



MINING & CONSTRUCTION

MECHANIZED ROCK EXCAVATION WITH ATLAS COPCO - NO. 2/ 2012



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2012
MINE XPO
INTERNATIONAL

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Boomer M2 C delivers faster face drilling

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Scooptram means easier maintenance for mine

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Large Combi Cutter takes down bridge

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Atlas Copco

EDITORIAL



Atlas Copco continues to grow with the industries we support, and we have been investing in the development of improved services and product offerings for our customers. The upcoming MINExpo will be a great opportunity to catch up with us to discuss the improvements and what they mean to your business.

One of the new developments is the formation of the Mining and Rock Excavation Service (MRS) division. This new division is responsible for support to our customers for all of the business lines. Some of the steps taken by MRS include an improvement in our local parts inventory, additional component rebuild capabilities, development of a dedicated training department, improvements to the supply chain and logistics departments, and upgrades to several of our company stores.

Another significant change that will be exhibited at MINExpo is the addition of several new products for the Underground Rock Excavation division. Atlas Copco made an acquisition that expanded our offering to include SwedVent fans, Kiruna Electric trucks, Häggloaders, and a variety of utility vehicles for use in underground mining and tunneling applications. This gets us much closer to a “one stop shop.”

The MINExpo will give you an opportunity to see many other products, including our Pit Viper 311, the SmartROC D65, the Diamec U8 APC, multiple rock drilling tool products, and several Portable Energy products.

Best of all, it is a time to renew and build upon the relationships we all have in this industry. Looking forward to seeing you there!

Ed Tanner
Business Line Manager,
Underground Rock Excavation

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SAFETY FIRST

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Fully automatic **face drilling**

Positioning with lasers is blazing a path to increased productivity for Cementation



Cementation started up its U.S. division only six years ago but has already confidently established itself as one of the finest underground engineering, development and production contractors in the western part of the country. Now part of the Murray & Roberts group, the largest underground mine contracting company in the world, Cementation brings to its North and South American clients the best practices from a global network of sister companies.

The company has increased four-fold since establishing its offices in Salt Lake City three years ago. Its current employee roster numbers about 400 so far working five major projects. Contracts include mine development, personnel training and vari-

ous underground installation and construction projects such as shaft sinking, Alimak raising and ore pass and dump construction.

Cementation's U.S. president, Mike Naddon, attributed the company's rapid growth and recognition in the U.S. mining community to its proven record for operating safely, hiring highly competent people, retaining them through its genuine concern for their ambitions and needs, and of course its reputation for getting the job done on time with the highest degree of quality. The steady growth means he is always on the lookout for the best equipment he can acquire to meet requirements of new jobs, keeping his company competitive in the bidding process.

“I consider it a huge testament to the system that a guy like me can use it. I mean, I'm just a regular old miner, but look—even I learned this.

Mike McMillan
Cementation drilling supervisor



» Recently Cementation found a way to increase quality and reduce time with one of the newest and most highly automated face drills, the Atlas Copco Boomer M2 C. Though a few other companies on the continent have acquired drill rigs with similar capabilities, Cementation is the first company to fully utilize Total Station navigation in conjunction with Tunnel Manager drilling software to perform completely automated drilling.

It's just one more testament to the company's pace-setting adaptability, getting the most from equipment as it becomes available. Cementation, for instance, was also the first U.S. company to prove out the productivity of the new Atlas Copco Minetruck MT42 in the U.S. after seeing its remarkable success in Canada.

Cementation prides itself in finding the best tools for the job. In the case of finding a good LHD in the U.S. division's early stages, Cementation brought down a Scooptram ST1520 from its first owners in Canada.

Automated, not complicated

It may seem intimidating to coordinate the sophisticated Atlas Copco Boomer with Total Station and Tunnel Manager, but Cementation drilling supervisor Mike McMillan said he was impressed that it wasn't that difficult to learn.

Atlas Copco provided training for use of the systems, McMillan said. Atlas Copco sent Mike Delbridge and Sweden-based Mikael Sjoval to Cementation's project site. McMillan said he could use the program after just one day of working with it under their tutelage. Within the course of two months he had completed all the drill programming for the tunnel, all on his own: "I consider it a huge testament to the system that a guy like me can use it. I mean, I'm just a regular old miner, but look—even I learned this."

Others at Cementation challenge his



MIKE NADON
Cementation President, U.S.

modesty, considering him an exemplary employee who rapidly advanced within the company with an insatiable appetite for learning new technology. Nadon said of McMillan, "He can run any piece of equipment we have," pointing out that McMillan, who came down to work under Nadon from Cementation Canada, mastered the Boomer to become its operator trainer and drilling supervisor in a relatively short time.

McMillan said using Tunnel Manager and the Total Station navigation system has been saving Cementation untold amounts of time on the decline project he is currently working on. The job is to complete a 20-by-20-foot access with an 8-degree decline to more than 8,000 feet with a total vertical depth of roughly 1,000 feet. Using the Tunnel Manager program, McMillan lays out

Atlas Copco Area Sales Manager Clay Gremel, Cementation USA President Mike Nadon, Drilling Supervisor Mike McMillan, Cementation Project Manager John Larsen, Cementation Area Manager Justin Oleson and Atlas Copco Sales Representative Dan Basanez.





BOOMER M2C

The Boomer M2 C is a modern, hydraulic face-drilling rig suitable for small to medium drifts and tunnels with cross sections up to 570 square feet.

