilling trainer Bryan Scoggin.

Only the roof of the teleremote operating station can be seen atop the bench in the distance. The operator is 100 feet above and 1,000 feet away from the Atlas Copco PV-351. Line-of-sight is not required, however. The system has been demonstrated from distances as great as 837 miles. Theoretically, a rig can be operated from any location in the world.

PEACEFUL DRILLING

Sunsdahl rated drilling conditions for the ore body at this location as "medium hard for this mine," with a drilling rate averaging about one minute per foot. Total depths specified for this pattern s 150, 16-inch-diameter blastholes ranged from 35 to 50 feet.

Sunsdahl watched the rig control system monitor as his rig lined up over the hole, a green circle on the white display. He leveled up, checked air and water, and started the drill. Except for radio communications, there was no other sound in the rig and no vibrations—an extreme contrast when compared to the typical environment a driller experiences as 100,000 pounds of downpressure is applied to a tricone bit on taconite and his 400,000-pound Pit Viper shakes on its tracks. The bit generally makes a screaming noise like steel on steel until it settles deeper into the bore hole.

Real-time images on the drill platform's camera monitor showed the drill string slightly binding soon after the bit entered the ground. "The computer sorts this out. We're drilling in competent rock, except for the surface. It's a little bit fractured. That's normal. But some of that rock breaks free in big enough chunks to bind up the tricone. It could get stuck, but the rig has such great software that won't happen," Sunsdahl said.

"Normally I'd feel the string thrash or want to bounce around on the rig. I thought I needed to feel that so I could correct the bit's down-pressure. But I see it just fine on my monitor and by watching gauge pressures. Did you see how the computer immediately backed off weight on bit to get rotation back? That's exactly what I'd do, but I didn't need to touch it."

SAVING TIME BY ELIMINATING UNNECESSARY PROCEDURES

Because of rigorous safety standards to protect anyone who may be on the ground around the drill rig, standard drilling procedures at many iron mines in this region require drillers to exit the rig after each hole to reposition using a remote control.

The process is time consuming. Drillers must inspect the immediate environment for tramming obstacles, de-level the rig, propel away from the hole, exit the rig to rake down the cuttings pile, plug the hole, move the rig to the next hole 30 or 40 feet away, center over the next survey stake, then climb back in to level the rig before drilling can continue.

Teleremote operation renders most of this protocol unnecessary, as drillers don't need to leave their control station. De-leveling, tramming, centering and leveling up take as little as two minutes for the same pattern spacing. Raking and plugging are still required but can be done all at once upon pattern completion or at shift's end. And in Northern Minnesota, where winter temperatures are extremely cold and can be icy on the stairs and bench, the operator is safe and warm in the teleremote cab.

Luoma said, "Just how much time is saved waiting to rake and plug the holes all at once rather than one at a time? We're studying that."

Should Minntac opt for the teleremote control station, Luoma said the ultimate goal will be to cross-train all drillers on it. ■

Not so risky BUSINESS

Learn more

Driller who started a company at the beginning of the recession now continues success by turning to Atlas Copco SmartROC rigs

A-1 Drilling & Blasting Co. Inc. owner Tim Keefe and driller Craig Desanti

In 2008, while some drilling and blasting contractors were barely making ends meet or even closing, Tim Keefe was offered the opportunity to start up a his own drilling and blasting company. One problem—he couldn't get rigs.

In the midst of the most severe economic downturn in decades, lending institutions had locked their vaults, and drilling rig manufacturers set almost impossible conditions to financing. One in particular left him bewildered. "They said we first had to prove ourselves for a period of five years, and then they'd consider selling us a rig," Keefe said. "But Atlas Copco was a different story."

Keefe had drilled for other companies for more than 20 years. Today he is co-owner of A-1 Drilling & Blasting Co. Inc., a full-service rock drilling, blasting and excavation contractor based in Milford, Mass., with well-established customer relationships throughout Massachusetts and in Connecticut and Rhode Island as well.

Atlas Copco salesman Mike Wentworth, who is also product manager of Atlas Copco Surface Drilling Equipment, credited Keefe for an easy sales decision. It's not that Atlas Copco was eager to take financial risks, Wentworth said, but a manufacturer that knows the industry and its equipment defines risk differently. Atlas Copco equipment isn't just a commodity bought and sold but a market advantage whose technology and product support give a good driller the advantage. The tougher the market, the greater the advantage.

Atlas Copco sales representative and product manager Mike Wentworth can save rig data to a USB memory device.

"All it took was sitting down with Tim, recognizing his business sense, knowing his situation, and we were able to get him up and running," Wentworth said. "What I saw was, for one, here's a guy who already had 20 years' experience in the drilling and blasting industry. He had two good partners. And then he had a solid customer anxious for him to drill and blast for them. It really wasn't that much of a risk."

Keefe's first two rigs were an Atlas Copco ROC F9 and a ROC F7.

