MINING & CONSTRUCTION

CANADA

MECHANIZED ROCK EXCAVATION WITH ATLAS COPCO - NO. 2/ 2013

Atlas Copco Celebrates

1873 140 2013

Atlas Copco exploration at PDAC show

Atlas Copco

EDITORIAL

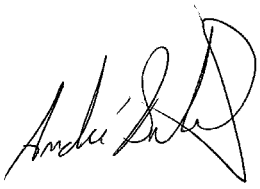
This is an exciting time for Atlas Copco! Last year started with the official launch of a new division within Atlas Copco Mining and Rock Excavation—service, also known as MRS (Atlas Copco **M**ining and **R**ock Excavation **S**ervice division). Since that division launch, we haven't slowed down.

Our primary goal is to improve the customer experience while using Atlas Copco products.

We have reorganized to be closer to our customers in all aspects, including the most dedicated service teams working out of centers close to our customers. We have also created a competency training group. This new focused competency training group has 12 of the top trainers available to help our customers reach their maximum potential while using and maintaining our Atlas Copco equipment safely.

We have also released new products such as RigScan, which helps customers ensure their equipment is available when they need it. Our service exchange programs added installation kits that give the maintenance groups a perfect plan to complete required tasks. Fluids management including hoses and fittings helps us become a one-stop experience. Let's not forget the improvements we have achieved in overall parts deliveries this year with a new virtual warehouse system that helps deliver the right part at the right time.

We have many more things to discuss with you and would like to hear from all of you. Please feel free to contact me directly anytime. It would be a pleasure to discuss your Service experience with you!



Andre Bertrand
Business Line Manager
Mining and Rock Excavation Technique
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CONTENTS

MINING & CONSTRUCTION CANADA
is published by Atlas Copco. The magazine focuses on the company's knowhow.
www.atlascopco.com

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SAFETY FIRST
Atlas Copco is committed to comply with or exceed all global and local safety rules and regulations for personal safety. Some photographs in this magazine may, however, show circumstances that are beyond our control. All users of Atlas Copco equipment are urged to think safety first and always use proper ear, eye, head and other protection as required to minimize the risk of personal injury.

Atlas Copco

Atlas Copco takes stage at PDAC

Attendance at the 81st Prospectors & Developers Association of Canada Convention, Trade Show & Investors Exchange once again exceeded 30,000. PDAC 2013 Executive Director Ross Gallinger, who called the convention "the world's premier event for the mineral industry," credited its outstanding program of events for attracting 30,147 investors, analysts, mining executives, geologists, government officials, students and international delegations from government, industry, financial institutions and Aboriginal communities to attend the event held March 3 at the Metro Toronto Convention Centre. Among the attractions were Atlas Copco exploration rigs, tools and equipment.

Atlas Copco's Eric Diaz-Arguelles, the product line manager for Christensen exploration drills, and Martin Sommers, vice president marketing, capital equipment, said the show was positive from their point of view.

Sommers said, "In spite of the concerns surrounding the market conditions expressed by many of our customers, the reception and turnout at the PDAC was motivating and energetic. It was great to see the level of interest our CS14C surface core drill generated at the trade show with several customers expressing an interest to acquire such a unit.

Despite the general depressed global exploration market conditions, regions such as Africa, Eastern Europe, and Russia still remain quite active. The expectation from many is that the industry activity will pick up again in the second half of 2013 with demand returning to a more normal level in 2014."

Stephane Goupil used his time at the PDAC show to explain the finer points of Excore EXII Safety Overshot.

Atlas Copco Product Manager Reverse Circulation Hammers Pierre Coulon said traffic was steady and optimistic. Visitors showed keen interest in the new Secoroc RC 40 circulation hammer.

Atlas Copco's Stephane Goupil and Artur Makos, product line manager of core drilling and in-the-hole tools and Excore EXII Safety Overshot and Excore high performance diamond products, respectively, also declared the show a success.

The 82nd PDAC Convention will be held next year between March 2 and March 5. In the meantime, PDAC officials said they will continue as always supporting and advocating on behalf of the mineral exploration and development industry.

Best known for its annual convention, trade show and investors exchange, the Prospectors & Developers Association of Canada (PDAC) represents the interests of the Canadian mineral exploration and development industry. The association was established in 1932.