- Rock drill—COP 1838 with dual-damping system for optimal consumable life. Coverage width is 33 feet wide by 24.5 feet high.
- Hydraulic boom—BUT 35 SL heavy-duty booms for direct, fast, accurate positioning between holes. Double rotation unit has 360 degree feed rollover. Boom extension is 5.25 feet.
- Hydraulic feed—BMH 6900-series heavy-duty aluminum feed with high ability to bend and resistance to breaking.
- Controls—Advanced Rig Control System allowing several levels of automation. Integrated diagnostic and event logging system to assist in maintenance. Interactive operator panel with full-color display.
- Carrier—Sturdy, articulated with four-wheel drive. Powered by a 4-cylinder, EPA III (Tier3) approved diesel engine.

Height of cabin	9.5 feet
Height roof down	7.8 feet
Length	47 feet with feeds
Ground clearance	10.31 inches
Turning radius, outer	283.46 inches (23.6 feet)
Turning radius, inner	173.23 inches (14.4 feet)

the drilling patterns. The program lets him include information such as tunnel profile, position coordinates, tunnel line and even the driller's name for each round.

When it comes time to drill, the operator drives down to the face. Once there he sets out a tripod with the Total Station receiver, or Power Tracker, mounted on it. The station triangulates with fixed points installed on the tunnel wall to calculate position in three dimensions. McMillan said it takes about 10 or 11 minutes total to drive the rig to the face, to set the tripod and to get the drilling started.

The operator inserts the Tunnel Manager file into the rig from a special memory stick. The 32-hole perimeter of the total 72-hole pattern is drilled by the operator in "semiautomatic mode," said McMillan, so that the operator can be certain everything is going to plan. If not, the driller can quickly intercede to make corrections as he notes any deviation during drilling. Deviations occur from formation characteristics that cause

the drill to deflect slightly. The operator notes the degree of deviation, which the rig tells him precisely, enters a correction, and then, once the perimeter is complete, sets the rig to full automation again.

McMillan said, "Once I set up the drilling patterns, that's pretty much it."

Since the drilling is so precisely recorded, and since corrections are inputted immediately and in such small increments, the process is not interrupted by having engineers measure and calculate corrections and lay out patterns in paint for every round. It's all already in the rig's computer. Delay between rounds is dramatically minimized, and more time is spent drilling.

On this project McMillan is a drilling supervisor. Of the formation, McMillan said, "The rock is soft and forgiving, but it really isn't too bad here." Cementation bolts each advance anyway. Bolting is done mechanically with an Atlas Copco Boltec MC using 8-foot Swellex in a 4-by-4-foot pattern.

He said the company has been making

14-foot advances with 1.75-inch diameter ballistic carbide bits, placing holes in the pattern about 24 inches apart. Rate of penetration has been averaging 3 meters per minute. Cementation has advanced the face more than 1,700 feet already so far and is at roughly 250 vertical feet down.

With this project well under way, Cementation is looking at upcoming projects, locating equipment to give it an edge in the bidding process. Clay Gremel, Atlas Copco's area sales manager based out of Elko, Nev., has been working the past two years with Cementation USA to keep the company equipped with a sufficient fleet of drill rigs, mine trucks, bolters and LHDs.

He said Atlas Copco has now located Dan Basanez in Salt Lake City to provide close customer support, keeping Cementation's consumables warehoused right on their property for them. As for rigs, Gremel said, "We're always ready to help Cementation find the right equipment for the job."

Expanding

Atlas Copco acquires GIA and offers additional products for underground mining and construction

Atlas Copco has greatly expanded its underground product portfolio with the acquisition of GIA Industri of Sweden. In addition to drill rigs, bolters, loaders and trucks, Atlas Copco can now offer electric haultrucks, locomotives, rail mounted shuttle cars, charging and service trucks, Häggloader continuous loaders, and complete ventilation systems.

Shane Roden is the product manager for GIA and raisebore products in the U.S. He said, “Our customers can truly consider Atlas Copco a one-stop shop for their underground projects.”

“The acquisition of GIA is a good strategic fit for Atlas Copco. We are entering new market segments and will be able to serve customers with an even broader product portfolio,” said Bob Fassl, business area president for Atlas Copco Mining and Rock Excavation Technique. “We especially look forward to offering our customers the Kiruna Electric haulage truck with its strong en-

vironmental profile. We see great opportunities in leveraging Atlas Copco’s global sales network for this and GIA’s other products.”

The Kiruna electric haul truck is the only electric truck in the world capable of hauling 35 to 50 tons. The truck is energy efficient, requires less ventilation and contributes to better working conditions underground. The Kiruna Electric 635ED is powered by two 200 kilowatt and one 80 kilowatt electric motor, and is capable of travelling at 11 miles per hour up a 15 degree ramp while fully loaded.

Matt Juth is the product manager for pedestal boom systems and load/haul/dump products, which includes the Kiruna electric trucks. “We are very excited about the Kiruna truck. The electric truck provides distinct advantages. With mines going deeper, often on aging infrastructure, getting the necessary airflow to meet diesel particulate matter regulations is a challenge. The use of electric haulage equipment can significantly re-

duce mine development needs for ventilation. Plus, the Kiruna truck has the benefit of lower operating costs and great comfort for operators.”

Roden said, “The Chargotec UV1 and UV2 offer high-speed charging through a three pressure point charge vessel. This offers low pulsation in the charging hoses, high speed and high density of the delivered material.” The Chargotec UV2 will be at Atlas Copco’s booth at MINEexpo International.

Ed Tanner, Atlas Copco’s business line manager for Underground Rock Excavation equipment in the United States, said, “We’re going to be able to support a greater portion of our existing customers’ operations, as well as be able to enter new markets.”