Keefe and his partners Brad Letourneau, Chris Keefe and Kevin Keefe have grown A-1 Drilling beyond Keefe's expectations. "The first two years were a struggle," Keefe said. But the fledgling company paid o f its first rigs and now owns 14. In addition to nine trucks for hauling and charging services and its original Atlas Copco ROC F9 and ROC F7, A-1 also has a ROC 780, three ROC T45 rigs, three ROC D3 rigs and a SmartROC D65.

Eight years since its founding, A-1 Drilling and Blasting has 25 employees who serve 30 steady customers from 22 quarries in Massachusetts, Rhode Island and Connecticut.

Keefe said the rigs' reliability has been a primary contributor to his success. Recently the capabilities of the SmartROC series of top hammer and down-the-hole rigs have sold Keefe on the wisdom of buying only SmartROC-series rigs from now on.

On this day, for instance, Craig

Desanti, a 13-year driller, was drilling 6 ¾-inch-diameter blastholes on an 85-foot bench in a trap rock quarry with A-1's Atlas Copco SmartROC D65—the first SmartROC-series D65 in New England.

Before coming to A-1 Desanti had operated a number of makes and models. The rig he operated prior to this was an Atlas Copco SmartROC D7. "Transition wasn't really a factor," Desanti said, "because all Atlas Copco rigs have such similar drilling functions. To leave one for another is not a problem."

With only two months on the rig, the SmartROC D65 is demonstrating just how low its operational cost is compared to many other rigs. "The job we're doing right now," Keefe said, "is typical of work for this quarry. In the past I was getting 1 foot per minute. Now we're getting 2 ½ feet per minute." Keefe said it used to take two rigs more time to complete a job like this. "Now we complete the same job with the SmartROC D65 alone in the same amount of time."

The SmartROC has paid off a number of ways, Keefe said. "It not only burns a lot less fuel than the other rigs, but also saves on labor costs per job for having another driller-and-a-half working it, as well as on equipment maintenance and depreciation. That can all go to another job."

Increased ROP and greater fuel economy are just two of many SmartROC benefits. Keefe s SmartROC D65 rig's automated drilling feature frees up the operator to do other things, such as sharpening bits, greasing the machines and tending holes while the hole is being drilled. On this quarry's 85-foot benches, that's up to 40 minutes or more accomplished per hole.

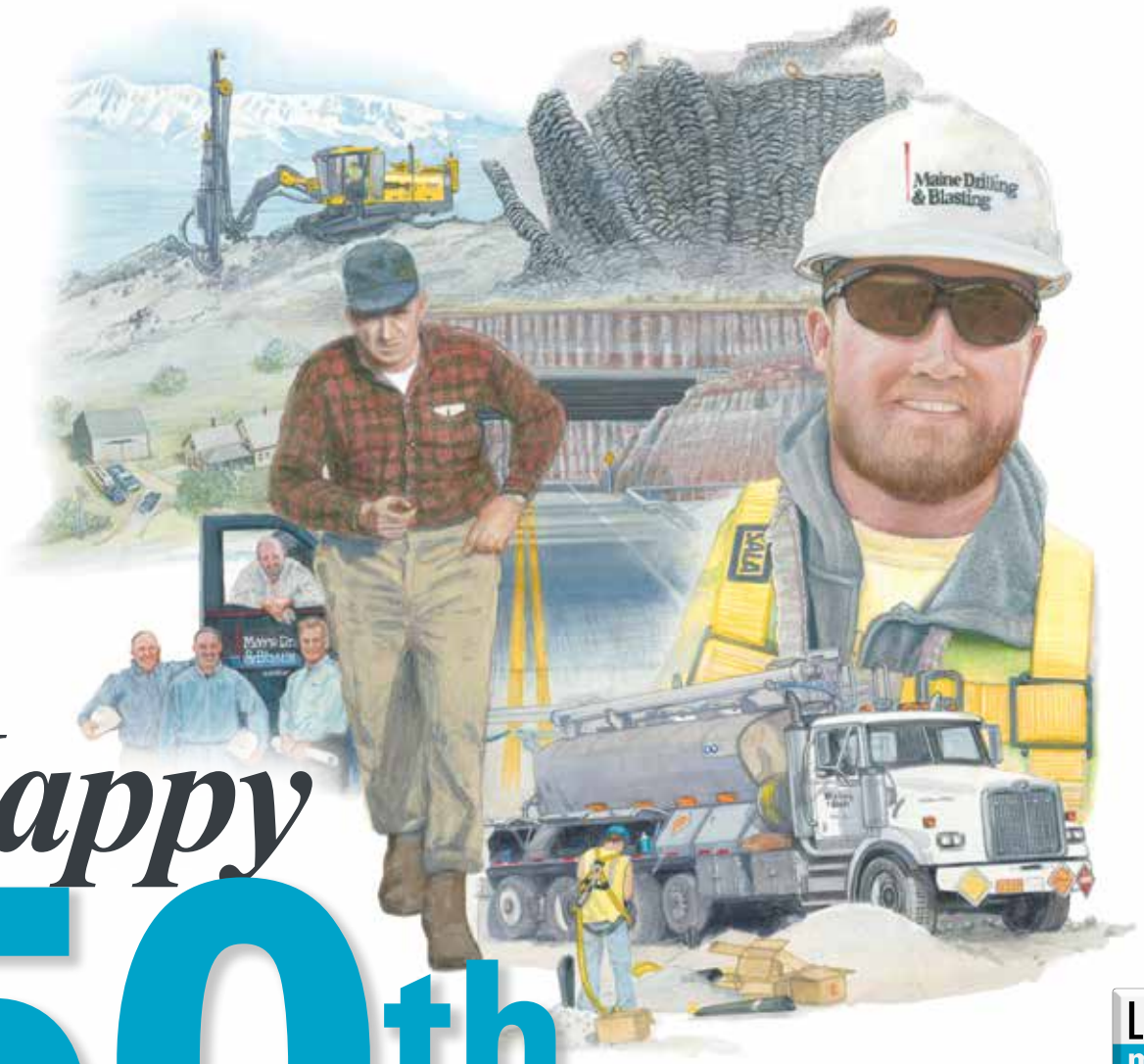
Automation also ensures more accurate blastholes to exact depths since irregularities in the pattern's surface do not affect a drill plan's execution. "Down-the-hole hammers always have been the most precise way to drill. But these holes are not only precise, they're absolutely level," Keefe said.