Among the many exploration products that Atlas Copco offers, the following were showcased at PDAC

SPECIFICATIONS

Depth Capacity	1200 m
Rod Pull Length	6 m
Max Torque	3770 ft-lb
Max Speed	1300 rpm
Drill Rod Size	B–P
Main Hoist	18,000 lb
Line Speed	148 ft/min
Hole Diameter	48-122 mm
Feed Thrust	13,390 lb
Feed Pull	31,020 lb

Atlas Copco Christensen
CS14 Core Drill

The powerful feed system and main winch of the Christensen CS14 surface core drilling rig make for fast, efficient, deep drilling. Comes with a 208 hp Cummins 6-cylinder Tier III or Tier IV diesel engine. The mast dump, four hydraulic leveling jacks and foldable mast make for easy setup. The CS14 rig's modern design includes safety guards and emergency stop buttons making the rig user-friendly and safe to operate.

RC 40 Hammer

The new Atlas Copco Secoroc RC 40, together with Atlas Copco reverse circulation tricones, drill pipe and its bigger brother, the RC 50, offer customers a dedicated range of solutions for any reverse circulation exploration job.

Ideal for hole sizes 5 to 5.5 inches (125 to 140 mm) in a variety of conditions, from hard rock to flooded, the 4-inch RC 40 hammer's unique new design is 34 percent shorter than other 4-inch hammers and 20 percent lighter than its competitors. It can also be serviced more quickly, making it the best selection for increased performance and reliability in remote, greenfield exploration.

The RC 40's modular system features a one-piece sample tube that can easily be changed without opening the hammer. Matching the RC 40 to Atlas Copco DR102 and DR115 pipes, which are 23 percent lighter, allows exploration to depths greater than 600 meters. The unique coupling seals of DR-series pipe do away with O-rings and, therefore, minimize risk of leakage.

RC Tricones Atlas Copco Secoroc has added to its entire range of reverse circulation solutions. The new range of RC tricones offers built-in check valve and a superior flow control to seal the sampling process. This is the ideal solution for RC drilling in the most difficult ground conditions.

Atlas Copco

EXII Overshot

The safest overshot made to date. Operators can't forget safety with this–it's built in. The automatic safety mechanism does not require action from the drilling crew, neither to engage it nor to disengage it during core retrieval. With one less process to worry about, the EXII not only protects the crew and the equipment but increases overall cycle time, raising productivity levels.

Premium Excore System

Atlas Copco offers the Excore family of wireline tools, a full range of drill rods, core barrels, core drilling bits and casings. Simplicity of design throughout the product family creates increased safety, reduces unnecessary inventory and downtime and ensures sustainable productivity in all underground and surface exploration coring jobs.

CMO drill rods Atlas Copco CMO-series internally upset rods have a lighter weight—11 to 21 percent lighter depending on size—to allow greater depth yet maintain the benefits of MO threads.

Safety mechanism The EX II "built in" safety mechanism benefits productivity with efficient design and by removing unnecessary steps in the drilling cycle that are present in other manual locking overshots.

Head assembly Newly designed Excore head assembly decreases inventory by easily converting from surface to pump-in operations. Available in DCMA sizes B, N and H.

Excore bits Atlas Copco Excore diamond bit designs optimize matrices and crown profiles to cover a wider range of applications from a single bit. Drillers reduce the number of bits usually kept on hand for different rock conditions and minimize tripping out of the hole to change bits.

MO drill rods Atlas Copco MO-series wireline drill rods are manufactured to exacting specifications using the industry's highest raw material specification standards with subsequent heat treatment enhancement. Mating MO thread profiles provide a leak-proof joint. Easy to stab and start, and easy to make and break and maintain joint pre-torque.

The identification grooves on each rod pin allows easy identification of the MO thread. In addition to removing the risk of mix up, it also provides an easy way to find the rod joint and gives an indication of the ware of the outer diameter.

February 21, 2013, Atlas Copco celebrated its 140th anniversary. The milestone is an opportunity for the company to celebrate the accumulated experience and expertise it's developed over these many years.

Today Atlas Copco is a world-leading, multi-division manufacturing icon whose equipment and compressors are familiar to customers throughout the automotive, mining, construction, aerospace, food and pharmaceutical industries. Its customer base spans 178 countries with operating bases in 90 of them. So it may surprise people to know the company first laid its tracks in Sweden in 1873 as a locomotive and railroad manufacturer, which at the time was called "Atlas."