GIA Industri was founded in 1884 and is based in Grängesberg in the old mining region of Bergslagen in south central Sweden.

Häggloader—

- Loads 3 to 5 cubic meters per minute
- Unique system loads the muck on to the conveyor, which then fills the shuttlecar
- Built-in sprinkler system to control dust
- Track, crawler or rubber tired versions



Underground

Shuttlecars—

- Carry the muck quicker
- 9 to 20 ton capacity
- Dual electric motors
- Loading from car to car, inside conveyors provide quicker loading than any other system on the market.

SwedVent—

- High pressure fans for ducts with extensive length. Together with SwedVent ducting and ventilation calculations, this can be your complete ventilation system.



ANFO charging equipment—

- Charging capacity up to 286 kg per minute
- Different sizes of ANFO charges
- Charging can be done with external or onboard air, electric or diesel
- Radio remote control for charging



Scaling equipment—

- Hit area from 275 to 425 sq ft
- Impact energy rating of 375, striking rate of 480 to 960 beats per minute
- Two boom systems, folded for transport or extendable
- +/- 70 degree angle working area

Locomotives—

- Diesel hydrodynamic and hydrostatic from 2 to 50 ton
- 20 mph
- Width 3 ft and up
- Easy to service and maintain

Service Trucks—

- For boom and basket or scissor lift... and many more options



'Gobs' of power

SMD's LHDs are tops underground

At the Chukar mine in the Gold Quarry Pit of Newmont's South Area near Carlin, Nev., the underground mining contractor Small Mine Development is on its second tour of duty. SMD created the initial portals in early 2002 on a three-month contract but stayed on for eight years, during which time the company mined 2.6 million tons of ore and created 52,000 feet of drift. Returning at the end of 2011 to re-establish access to the Chukar Mine, SMD has come home again to provide mucking

and backfilling services, though in a different area of the pit this time.

The high productivity of this mine means SMD needs highly productive equipment. Though SMD sources its equipment from a variety of manufacturers, they have seen great success in the transverse long-hole stoping, cut and fill operations at this location with their two Atlas Copco ST7 Scooptrams, whose 4-cubic-yard ejector buckets and ample tramming speed set the pace.

Some of the tighter areas in the mine's

headings are only 11 by 11 feet. However, most are roomier at 15 by 15 feet. "Everyone needs smaller scoops for cleanup at the face and for working in tight or small areas," said Clay Gremel, the area sales manager based out of Atlas Copco's customer center in Elko, Nev. SMD has been pleased with their Atlas Copco ST1030 Scooptram LHDs but they liked the idea of the ST7. "And the timing was right for them," said Gremel. "We knew the machines would do a good job for them."



SMD service technicians pose with one of the Atlas Copco Scooptram ST7 LHDs in use at this mine. Left to right, Taylor Black, Master Mechanic Spencer Laney and Mark Ballew.

Spencer Laney, SMD's master mechanic at this operation, said they have run the ST7 for a little over a year. Other than adding SMD's own wear-iron package, he said he has had no large component issues at all with the rig. Originally SMD was running them each full time, one out of each of the mine's two portals. Now working solely from the north portal, one of the two is running at all times, 24 hours a day, seven days a week. Only operator preference for one rig or the other has determined which is running. Service is easily scheduled for a rig during its parking time, so availability has always exceeded demand on this project, which is straightforward backfill work and mucking out headings.

Laney, who is a tall, powerfully built man, said, "It's a small loader, so cab room is smaller. But even guys my size fit, once they realize the controls are adjustable." For

example, Laney explained, the armrests can be set wider, narrower, up, down, forward and back to accommodate differences between individual operators' arms and hands at the controls.

"A huge benefit is visibility," Laney said. "The ST7's visibility is phenomenal." He gestured toward one of the rigs, which was up for routine maintenance and cleaning. "See that upper deck and how the covers are flat, out of the way. Low profile. Operators see all around them," he said.

"Flow is right now. Gobs of power. It's a monster with that Cummins in it," he added, referring to the ST7's 193-horsepower, 6.7-liter Cummins Tier 3 diesel engine.

That power allows the scoop to tram up to a 6.8-ton load so fast that SMD has locked out its top gear. Laney mentioned the load-sensing hydraulic system. Even with all its ready power, the load-sensing hydrau-

“A huge benefit is visibility. The ST7's visibility is phenomenal.”

Spencer Laney
Master mechanic, SMD

lics system protects fuel economy.

He said his operators adjusted to the rig with no problem, though there are a couple differences. "There's no key switch. It's pushbutton control. And a visual display that tells you everything. Insight diagnostics, all computer monitored." »



The ST7 is shown working in a lead and zinc mine in Sweden. Lovisa Mine Manager Jan-Erik Björklund reported that the Scooptram ST7 resulted in a dramatic productivity increase in loading operations as well as improvements in the working environment.

“The Scooptram ST7 is just great,” he said. “It’s been going for more than 2,000 hours and we have seen a productivity increase of almost 100 percent, going from two loads per shift to nearly four. In addition, we previously had four loaders in operation and now we only need one—the Scooptram ST7.”



» Laney pointed out one feature he considered to be of high value on the rig. “You know how a scoop works, how the front wheels can spin when the operator is loading the bucket? I can turn down the traction control on the front wheels and it really slows tire wear. You can see these are only scuffed up on the sides, but no big gashes. And compare the wear rings in the front to the ones on the back—about the same.” Though the tires were the original tires, the wear was indeed about the same between front and back. “You don’t usually see that on a loader.”