Accurately drilled patterns produce the most consistent rock fracture, which results in less wasted time during drilling and blasting cycles, and that means more time for production drilling.

A-1 has a full-time mechanic to do its own servicing. As far as rig reliability, Keefe said, "Downtime has been minimal. And if there's an issue our mechanics need assistance with, Atlas Copco has quickly resolved it, taking at most a day."

Although A-1 has some equipment of other manufacturers it acquired from other drilling contractors who went out of business, the company maintains a close relationship with Atlas Copco. "Those who wouldn't sell A-1 a rig are kicking themselves today," Wentworth said. "They lost out on the chance for a relationship with a great contractor." ■

Automated drilling features of the SmartROC D65 free up drillers to do other tasks. As Craig Desanti's rig drills this hole, he can prep the next area, tape holes, or, as he is doing here, resharpen bits.



Happy 50th *anniversary,* Maine Drilling & Blasting

Learn more

Contractor credits relationship with Atlas Copco as large part of its 'safely aggressive' sustainable productivity

In March 2016 Maine Drilling & Blasting marked the 50th anniversary of its founding by Ted and Judy Purington. What began in rural Gardiner, Maine, as a family startup run from the Puringtons' kitchen to fracture rock for "cellar holes and swimming pools" has since grown to become the country's largest drilling and blasting services contractor in the construction and quarry markets.

Over the past 50 years Maine Drilling & Blasting has safely conducted over 2 million blasts throughout the Northeast and Mid Atlantic for highways, site development, quarries, housing lots, utilities and marine work. The company also provides a variety of specialty services such as rock bolting, hoe ramming, engineering, public relations for blasting concerns, pre-blast surveys and packaged and bulk distribution. Still headquartered in Gardiner, Maine, the corporation has six construction and four quarry divisions

Back L to R: Ted Purington, Jr., Executive Vice President; Bill Purington, Chairman and CEO; Front L to R: Mitchell Green, Senior Vice President; Dan Werner, President; John Capasso, MD President; Tim Maynard, CFO; Todd Barrett, Regional Vice President

with offices in New Hampshire, Vermont, New York, Massachusetts, Connecticut and Pennsylvania.

This year's celebration of a half century of safety and growth in the blasting industry also marks the company's 25th year of continuous profitability—in spite of several significant downturns in the national economy over that span of time.

MAINE DRILLING & BLASTING attributes its success to a relatively simple formula for such a complicated industry. Never stray from the core values the company was founded upon: honesty, respect, fairness and responsibility. Focus on doing quality work for the customer safely and productively. Base services at the local level, engaging local resources and people. Never stop improving.

Ted Purington Jr., executive vice president, also credits the company's close collaboration with Atlas Copco, whose innovative drilling rigs, accessories and rock drilling expertise has played a key part in their success. "For this part of the world, our relationship has changed the drilling industry."

Maine Drilling & Blasting has more than 75 of its own surface crawler drill rigs, approximately 50 of which are Atlas Copco, and has about 25 more through Atlas Copco Rental.