Reliable, productive tooling for manufacturing railroad equipment was neither convenient nor cost-effective to keep importing. So Atlas first made pneumatic tools and machines for itself, so that it could complete its share of orders for the rapidly developing Swedish railway. It means that long before they were ever coined, Atlas Copco's brand promise of "Sustainable productivity" and its visionary slogan "There's always a better way" have been working principles for Atlas Copco.

By 1876 rail car orders for the established rail network were slowing down, and Atlas was getting its first lessons in diversity. Atlas strategically shifted toward production of steam engines, tools and machines.

Atlas Copco employees celebrated the corporation's 140th birthday in February. Atlas Copco has 15 locations throughout the country in order to be close to its customers.

As Atlas modernized its own manufacturing plant, adding planers, mills and grinding equipment, it imported a compressor and a yoke riveter.

The exorbitant cost of having to import them prompted the company's engineers to reverse engineer this equipment, as it had other machines, to make their own. But Atlas also improved upon those designs, further developing them through an openly collaborative effort among the engineers, production staff and end-users.

By 1901, pneumatic tools were coming off Atlas's assembly line. In 1905 the first Atlas rock drill was in production. The tools were better than others on the market. In 1915, pneumatics accounted for more than 50 percent of Atlas's revenues.

Then in 1917 Atlas merged with Diesels Motorer, headquartered outside Stockholm. Atlas ran the diesel engine side of its operations separately from its compressed air division. The compressed air side of the company accounted for much more of its profit. During the 1920s and '30s, Atlas made crucial advances in compressed-air technology under the leadership and vision of Erik Ryd, the son of Atlas Diesel's former chief designer.

Ryd had a combination of expert technical knowledge and the intense desire to improve his customer productivity. In collaboration with the legendary John Munck, for whom Atlas Copco's Munck award is named, Ryd designed a strong, lightweight and highly efficient pneumatic rock drill in 1936. Capable of one-man operation, it could be equipped with a pneumatic pusher leg enabling one-man drilling in various directions.

When Atlas noted that customers were reluctant to invest in new portable drills, it accommodated them by adding rental services to local customer centers. The popularity of compressed air machinery immediately increased throughout the industry. At this time Atlas Copco developed its selling technique of taking the equipment to the customer's jobsite and demonstrating its productivity to operators and engineers on site, rather than relying on designated company representatives alone.

The Swedish Method

At about that time another Swedish company, which manufactured drill steel and bits, was experimenting with tungsten carbide as a bit material. When Atlas's portable drill was combined with carbide bits, nothing in the industry could compare with its performance. Other countries such as France, Germany, the United States and Canada, were using much heavier, more burdensome equipment.

Atlas Diesel acquired the rights to the carbide bits and paired it with their lightweight pneumatic drills as a new technique for drilling. The technique and its equipment were nicknamed "The Swedish Method."

Throughout World War II the drill and bit combination were used to make Sweden's defense bunkers, but exportation was hampered by a crippled trade network, disrupted by the international crisis. In the latter half of the 1940s, however, as Atlas Diesel's motor sales declined, its pneumatic equipment sales increased tenfold.

The company terminated diesel engine production in 1948, dedicating all resources solely to compressed air machines and equipment. In 1956, the company changed its name to Atlas Copco, trading Diesel for an abbreviation of the French words Compagnie Pneumatique Commerciale.

Having already established dozens of international offices Atlas now offered its Swedish Method to North America, dispatching George Blomdal, a Norwegian engineer, and drill master Olle »

▲ Norwegian engineer George Blomdal tested a new Swedish-designed rock drill and drilling method in Canada, targeting Northern Ontario's gold industry. Consisting of a handheld drill with pusher leg and integral steel and bit, it could be operated by one man instead of two. The Swedish Method outperformed anything then available, revolutionizing Canadian mining.

▲ Headquartered in Kirkland Lake, Canadian Copco Ltd., was born May 9, **1949**. Within a year the Kirkland Lake head office established two branches, one in Port Arthur and the other in Vancouver. The name Canadian Copco subsequently changed to Atlas Copco Canada when the parent organization Atlas Diesel AB changed its name to Atlas Copco AB in **1956**.