The main selling point Laney saw in working with the ST7s was Atlas Copco’s responsive service. SMD’s direct contact with the Atlas Copco Elko store is through Mark Shupe, the product sales and service representative to both SMD and Newmont.

He provides, he said, “just about anything SMD needs.” Laney pointed out that he also had on-call technical support from Atlas Copco’s Brian Barton, whose special expertise includes the ST7 in particular.

“Brian broke us in on the rigs,” said Laney. “He was here about four days. But any time I call, I can get him. We had a CAN-bus cable go, and I called. Brian had just come off a night shift in Alaska, but he answered.”

Laney said this kind of devoted service impressed him, since someone else might have called it a day and put him off until later. Barton, however, seemed interested only in working with Laney to get the rig back up and running as quick as possible.

When a software update came for remote stopping operations, Barton not only updated the software but made a few cus-

tom changes that SMD preferred for its rig. Details like this, Laney said, don’t go unnoticed and contribute to why he is so satisfied with the powerful little Scooptram ST7 and the relationship SMD has with Atlas Copco Elko. 🟡

MINEXPO 2012 INTERNATIONAL



Sept. 24-26
Booth #2121 North Hall



Ace in the hole

Following a tradition of product releases at MINExpo, the new **Pit Viper** will be revealed for the first time at MINExpo International 2012.

With 12 halls and outdoor areas, the mining industry will have plenty of new equipment, technologies, products and services to see at MINExpo 2012. Atlas Copco plays its cards right by helping customers achieve the highest productivity with expertly designed equipment.

Atlas Copco has a few surprises in store at the 2012 event. Watch for the next generation of RCS and the launch of a new Pit Viper. Atlas Copco is also unveiling a new, top secret underground product!

See us at the show to learn about the products shown here and many more.



Learn more about the **Rig Control System** and simulator training in an actual **Pit Viper cab**.

◀ Pit Viper 235

The Atlas Copco Pit Viper PV-235 is a crawler mounted, hydraulic tophead drive, multi-pass rotary drilling rig that can be configured to accommodate a wide variety of rotary and DTH drilling demands. Hole range is 6 to 9 7/8 inches diameter to depths of 240 feet. Single pass depth of 35 or 40 ft. Can be delivered with the computerized RCS (Rig Control System) to make use of such functions as wireless remote tramping, auto-leveling, auto-drilling, reporting functions and GPS navigation. A patent-pending automatic clutch option provides fuel and maintenance savings.



◀ SmartROC D65

Designed with new, advanced automation for the 4.3–8 inch diameter hole range to a maximum depth of 177 ft. A 539 hp Caterpillar C15 engine powers the rig while an onboard Atlas Copco XRX10 compressor supplies 431 psi of pressure.



▼ Simba M7 C

A topammer long-hole drill for the 2–3.5 inch hole diameter range. Its Rig Control System provides efficient, high precision drilling for longer consumable life. Drill parallel holes upwards or downwards up to 18 ft. apart. Low-emission, turbo-charged diesel, 4 wheel drive articulated carrier.





◀ Complete a winning hand

A new underground product will be unveiled at MINExpo. It's so top secret, we can't even talk about it yet. Stop by our booth to discover it.



◀ Pedestal Boom System RB600XD (with MB1700)

New Atlas Copco XD (extreme duty) series offers nine models ranging from light to heavy duty. Two- and three-boom models span horizontal reaches up to 37 feet supporting breaker weights up to 630 pounds. The PBS RB600XD is ideal for scaling and secondary breaking in mines.

◀ Boomer M2 C

A modern, hydraulic face drilling rig suitable for small to medium drifts and tunnels with cross sections up to 570 square feet. Powered by a 4-cylinder, EPA III (Tier3) approved diesel engine.

▶ Unigrout Flex-E

Grouting system based on the Pumpac hi/low pressure pump, 52 gal. Cemix 203H mixer, 106 gal. Cemag 401H agitator, and Pug 22 electric power unit. Hi/Low pump pressure presets at 115–800 psi or 30–145 psi.



◀ Diamec U8 APC

Designed for deep hole drilling down to 6,560 ft. B size. Ergonomics and safety are also a consideration in the design. Exists in two basic versions, Automatic Performance Control and Pilot Hydraulic Control, available with either electric or diesel power units. Two types of Diamec U8—underground version, compact with a flexible WL-hoist (4,265 ft.) and surface version, long mast extension to handle 6 meter rods, WL-hoist (6,560 ft.).

Atlas Copco Secoroc PARD >

Hammer boosts rotary drilling performance with DTH hammer engineering and rotary drilling technology. It is specifically geared for large mine and quarry operations with blastholes ranging from 9 7/8 inch to 12 1/4 inches.



< Secoroc DTH Rocket Bits

Bits feature ballistic buttons and spherical buttons. Available in 3 9/16 through 4 1/2 inch diameters. Generous spacing around the ballistic buttons allows cuttings to escape easily.



< The Secoroc epsilon line of Tricone bits

Now regarded as the ultimate blasthole bit solution, designed specifically for each application.

Edge drill monitor >

Atlas Copco Secoroc EDGE is the world's first continuous monitoring system that shows the driller what the bit is doing at the bottom of the hole. EDGE enables drillers to make continuous adjustments to the feed force and rotation speed, optimizing drilling from start to finish with confidence at any depth. EDGE helps drillers optimize penetration rate, extending equipment life, minimizing fuel consumption and lowering overall costs.