Mike Wentworth, product manager for Atlas Copco Surface and Exploration Drilling and key account manager to Maine Drilling & Blasting believes the company may be underestimating its contribution to the global blasthole drilling industry:

"Maine Drilling & Blasting is a leading innovator whose input impacts design and technique not just for New England and the Mid Atlantic United States but globally. People from Sweden and India know about Maine Drilling & Blasting and will come here to see their operation firsthand. The world is watching for what Maine Drilling & Blasting will do next."

Maine Drilling & Blasting prefers to be the first company to try out new technology rather than wait to see if others have success with it. The company started out with two men running jackhammers and a crawler-mounted pneumatic drill rig running 38-series steel and towing a 750 cfm compressor behind it. They realized they'd rather be on the leading edge of technological capability. Maine Drill- ▶

Bill Purington,
Chairman and CEO, Maine Drilling & Blasting, son of founders Ted and Judy Purington.

Ted Purington Jr.,
Executive Vice President, Maine Drilling & Blasting, son of founders Ted and Judy Purington.

Terry Bower,
Equipment Services Manager, Maine Drilling & Blasting.

Blasthole drilling's revolutionary collaborators

Maine Drilling & Blasting never set out to be the biggest contractor, but its core values made that happen: continually strive to improve productivity, efficiency and quality through mutually beneficial working relationships with customers, employees and suppliers. The company's drillers and OEM-trained rig technicians stay in close contact with Atlas Copco and have been involved in the evolving design of rigs.

The collaborative relationship began in the early 1980s when Maine Drilling & Blasting introducted the blasthole drilling industry to the efficiencies and productivity of a reliable hydraulic surface crawler drill rig. Their success with the Atlas Copco ROC 410 rendered pneumatic drills all but obsolete. ▶

Dan Werner, President, and Will Purington II, Eastern Division manager, grandson of founders Ted and Judy Purington. Dan Werner, who assumed his role as company president May 1, is overseeing the goal of transitioning the company to 51 percent employee-owned within the next two years.

ing & Blasting acquired increasingly more productive machines, graduating to 45-series steel and rigs with 1,100 cfm onboard compressors.

Ted Jr. described the sense of urgency his family had in their pursuit of greater efficiency: "It had been a struggle to get established, and now that we were there, we didn't want to lose it. Competition was unbelievable. Profit ma gins were tight. Money was tight. We had no choice but to find more efficient way to do things. We were inspired by our highway customers. We had seen them timing their crews' processes. They were always trimming times, always cutting waste. They set high standards and expectations, and we met them. We learned from them."

The company's introduction to Atlas Copco came in the early 1980s. Maine Drilling & Blasting recognized the potential of diesel-powered hydraulic technology for increased productivity at lower fuel expense.

The first two hydraulic rigs it tested from other manufacturers failed in the field. In spite of some in the industry who wondered if investment in hydraulic technology might lead to the company's undoing, Maine Drilling & Blasting persisted in its quest.

Success with the third hydraulic rig they tried almost immediately revolutionized drilling for the construction and quarry industries. The Atlas Copco ROC 410H not only ran dependably but rewarded Maine Drilling & Blasting with the efficient productivity it had been looking for.

Ted said, "Initially the rate of penetration of the hydraulic rig was so much more aggressive than our pneumatic drills that we encountered deviation issues. It required a short period of adjustment."

Once the company got the consistent hole quality it wanted, Maine Drilling & Blasting was no longer merely competitive in a tight market—it was the region's market leader.

Unable to keep up with Maine Drilling & Blasting's productivity, some contractors simply began submitting their bids as "ten percent less than whatever Maine bid."

In contrast, Maine Drilling & Blasting President Dan Werner said the company's bids are always factually based on accurate assessments of what it takes to get the highest quality job done safely and efficiently: " e're a value-added company. Our customers recognize that we are the lowest-cost provider because we minimize their financial risk throughout the project, beginning to end."

EFFECTIVE MAY 1, DAN WERNER is the first non-Purington to hold the offic of president for Maine Drilling & Blasting. However, Bill Purington, Maine Drilling & Blasting's Chairman and CEO, said Werner embodies the core values of its founders, ensuring that the fundamental principles of the family-owned company carry far into the future even as it transitions to 51 percent employee ownership by 2018.

The Puringtons believe the original values of the company so fully permeate the company's culture that they will continue to be its shaping force far into the future:

"While I was growing up," Bill said, "the company was so much a part of family life that it was like having another brother in the house. And then when my brother and I were grown, it became our child. At some point your family isn't just your own children but your second cousins, third cousins, fourth cousins, and all those married to them. You no longer know all the names

1980s

Maine Drilling & Blasting introduces reliable Atlas Copco hydraulic drill rigs with onboard air to its fleet: ROC 410, ROC 512, ROC 612H, ROC 712H, ROC 722HC, ROC 820H, 812HC

1990s

Adopts Atlas Copco's 7 series as its workhorse drill rigs. The ROC 742R replaces the ROC 712H. By late '90s fleet includes ROC 860, ROC 642, ROC 748 HC-01 w/1850 cfm air package, ROC 748 and ROC F7 and F9 rigs.

of the extended family at the reunion."