▲ Atlas Copco Canada headquarters moved to Dorval near Montreal in **1951**. Additional branches opened in Toronto and Montreal. Compressors sales kept pace with an increasing industrial base. A Truro branch of Atlas Copco Canada opened in **1952**, phased out in **1969** with transportation improvements. Pictured is an early delivery truck with a Compressor.

▲ One of two Atlas Copco PROMEC T 290 rigs, equipped with six TUNMEC R250 booms, is seen here in **1961** slashing one of the 11 penstock tunnels at Churchill Falls. The rig was raised on winches for blasting and lowered again to rapidly resume drilling. Mechanized long-hole drilling was introduced at this time with the Simba 22, significantly increasing drill meters per man hour.

» Hedwall to Canada. Blomdal chose Northern Ontario's gold mining industry as a likely starting point. The Swedish Method caught on almost immediately.

In 1950, Blomdal helped introduce Atlas pneumatic products.

By the mid-1950s, Altas Copco compressors were experiencing success after success. Then in 1958, Atlas Copco introduced the first oil-injected screw compressor, later launching a portable screw compressor that produced oil-free compressed air without chamber oil injection in 1967. With oil-free compressed air, Atlas Copco broadened its presence in the textile, food, and pharmaceutical industries.

Sales of handheld tools also increased, especially in the automotive industry, where pneumatic assembly tools and systems prevailed. In the 1960s, Atlas Copco designers worked with medical experts to enhance the ergonomics of handheld tools.

Atlas Copco itself had realized the importance of having a close source for reliable, productive tools and equipment during its humble beginnings as a locomotive and rail car manufacturer. A series of acquisitions have made it possible to provide the same for Atlas Copco's customers.

Some have powerful brand names that assured customers they were getting the highest quality available, such as the Craelius mineral exploration lines, which Atlas Copco acquired in 1960.

In 1987, Atlas Copco acquired Chicago Pneumatic Tool Co. The purchase instantly made Atlas Copco the world's largest manufacturer of pneumatic tools and assembly systems. Secoroc down-hole tools joined the Group in 1988, and Wagner loaders and mine-trucks in 1989.

Atlas Copco acquired U.S.-based Ingersoll Rand Drilling Solutions, as well as Baker Hughes Mining Tools, in 2004. The drill rig division manufacturers open pit, quarry, oil and gas and water well rigs.

In 2007 Atlas Copco acquired the Swedish road construction equipment manufacturer Dynapac.

In 2012 Perfora came to Atlas Copco with its high quality drill rigs and cutting tools specifically designed for the dimension stone industry. That same year GIA increased the selection of electric mine trucks, utility vehicles, continuous loaders and ventilation systems.

As Atlas Copco has grown, it has not neglected its responsibility as a global citizen, knowing full well sustainability means operating in accordance with established environmental standards, promoting ethical business practices, and providing for the safety and wellness of its people and their communities.

One of its best-known initiatives is Water for All, born of the belief that all people have a right to clean water. Since 1984 the program has been funded by employee donations and today is met with matching funds from the corporation.

With solid plans in place to increase its diversity, mobility and competence development even further, Atlas Copco is committed to your sustainable productivity for another 140 years.

► This photo taken in **1956** shows the world famous Swedish Method. The first Sudbury branch opened in **1956**. Edmonton also joined the list of branches in **1956**. Due to improved transportation, the original Kirkland Lake branch was phased out. A sub-branch opened in St. John's, Newfoundland, in **1962**. Calgary would become an Edmonton-affiliated office in **1973**.

► In the **1970s** the Dorval shop took Atlas Copco deeper into the mining market as well as into civil construction and the British Columbia logging industry. The shop at Dorval manufactured many Long-Hole Wagons during this time (pictured), designed the Boomer 3R for Montreal's Metro extension, and produced Uppers Drill Wagons, Simba 11s and Hydraulic Boomers.

As tool sales took off in the **1960s**, wagons like this one took them directly to customers, demonstrating them on site. In **'63** the Winnipeg branch was established to support the burgeoning mining industry in Northern Manitoba. In **1966** the Sudbury branch moved to Lorne Street. Hydraulic drill rigs were introduced and underground loaders were now in use in Canada. ▼

◄ In **1962** Patrick Harrison Contractors of Sudbury purchases the first Robbins Raise Bore Machine, the 1.2 m diameter Robbins 41R. Mechanizing one of the most hazardous tasks in underground mining, James Robbins invention is now the world standard for mechanical raise excavation. The 41R was purchased by. Incredibly, 50 years later, that first machine is still in use in Morocco.