• COPROD system

Combines the speed of tophammer drilling with the precision and long service life of the down-the-hole method. COPROD produces high-impact power with minimal wear. Since outer tubes are flush along the entire length of the drillstring, jamming is nearly impossible.

COP 44 Gold >

Atlas Copco Secoroc COP hammers have an unmatched reputation for productivity with the lowest cost per meter drilled. The COP 44 Gold is recommended for holes from 4 5/16 to 5 1/8 inches, and the COP Gold hammer range covers up to 7 inches.





Las Vegas, Sept. 24-26

Visit us at Booth #2121 in the North Hall
www.atlascopco.com/minexpo



◀ Tier 4A Hurricane Booster B4-41

Presenting the solution for EPA's Non-road Regulation Interim Tier 4 emission standard: the newly designed B4-41/900 with Cummins QSB4.5 engine. Overall dimensions of only 97.5 by 70 by 67.25 inches and oversized forklift pockets make it easy to maneuver. Cold weather operation is made possible by a pre-cooler bypass system incorporated in the design.

• QLTS 8 solar light tower

No fuel, maintenance or noise. The light tower will run for months with proper sunlight. QLTS 8 comes with a rugged frame and battery box.

XAS 1800 JD Compressor ▶

This powerful, EPA compliant John Deere 6135HFC95 engine delivers 12 percent more air than the previous T3 version. It has a larger fuel tank for more autonomy and comes with PFF standard (quality air system).



◀ QAC 1250 generator

1MW of power in a standard 20-ft. container. This unit has an electric variable speed motor-driven cooling fan for low fuel consumption. Designed for extreme weather conditions and state-of-the-art control panel.

▼ Booster M-41

Options for unit's prime mover include hydraulic or electric motor PTO/belt drive, and diesel engine. Capacity of 2,440 cfm at maximum discharge of 1,000 psi. Features a remote mount control panel and a digital temperature scanner.



◀ WEDA Pump

Submersible drainage and slurry pumps offers full range of pumps. Connection diameters from 2 to 10 inches with maximum capacity from 158 gpm up to 475 gpm.



Simulator training, real productivity

Master Driller Program comes to the U.S. after proven success in other countries

While the mining industry is enjoying a period of strong growth and expansion, it also faces one of its biggest future challenges—a shortage of skilled operators. Those shortages are due to new positions added to mines and a loss of workforce from retirements. Either way, it takes time to get new operators well trained.

Atlas Copco's Master Driller Program can help. It gets operators to perform their best whether a mine is working with new staff, changing its fleet or just trying to increase efficiency. It involves classroom time as well as simulated drilling in a simulator cab of an actual drill rig.

Wesley Stivers is the regional training manager of North and South America for Atlas Copco Mining and Rock Excavation Service Division (MRS). He said, "We are starting the program for the Pit Viper and will expand the Master Driller Program across other product lines in the near future."

For now, training will first be offered through the Garland, Texas, Atlas Copco MRS hub. Stivers and Versie Wallace, U.S. training manager for MRS, are already working on plans to set up training in other Atlas Copco stores across the country and may expand the program to private distributors later.

Wallace said, "It's very exciting training that will ensure that our operators are skilled on the specific machines they operate."



Testimonial from graduates

The Master Driller Program recently made a big difference to one company going through a mine expansion. Before the mine even received shipments of their new Atlas Copco Pit Viper 271 blasthole drill rigs, operators began to learn on them.

After the training, the crew will be able to drill on the first day the PV-271 arrives. Despite many years of experience, the superintendent and drillers completed the training that they thought would make them communicate better, would help jobsite collaboration, and would improve overall efficiency.

The trainees were a mix of ages, tal-



Instructor Brett Randall leads a Master Driller class.

MASTER THE DRILL

Why implement Master Driller training?

- Higher productivity
- Reduced costs of damaged equipment
- Increased safety
- Documentation of workforce skills

What sets the Master Driller Program apart from others is its incorporation of simulated tramping and drilling in an actual cab, which gives participants a safe learning experience and eliminates the risk of damaging equipment or injuring themselves. The Master Driller Program consists of theoretical and manual training available through all Atlas Copco customer centers, who can rent the simulators if they don't yet have them. The program is suited for novice and experienced operators who progress through Bronze, Silver and Gold levels of training, which each take just a few days.

Bronze level, learning in the classroom or e-learning at home site—Here, the training covers topics such as rock types, technique and theory of drilling.

Silver level, simulator training—In this level, trainees learn by using a rig and by working with a hands-on simulator. The simulator features large LED monitors mounted in the window spaces of the rig's cab so the environment appears real. The cab moves in response to the actions of the operator using real controls. (In the case of training on blasthole drill rigs, the simulator even gives prompts as the rig enters unstable ground. And just as in an actual rig on the job, if the operator attempts to auto-level the drill before a safe position is reached, the drill will not allow the procedure. The operator must successfully stabilize the rig before leveling can resume.)

Gold level, on-the-job—An Atlas Copco product specialist works with trainees one-on-one on their job site. Previous training is reviewed on an actual rig and is repeated if necessary.

Only after the Gold level is passed is an operator called a Master Driller.

For an Atlas Copco Boomer E2C for instance, the combined training scenarios include:

- Position feeders
- Basic drilling
- Basic tramping
- Setup and positioning
- Navigation with different methods
- Advanced drilling
- Advanced tramping
- Calibration

Robert Dikmen is a training manager at the Mining and Rock Excavation Service Division and is responsible for the Master Driller Program. He said, "The feedback we've received from our customers is that the operators' understanding increased and translated directly into greater production and greater safety."