Everyone working for Maine Drilling & Blasting is part of its culture, sharing its history as family. Will Purington, Bill's son, who is both Foundations Services Group business manager and Eastern Division manager, underscored the point. "When I was 12, there were maybe 40 people in the company I knew from traveling to the offices and jobsites with my dad and grandfather. That was family to me. They were my family. And now today, as a regional manager in a company with over 400 employees throughout the Northeast and Mid Atlantic, each region with its differences, no matter where I go in the company, I still have that feeling I'm with family. The Maine Drilling & Blasting culture unites us."

Werner said in the 14 years he has been with the company he has been profoundly shaped by that culture. Werner came to Maine Drilling & Blasting in 2002 after four years service as an Army explosives technician. But he didn't begin as a blaster. He began as all employees do at Maine Drilling & Blasting—as the owners themselves did—a laborer.

It is one more ingredient in the company's recipe of success. Managers who have experience at all levels from the ground up give the company flexibility to endure tough times.

"I knew from the start I wanted a leadership position," Werner said, "but looking back, I think I was a little naïve. I had no idea the journey it would take me on, the work it would take to get there." Werner said opportunities kept opening up around him, and he eagerly pursued them all. "I had so much to learn."

Werner also began taking night classes. "I would work all day and then go to school at night three times a week. Maine Drilling & Blasting encourages and supports those who want to advance."

Using radio remote control, an operator trams his FlexiROC T40 up a steep incline in a granite quarry. Always on a quest for improved efficienc , Maine Drilling & Blasting's newest FlexiROC and SmartROC series drill rigs are getting up to 50 percent better fuel economy than earlier rig models.

He earned his bachelor degree in business studies. By the time he earned his MBA he had already progressed through the ranks to an executive position.

Werner was also one of the first to graduate from Maine Drilling & Blasting's newly established Leadership Development Program (LDP), an in-house corporate management training curriculum designed in large part by Bill. Initial levels of LDP are standard leadership courses. Higher levels are tailored to the needs of the enrollee. LDP ensures continuity of the principles and values fundamental to Maine Drilling & Blasting's cultural identity and success.

The company actively seeks out candidates who are a fit for its culture. "We're always looking for the next Dan Werner," Ted said.

TED SAID, "I'M VERY COMFORTABLE with where we're at and with where we're headed. The next generation is not going to simply continue the Maine Drilling & Blasting culture. They're going to take it to the next level."

In addition to his commitment to the company's values, Werner also shares an appreciation for the innovative collaboration with Atlas Copco. Maine Drilling & Blasting now uses Atlas Copco ▶

2000s

North America's first radio remote control rigs ROC D3RRC and ROC D7RRC replace tethered remote controlled rigs. Also introduces industry to the Atlas Copco ROC T15 wheeled drill rig for work originally done manually with a jackhammer.

2011–Present

Finds greater drilling efficiencies through computerized drilling optimization offered by FlexiROC and SmartROC series T30, T40 and T45. The latest models are up to 50 percent more fuel efficient than earlier rigs. Uses T30 models primarily for construction jobs and the T40 and T45 models in quarry work.

In honor of both its commitment to service at the local level and to individual self advancement, Maine Drilling & Blasting has kicked off the year-long celebration of its golden anniversary with $25,000 in scholarships. The money will be distributed as five $1,000 scholarships to five institutions over the next five years.

Computerized rigs like this Atlas Copco SmartROC T45, says Executive Vice President Ted Purington Jr., will bring about a revolution in the drilling industry at least as big as the change from pneumatic to hydraulic drill rigs.

drilling accessories throughout its fleet. And he is closely studying the feasibility of replacing PowerROC series rigs with SmartROC rigs in various applications throughout the company's offerings.

Werner works with Atlas Copco's Mike Wentworth. "Mike is readily accessible and in constant communication with us regarding solutions," Werner said.

Maine Drilling & Blasting's equipment manager, Terry Bower, said, "We've been following the development of the SmartROC rigs for 10 years now. SmartROC rigs drill straighter, more precisely, with less fuel—in some cases 50 percent less fuel. But I believe we haven't even scratched the surface of what the SmartROC series can do."

Ted said, "The SmartROC series will be at least as great a revolution in the industry as the move from pneumatic to hydraulic was."

Ted pointed out that no longer can anyone judge a company's size or capabilities by its rig count. "We had at one time 113 rigs, but now we're down to 80. It isn't because we got smaller. It's because our current rigs efficiently do the quality work of the previous 113."

Bower said the capability of Maine Drilling & Blasting has been driven in part by Atlas Copco. "They give us rigs that are more powerful, more efficient, cleaner with improved fuel economy. The new SmartROC T40s and T45s have 30 percent better fuel economy, in some cases 50 percent. But it will never end. We will always want more powerful, more efficient, cleane , quieter rigs. It's never-ending. That's the industry. We are always looking to improve. And so is Atlas Copco. We work hand in hand. They use our input and it's reflected eventually in the next generation of products."