From 2001 on, operations were separated into Canadian and U.S. companies. The Canadian corporate office moved to Lasalle, Montreal. Acquisitions included Hobic and Layne Christensen (**2001**), Ingersol Rand Canada (ADS) and Baker Hughes Canada (**2004**), Thiessen and Dynapac (**2006**), and Greenfield Canada (**2007**). Milwaukee Electric tools was divested in **2004**. ▼

◄ The first three Robbins 53RH machines were built in Sudbury in **1999** for use at Cameco's McArthur River Uranium Mine. This was a unique application where the very rich uranium orebody was "stitch-drilled," or completely mined out by Raise Boring Machines, backfilling the empty holes with concrete. Eight machines were eventually delivered over the years to McArthur River.

▲ Atlas Copco Tools moved to Mississauga in **1996**. In **1998** Atlas Copco CMT moved its head office from Dorval, Quebec, to a large remanufacturing facility in Sudbury, Ontario, and then moved it again to the Mumford road building in **1999** (pictured). In 1998, JKS Boyles was acquired. Rental Services began in Canada in 1999, and Milwaukee tools was acquired.

In **2010** Atlas Copco CMT Canada opened hubs and branches across Canada to be nearer their customers. Its head office moved to Mississauga, where Dynapac and Atlas Copco Tools joined them in the Tristar building (pictured). In **2011**, Atlas Copco CMT Canada became Mining and Rock Excavation Technique Canada. Dynapac became part of the new Atlas Copco Construction Equipment. ▼

◄ In **1993** the first Swedish-built drill rigs were introduced into the Canadian market with the Borpak 1200 at INCO's Coleman Mine in 1993. In 1994 Atlas Copco acquired Scooptrams (pictured) and Mine Trucks from a pioneering giant in articulated 4WD tractors, Wagner Mining Equipment Company, which had been making the scoops since first designing them in 1958.

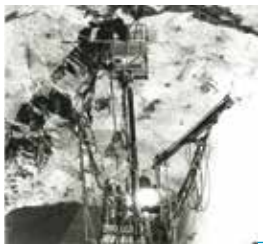
▲ Atlas Copco Compressors relocated to Dollard des Ormeaux, Quebec, in **1990** (pictured). In **1992** Atlas Copco CMT closed the Kirkland facility (Montreal Works) and moved manufacturing to Orebro, Sweden. Atlas Copco Compressors Canada continued selling a line of stationary and portable compressors and accessories in the Canadian market.

▲ The "Swedish Royal visit" (pictured) to Montreal Works manufacturing unit was a major event in **1990**. Numerous underground drilling rigs were built here for the North American market. In **1991** a Robbins 53R successfully completed a test blind bore in the uranium ore body, and Atlas Copco CMT moved the Sudbury Service Group to a workshop building on Webbwood Drive.

◄ Portable VT4 compressors together with DOP 10 pumps made the headlines in **1974** when they were used to rescue silver concentrate from the bottom of Great Slave Lake in spite of air temperatures that dipped below minus 30 degrees Fahrenheit. Eight ROC 302s were purchased in **1975** by Canfarge Ltee for Highways 2 and 20 to the new Montreal Mirabel Airport.

► The introduction of hydraulic rock drills with the COP 1038 ramped up Dorval workshop's production of hydraulic rig lines such as Boomers, Simbas and Boltecs. By **1976** it became necessary to create a separate CMT manufacturing unit in Pointe Claire, Quebec: the Montreal Works. The Swedish-built CAVO D 710 (loader shown here) was tested in Canada in the mid '70s.

▲ This **1985** Rocket Boomer 226 was one of the first market-leading hydraulic drill rigs built at Montreal Works. Montreal Works moved from Pointe Claire to Kirkland, Quebec, in **1987**. The Robbins 97RL DC sold to Falconbridge in **1988** was the largest Raise Boring Machine working in Canada at that time. In **1989** Kenroc (Rock Tools) in North Bay, Ontario was acquired.