The Master Driller Program with simulated drilling in a simulator cab of an actual drill rig has been offered for two years. With the success the program has shown, Dikmen said Atlas Copco is now extending the simulator fleet and developing a program for more products to complete the Master Driller offering.



A student inside a cab of an actual Pit Viper practices drilling during simulator training.

Simulators are currently available for the following products:

- Boomer E2C
- SmartRig D7C
- SmartRig D9C
- SmartRig F9C
- FlexiRoc D50-D65
- SmartRoc D65
- PitViper 271
- Simba E7C

ents and backgrounds. One was an experienced 58-year-old who has been drilling for 28 years and purchased his first computer only three weeks earlier. One was 47 and had drilled for years with some computer experience. A third was 28 with eight years of drilling experience and many years of computer gaming.


During the three-day course, the group studied drill startup and stop, safety procedures, towering-up, propelling, advanced propelling, drilling and advanced drilling.

As one Master Driller student simulated the drilling of five holes, his skill level increased, completing the last two holes in half the time it took to do the first one. This section had an overall time limit of one hour. On the first attempt, he failed it by two minutes. Repeating the level, he finished it in just 32 minutes. By the second run, each operator had cut his time in half and had become proficient with the controls.

Another driller said that without the simulator training he would have figured out how to operate the rig, but the course got him up to speed so that he will be



ready to drill when the new rig arrives on site. He added, "The simulator is definitely safer. You can't damage the simulator like you can the drill itself."

Almost all Atlas Copco blasthole rigs, along with underground and surface crawler drill rigs, have training programs designed to help operators become Master Drillers. Training on equipment other than the Pit Viper will be available soon in the U.S. 

Wes Stivers and Versie Wallace welcome inquiries from those interested in the training.

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2012 SME Annual Meeting & Exhibit

WELCOME

Society for Mining, Metallurgy & Exploration annual meeting

New award, Atlas Copco Miner of the Year, will be given by SME starting in 2012

The Society for Mining, Metallurgy and Exploration's annual meeting in Seattle drew a record number of exhibitors with 690 booths and attendance of 5,102. Atlas Copco has been a longtime member of SME and supports its mission to advance the worldwide mining and minerals community through information exchange and professional development.

New award sponsored by Atlas Copco

The Mining and Exploration Division of SME is a large and active group whose incoming secretary is Jess Kindler, Atlas Copco business line manager for Mining and Rock Excavation Technique Service Division. The SME Mining and Exploration Division was chaired in 2011 by Atlas Copco's Bill Warfield, business development manager of Geotechnical Drilling and Exploration. One of the lasting contributions of Warfield's time as chairman was the establishment of an award recognizing stellar miners who contribute to the industry through their hard work. Atlas Copco has committed to

sponsoring it for at least 10 years.

Warfield said, "I formed the committee to take a look at areas that were not being recognized. We felt that we as a group were good at giving honors to top level management, the CEOs. But we were lacking in recognizing the person who gets in and does the work in the mines."

The committee is in the nominations process now for the award that will be known as the Atlas Copco Miner of the Year. The award's description declares that it is to be "... presented to a person in recognition for getting 'rock in the box.' This award is designed to recognize leaders working on the mine sites who are able to manage production, people, community and safety and be good stewards of the environment. ..."

The SME meeting included 93 technical sessions with 173 papers printed under the theme "Mine to Market ... Now It's Global." The record number of booths exhibited nearly every kind of product used in the mining and mineral extraction industries. ●



Speakers at the keynote session included moderator Robert Shafer, executive vice president of Hunter Dickinson Inc.; Christopher B. McGill, managing director, policy analysis with the American Gas Association; Roderick G. Eggert, director and professor, division of business and economics at the Colorado School of Mines; Dave M. Cole, president and chief executive officer of Eurasian Minerals Inc.; and Jeffrey R. Huspeni, senior vice president, Asia Pacific Operations with Newmont Mining. (Photos courtesy Bill Gleason, Mining Engineering magazine)



Bill Warfield (at left), Atlas Copco, received the 2011 Chair Award, presented by Dr. Hugh Miller of the Colorado School of Mines.

Boomer E1C-DH moves projects faster

Atlas Copco's Boomer E1 C-DH face drilling rig is a single-boom, diesel-hydraulic multipurpose unit specifically designed for mines or underground construction sites lacking water and electrical infrastructure. The Boomer E1 C-DH comes with dual onboard 118-gallon water tanks and a six-cylinder, 232 hp Deutz diesel engine to drive the rig, its boom and the drill's hydraulic pumps.

The new Boomer E1 C-DH rig is one of the largest diesel-hydraulic face-drilling rigs on the market, with a coverage area of up to 1,022 square feet. This is a 38 percent improvement over its predecessor, the Boomer L1 C-DH drill rig.

According to Johan Jonsson, product manager for Atlas Copco Underground Rock Excavation, the new rig provides unique advantages in the field. "The Atlas Copco Boomer E1 C-DH drill rig can be used to get started even before water and electricity are installed at the job site," he said. "Mines begin earning sooner, and contractors are able to get ahead on their schedules." Jonsson also pointed to the new drill rig's advantages in widening existing tunnels or adding bolts in older workings, as it is not necessary to install power and water infrastructure to support the rig on-site.

The Boomer E1 C-DH rig is able to handle small construction jobs more efficiently



than larger rigs, and is compact and maneuverable for tight spaces in a mine.