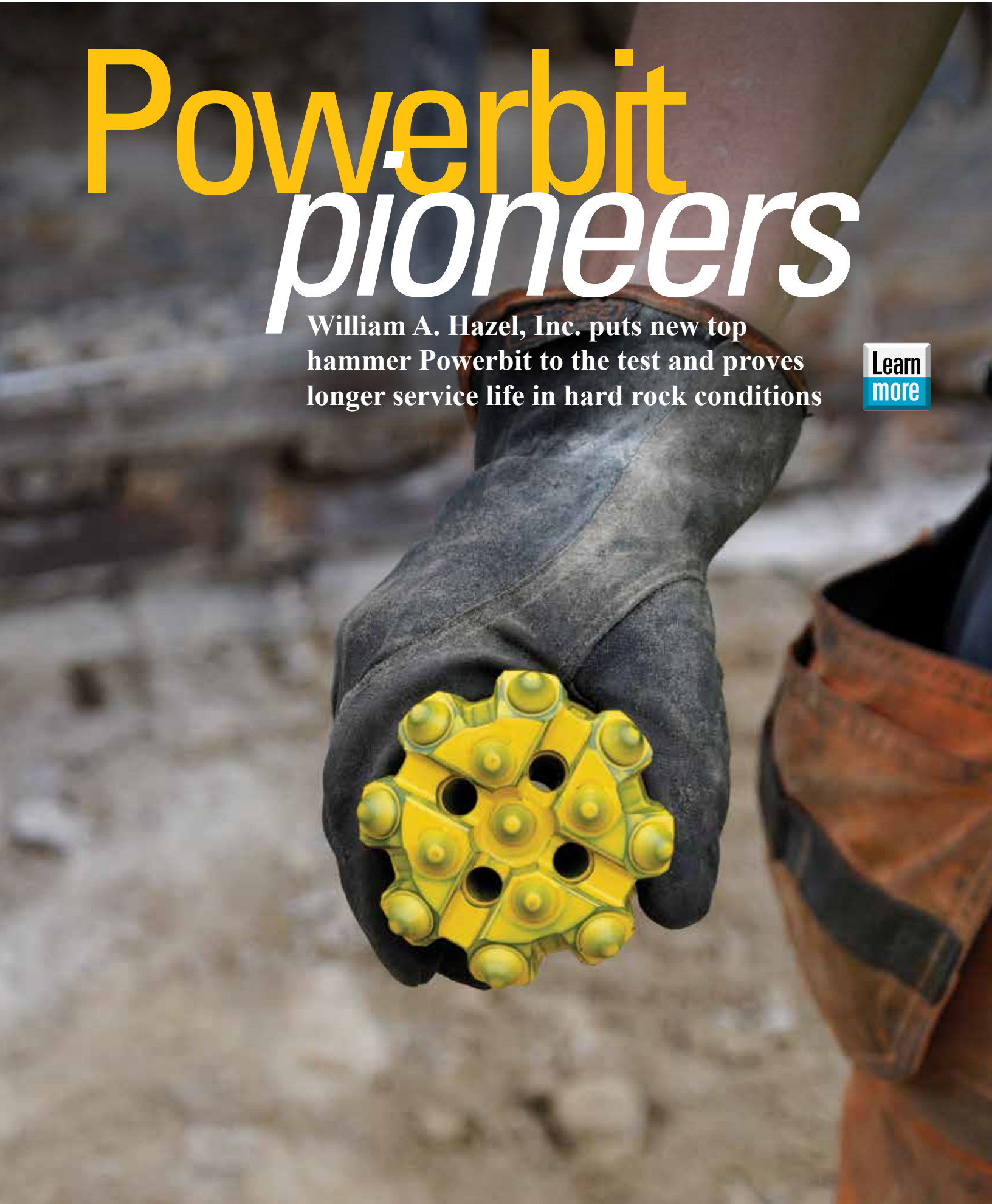
Atlas Copco listens to drillers worldwide, and some rig design changes come as pleasant surprises for Bower's in-house technicians. "My technicians will actually call me up to say, 'Terry, have you seen what Atlas Copco's done?' raving about it. And I'm always amazed at how much more Atlas Copco can do with something they've made smaller. There's always something, even things like cleaner hose management or, for instance, a shroud the techs no longer have to take off to get to a service point but that now has a removable section for easier access. There's just always something better."