The multipurpose capabilities of the new rig are enhanced with the addition of the optional basket attachment. This allows the Boomer E1 C-DH rig to be used as a bolting rig and as a utility rig for drilling holes and installing ventilation ducting, among other tasks.

The Boomer E1 C-DH drill rig comes standard with Atlas Copco's Rig Control System (RCS) with the option to upgrade to an even higher degree of automation. Jonsson said, "As a member of the Atlas Copco Boomer E-series of face-drilling rigs, the new rig has access to the wide range of existing options for that established product family," which he believed to be another

important consideration for those in the market for a large diesel-hydraulic rig.

The Boomer E1C-DH was developed to meet the need for a self-contained, diesel hydraulic driven rig with a large coverage area equipped with a service basket.

The rig comes with a COP 1638, COP 1838 or COP 2238 rock drill with a dual-damping system for optimum service life. The BUT 45 heavy-duty boom is equipped with a double-rotation unit for plus/minus 190-degree feed roll-over and plus/minus 135-degree feed rotation, providing the operator with fast and accurate positioning between holes. It comes with an 8-foot boom extension and 5.9-foot feed extension. The rig also has a BMH 6000 series hydraulic feed.

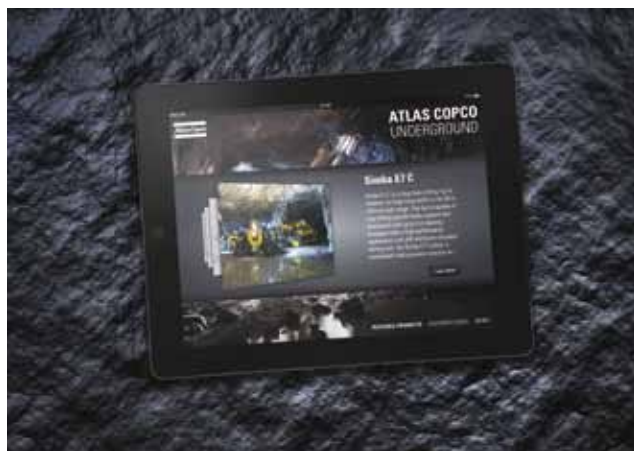
Underground app

Atlas Copco has announced the launch of a series of software apps for smart phones, tablets and other hand-held devices. The first in the series is an app available from the Apple App Store and from Google Play. After downloading the free app, users will gain access to Atlas Copco's wide range of underground face drilling rigs, loaders, trucks and other equipment.

The exclusive content in the app includes high resolution images of the products presented as 3D turntables, which enable the products to be viewed from all angles. The app will also feature video, technical data, case stories and a social news feed. In addition, all of the content can be synchronized

and then accessed offline. A GPS function can automatically direct the user to the nearest Atlas Copco office, store or representative.

Paula Blamberg, vice president of marketing communications for the Underground Rock Excavation division, says, "Due to the staggering number of new mobile devices we now see in use, and knowing the capability of these devices, we see that this technology has huge potential to simplify the way our customers, the media and other important



contacts can access our products. Information sharing has never been easier. You can easily pass on technical specifications or images with the touch of a button."

Latest bolting rig achieves fast installation rate

The Boltec EC, a fully mechanized rig that features the new BUT 45 heavy duty boom, is also equipped with a new rock drill, the COP 1435. The COP 1435 delivers up to a 30 percent higher penetration rate than its predecessor, the COP 1132.

The Boltec EC installs rock bolts from 4.9 feet to 19.7 feet in length, and is designed for a hole range of 1.4 to 2.5 inches. The rig is built on a sturdy, articulated carrier with four-wheel drive.

“The Boltec EC is fast, accurate and stable, and designed for bolting in large mining and tunneling applications,” explained Ed Tanner, Atlas Copco business line manager. “We are also offering several levels of optional automation that save time and improve productivity, including features such as Bolt Angle Indication and Bolt Plan Navigation.”

The BHR 20 feed rotary unit has a double rotation unit for plus or minus 190-degree feed roll-over and plus or minus 135-degree feed rotation.

In the field, the first Boltec EC rigs have already achieved an installation rate of 120 to 130 bolts per shift and have been used to drill holes for power lines and water pipes.



New Simbas join long-hole production fleet

Atlas Copco simultaneously launched four new Simba long-hole production drill rigs. The existing Simba rig fleet has been joined by the Simba ME7 C, the Simba E7 C, the Simba E7 C-ITH for in-the-hole (ITH) hammers, and the Simba W7 C, which is fitted with a water-powered ITH hammer for special applications.

The four stingers on the new rigs enable operators to achieve a much more secure setup and more stable positioning. The new BUT 45 heavy-duty boom is also an improvement. The stability of the BUT 45 boom increases the degree of precision and control possible. It has a 360-degree rotation, a tilt angle of plus 90 to minus 10 degrees, and a boom extension from 3.3 feet to 5.25 feet, so the coverage area is excellent as well. All of this extra stability makes the rig operation faster and more productive.

All four new Simba drill rigs are equipped with an automatic Rod Handling System (RHS) based on Atlas Copco’s existing control system platform. The control system platform not only provides automation but also self-diagnostics and data logging.





Crunch time

60-foot bridge columns no match for world's largest Combi Cutter

The February 2001 Nisqually, Wash., earthquake went down in records as one of the largest in state history. In Seattle, 50 miles from the quake's epicenter, the 45-second, 6.8 magnitude event caused damage to such structures as the Alaska Way Viaduct on State Route 99. After initial repairs the double-deck bridge was steadily monitored for safety concerns. In early 2009 officials of the Washington State Department of Transportation (WSDOT) announced that the viaduct would be replaced.

Demolition of concrete structures is one of the specialties of J. Harper Contractors of Maple Valley, Wash., who began work on the project Oct. 21, 2011. The initial assignment from general contractor Skanska USA on the WSDOT project was to demolish and remove 10,000 tons of concrete of a 1,300 lineal foot span of the structure to make way for crews who would immediately begin building a diversion. The diversion will relieve the other north-south thruway, Interstate 5, during construction of Route 99's underground replacement, a 2-mile-long four-lane tunnel that will stream traffic underneath Seattle.

J. Harper Contractor's vice president, Jeff Slotta said he knew what he wanted for this job right away: an Atlas Copco Combi Cutter CC 6000 U™.



» Faster cutter

Slotta said J. Harper Contractors has worked on larger projects and probably could have accomplished this task with their existing equipment. But Slotta said the heavy structural concrete of the bridge would have taken much longer without a larger cutter. And time was a factor: other contractors were waiting on demolition to join in on the project.

Slotta did check into other manufacturers who make large cutters, but he said he knows the quality of Atlas Copco equipment and has a good relationship with the company through Dana Creekmore, the Atlas Copco regional channel manager for the western U.S.

Slotta was aware of the CC 6000's use in Europe and knew it would handle the job here. J. Harper Contractor's other Atlas Copco equipment includes three HB3000 heavy duty breakers, a BP2900R bulk pulverizer, and a smaller Combi Cutter, the CC 3300. However the deciding factor, he said, was Atlas Copco's enthusiasm for the venture: "Other specialty tool manufacturers weren't willing to go out on a limb with us. But Atlas Copco bent over backward for us." He also had high praise for Modern Machinery's store in Kent, Wash. Slotta

said, "Those two companies combined efforts to make the deal work for us."

Scissors in its throat

The Combi Cutter gets its name from its design, which has an option that features steel-shearing blades in the throat of two concrete cracker jaws. The jaws are driven by separate pistons and operate, by Slotta's description, "like alligator jaws, with teeth in front to pulverize, crushing and swallowing concrete down its throat to get to the No. 18 rebar." J. Harper Contractors recovered more than 1,000 tons of the 2 1/4-inch diameter rebar during this section's demolition.

The viaduct's steel-reinforced 60-foot towers were 4 by 4 feet wide. In addition to the concrete bents, the supporting system that elevated and supported the roadway, its concrete beams were 2 to 3 feet thick.

"The CC 6000 didn't ever hesitate. It just squished them, munching down on those columns, slicing through rebar all day long," said Slotta.

Technical support team up

Slotta said he was impressed by the partnership between Atlas Copco and Seattle-based Modern Machinery. "I really have to commend them both. They put together a

machine that greatly facilitated us, and has absolutely wonderful performance."

It did indeed involve coordination. At the time Slotta made his request he hadn't realized that the CC 6000 would come to him from Germany. It was the first ever Combi Cutter in the U.S. and only the second CC 6000 to be used in North America so far.

J. Harper Contractors experienced no delay, however, having allowed about three months of lead time before the unit would see action on the project.

The CC 6000 required a larger carrier than the usual 300 and 400 series excavators that the company uses for its demolition fleet.

The CC 6000 is the largest Combi Cutter made, with a service weight of over 7 tons. So after the Combi Cutter arrived at Atlas Copco in Texas, it was shipped up to Modern Machinery, who mounted it to a Komatsu 800-series excavator.

Slotta said that additional modifications on the Komatsu they invested in were pretty much limited to installing extra hydraulics to run the Combi cutter and adding extra guards to protect the operators. J. Harper Construction places a premium on safety and has been repeatedly recognized for safe operations by profes-



From left: J. Harper Contractors Vice President Jeff Slotta and Atlas Copco Regional Channel Manager, Dana Creekmore

sional and government organizations, including the Associated General Contractors of Washington. Having the right equipment for the job, such as the CC 6000, helps the company live up to its brand promise: Providing customers with a “drama-free demolition experience.”

After a brief commissioning period and fine-tuning the hydraulics, Slotta said, “We’ve had absolutely no issues with either the tool or the excavator.”

Crunch time

Atlas Copco HB 3000 breakers were used to blow away both concrete decks. While the CC 6000 munched the upper deck, towers, bent supports and deep concrete beams, J. Harper Construction’s CC 3300 and pulverizer worked on the lower deck and beams. They completed the job in just 30 working days.

Slotta was pleased with the job his team has done completing this first demolition phase. “I’d rate this as one of the smoothest wrecking jobs we’ve ever done. Mardy Olson, our project superintendent, just did a fantastic job, the best demolition management I’ve ever seen.” The task included coordination of transporting concrete rubble to the company’s portable crusher at a staging area about a mile offsite. Crushing and transportation are just two of J. Harper Contractors’ other specialties.

While completing the first phase of demolition, J. Harper Contractors was awarded additional portions of the project that will involve them in other stages of what is anticipated to be at least a six-year project. Next on the list is crushing 30,000 tons of concrete for reuse at this job. Later the company will be involved in demolition of other sections of the viaduct.

No firm date has yet been announced for completion of the replacement route, but with the CC 6000 in the hands of J. Harper Contractors’ expert crews, construction definitely will not be waiting on demolition. ☺

Modern Machinery worked with Atlas Copco and J. Harper Contractors on this project.

Modern Machinery serves customers in Washington, Montana, Oregon, Idaho, Montana, Wyoming and Russia.

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Sustainable Productivity



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