Maurice Hunter, business line manager for Atlas Copco Surface and Exploration Drilling, said, "Atlas Copco's own principles complement those of Maine Drilling & Blasting. We are proud of our collaborative relationship with Maine Drilling & Blasting and look forward to its continuing success in the next 50 years." ■

Powerbit pioneers

William A. Hazel, Inc. puts new top hammer Powerbit to the test and proves longer service life in hard rock conditions

Learn more



Headquartered in Chantilly, Virginia, family-owned William A. Hazel, Inc. is a premiere site development contractor whose primary goal is to deliver the best quality product to its valued customers. For over 50 years, it has been an industry leader in pursuing innovative technologies to better serve customers.

They were one of the first companies to test cab drill rigs in the region, which predominantly favors "stand beside" rigs. And they realized after testing the benefits of the larger T45 drill string versus the T38 in their usual drilling conditions. They've switched from dynamite and ANFO to cap-sensitive emulsion and water-resistant ANFO, which is more expensive up front but has better blasting characteristics that reduce cost overall, at the hands of Hazel's blasting crews.

As Atlas Copco prepared to introduce the new Powerbit line of top hammer bits to the market, William A. Hazel, Inc. graciously put some of its drill crews at the disposal of Atlas Copco on some of its more challenging job sites.

These drillers encounter some of the toughest rock in the region while working on housing and infrastructure projects designed to support the growing population of the Washington, D.C., area.

Although satisfied they already had the market's most effective bit for these rock conditions, they were ideal candidates for proving a new bit in these conditions. On these sites with bands of 40,000 psi diabase, Atlas Copco put the Powerbit to the test from May through July 2015, collecting data for analysis back at the lab.

THE STORY OF THE POWERBIT is a little unusual, explained Ross Gjerde, the Atlas Copco Rock Drilling Tools product manager in charge of top hammer bits. While many new bits are actually upgrades to existing design strategies, Powerbit designers started with a blank page and input from customers: What do you want from a top hammer bit?

Gjerde said, "Not surprisingly, customers wanted bits with longer service

lives at a comparable price to bits they were already using." After all, Gjerde explained, technology exists already that can give drillers bits with fantastically long service lives in the hard drilling conditions—but at a cost. "Customers want these two values balanced—significantly greater performance without significantly greater cost."

Armed with those fundamental objectives, Atlas Copco Secoroc designer engineers came up with the Powerbit.

"It reminds me of a retrac bit," said Tom Ashbaugh, Hazel's blasting superintendent. "It has flutes like a retrac, and you can back it out of a hole like a retrac. But when we've run retrac bits here, we've had trouble keeping the holes open. The Powerbit does a much better job collaring the holes. It's stouter on the bit end, but then again further up the shaft. You don't see as much deviation from it. Holes stay vertical, straighter. And what I like best, of course, is the gage. Gage is maintained up the neck."

Gage retention during bit life is a critical factor in controlling fracture size and overall efficiency of the shot. The boosters William A. Hazel, Inc. uses are 2 ¾-inches in diameter, leaving only a ⅜-inch-wide annulus in a true 3 ½-inch hole. As the gage wears and the holes narrow, the risk increases that boosters might hang up in the hole, failing to seat at the bottom. A second concern is that smaller holes have less room for emulsion.

"This bit maintains its gage throughout its life, yet doesn't restrict flushing. In fact, this bit seems to have better flushing in general. So I'd say in diabase rock, it does a much better job than other bits we've used."

In the hard rock conditions of William A. Hazel's service area, results were even greater than averages drawn from a worldwide series of 20 Powerbit field tests. At 13 separate sites in a variety of rock conditions, Powerbit proved on average to have a 20 percent or greater service life over the market's leading competitor bits with a 10 percent greater penetration rate.

Several unique features underly the Powerbit range's success. The bit ▶

This area undergoing site prep will be all houses soon. Shown are Craig Mooney (territory manager for Atlas Copco), Tom Ashbaugh (Hazel blasting superintendent), Ricky Clatterbuck (Hazel blasting assistant superintendent), John Swift (Atlas Copco—Abingdon manager).

NEW POWERBIT BLOWS AWAY BIT LIFE RECORDS

THE POWERBIT is an unusual bit design in that it was not engineered as an improvement on existing designs but as a design and research project from scratch, using input from customers at the onset. The bit body steel grade and the button materials were developed with longevity and high qualty in mind.

Site development contracting firm William A. Hazel, Inc. sought a bit whose price was comparable to its currently favored, non-Atlas Copco bit but would exceed that bit's 400-foot average service life in the diabase by at least twice the footage: 800 drill feet.

The bit life increased by an average 92 percent over their previous spherical button bit. The Powerbit at times tripled the footage, exceeding 1,200 feet, yet effectively maintained its 3 ½-inch gage in each case. There were no bit failures during the testing period. Absolute bit life was not known, as bits were collected for analysis before they exceeded their useful life.

"I hope these bits are in production soon," says Ricky Clatterbuck, blasting assistant superintendent. "We had hoped to see something with double the life but we were getting way more than that from these, and they weren't worn out yet before they were pulled to be sent for analysis—Excellent wear characteristics."

Craig Mooney, Atlas Copco—Abingdon territory manager says the formations around the Dulles area can switch from 40,000 psi diabase to layers of much softer stone. It was good ground for testing bits.

shape an entirely new design, based on a harder, stronger, steel bit body. Instead of semi-ballistic buttons, the Powerbit series features Atlas Copco Secoroc's unique trapezoid-shaped Trubbnos buttons. Patented Enduro Extra surface treatment gives the Powerbit superior strength to endure all rock types.

TYPICAL PATTERNS during the testing period consisted of 3 ½-inch (89 mm) blastholes drilled on average from 14 to 16 feet deep. Several feet of soil overburden were left in place as stemming material over diabase rated with a hardness of 40,000 psi (275 mPa).

Shallow drilling in hard rock conditions means drillers are in and out of holes in rapid succession, with insufficient time in the hole for flushing air to cool the drill string. It results in excessive heat that leads to shortened tool life. The conditions are severe enough to quickly discover the flaws of any bit.

To ensure comparable test results, drill rigs from a variety of leading manufacturers were represented from the William A. Hazel, Inc. drilling fleet. Each of the rigs was assigned one 3 ½-inch Powerbit.

Between holes Atlas Copco field engineers checked the bits for signs of wear. Bits were not run to failure. Instead, at the first sign that a noteworthy change in the bit was occurring, the engineer pulled the bit, recorded the footage and set the bit aside to be sent to Atlas Copco Secoroc's design facility in Sweden for analysis.

The Powerbit was generally drilling with about the same penetration rate as their current bit, the drillers believed—but it was giving them two to three times the footage in these conditions.

In some cases it was giving them more than four times the footage before being pulled for analysis.

Ashbaugh smiled as he mentioned Atlas Copco field engineers had left one bit behind. Whether it was an extra bit or one that was unnecessary to send back, his drillers didn't know. "Our drillers found the bit, figured it was a leftover, and thought, 'Hey, it's still good, so why not keep drilling with it?'"

The first area they took it to was a site covered in shot rock. "It was pretty gravelly stuff, but the Powerbit did well in it. It collars holes up nice."

The site Ashbaugh was on at the moment was flooded at one end from rain water runoff. He nodded toward it: "And we can run this bit in water without any problem." The only formation it did not outperform other bits in, Ashbaugh said, was red shale. "It was too aggressive for our shale."

Craig Mooney, an Abingdon-based territory manager for Atlas Copco, said, "You might not realize all that hosting a field test requires of a contractor. Companies like William A. Hazel, Inc. showed great tolerance during the testing period for all the production interuptions as engineers stopped to record data and interacted with the drillers. We greatly appreciate their generosity in hosting these tests. What they have contributed here will likely benefit the industry in general, and their customers in particular." ■

In memory of GENE MATTILA

May 25, 1951–April 5, 2016

Longtime key member of the Atlas Copco team Eugene Mattila passed away April 5, 2016.

Mattila was business line manager for Atlas Copco Rock Drilling Tools. He began his 40-year career in the mining and construction industry after receiving a degree in mechanical engineering at Michigan Tech University. Mattila distinguished himself while rising through a number of increasingly challenging roles in product management, product application, sales and marketing management and administration management. His most recent positions with Atlas Copco included product manager for Secoroc down-the-hole tools and as business line manager for Atlas Copco Geotechnical Drilling and Exploration products.

Torbjorn Redaelli, president and general manager of Atlas Copco Mining, Rock Excavation and Construction USA and a friend of Mattila, spoke at Mattila's celebration of life service at the Applewood Golf Course in Golden, Colorado:

"We are thankful for our time with Gene, and immensely appreciative of his contributions to the Atlas Copco team. He will be missed dearly. We remember with fondness his incredible energy and passion with which he approached the business and his charismatic, positive outlook on life and his work–always flavored with a great sense of humo . His dedication to people, always walking the extra mile encouraging and helping them in their development, was exemplary."

Redaelli said Mattila was a "formidable leader" who inspired and guided people to get things done. Mattila loved business, sports (especially the Denver Broncos) and golf. But more than anything, he loved his family.

> **"His dedication to people, always walking the extra mile encouraging and helping them in their development, was exemplary."**
>
> **Torbjorn Redaelli**
> President and General Manager
> of Atlas Copco Mining, Rock
> Excavation and Construction USA

Mattila is survived by his wife, Geralyn Mattila, sons Derek and Martin (Davin) Mattila and their spouses (Elise and Kelly), and his daughter Amy McKeon and her spouse (Mark). He had three grandchildren. He is also survived by his mother and three brothers.

Memorials were requested to one of Mattila's favorite causes, The First Tee of Denver, which educates and inspires children through the game of golf. Atlas Copco is honoring Mattila's memory by starting an employee award named "Gene Mattila Diamond Achievement Award." ■

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