◄ This massive seven-boom rig was the first of several rigs built for Mica Dam in Northern British Columbia, one of the largest earth-fill dams in the world, with a generating capacity of 1,805 megawatts. The equipment order for excavation of its powerhouse, which was filled by the Dorval workshop in **1973**, included three-boom Boomer 3Rs.

In **1977**, two Robbins 34R Raise Drills purchased by Kidd Creek mine were used for the first time down-reaming to backfill stopes. Incidentally, a Robbins 34RH-HT was purchased by Brunswick Mine for similar application in 1996. Some 200 industrial air tools were ordered from the Edmonton branch in **1979** for use in the burgeoning oil sands industry.

▲ This early hydraulic rig with COP 1032 hydraulic rock drill is shown operating at Falconbridge Mine in Ontario in the **1980s**. Also in the 1980s, the company made some name changes: Atlas Copco Canada Inc., Atlas Copco Tools Canada, and Atlas Copco Compressors Canada. Ontario locations were consolidated under one roof in Woodbridge, Ontario, in **1986**.


Atlas Copco
ROC SIMULATOR
SMARTROC D

Raising the bar

Atlas Copco Canada service division's world-class training exemplifies safety, production and quality

Al Charbonneau, Training Manager for Atlas Copco Canada Mining and Rock Excavation Service (MRS) division has spearheaded some big accomplishments for his division. Nearly every one of his 84 technicians has completed Level 1 training in the Atlas Copco Mining and Rock Excavation Technique certification program. A Service Level 1 certified technician is capable of basic maintenance and repair work on Atlas Copco products.

This initial training ensures that Atlas Copco technicians, who come from a variety of technical backgrounds, familiarize themselves quickly with homogeneous, company-wide expectations, protocols and standards across all equipment lines. This includes electrical and hydraulic schematic print reading and advanced Rig Control System (RCS) training. Charbonneau, with his team of trainers, also coordinates the Level 1 training that is offered to Atlas Copco customers.

Charbonneau has led the way to Atlas Copco Canada setting a record for the number of technicians in a year who attained advanced Level 2 certification.

Level 2 techs certified in a year

Business Line Manager Andre Bertrand of Atlas Copco MRS had set the 2012 goal at 30 technicians certified in Level 2 training. The Canadian MRS training team delivered 34 certified Level 2 technicians in 2012.

Charbonneau said, "We didn't train quite everybody, but we did train the most people in the world to qualify for Level 2."

Level 2 certification training

Designed at corporate headquarters in Sweden, Atlas Copco'c internal training programs are developed to ensure that their team has the correct skills to serve their customers in the best way possible. Their commercialized training packages are developed to add value to the customer's business.

The Level 2 advanced service training targets technicians who already have their Level 1 certification. It is a team effort by the division, which includes at least one day of training conducted by the Human Resources Manager.

The first two days of the course focus on analytical aspects of how to increase a technician's capacity to successfully troubleshoot certain circumstances. "This part takes trainees through different examples, teaching the brain how to think for troubleshooting," Charbonneau said.

The second two days center on personal development. It is important to hone the social skills needed to maintain professional composure based on customer responses in various situations. Participants watch videos and share past personal experiences in the field. The situations are discussed as a group and evaluated based on what was considered positive, leading to a successful resolution, as well as what may have been handled differently for an even better outcome.

> "For one, it's our goal to try to have the best, most advanced training program in the world."
>
> **Al Charbonneau**
> Training Manager, Atlas Copco Canada Mining and Rock Excavation Service

Charbonneau started his career at Atlas Copco 16 years ago as a service technician. He was promoted internally to eventually manage this department in late 2011. Charbonneau attributes the training team's achievement to several factors. »

» "For one, it's our goal to try to have the best, most advanced training program in the world. So we promoted our best technicians internally to become the most experienced, expert trainers. We have 11 in the department so far. Two to three more will be promoted in the upcoming months."

Looking ahead

This year looks to be just as busy for trainers and technicians. Charbonneau said, "We have an aggressive training plan for 2013. We have already hosted a number of courses in the Pit Viper 235, Minetruck 6010, Simba, Scooptram and Boomer M2C. We plan to host many more product-specific training courses for all our technicians."

Charbonneau said he looks forward to certifying another 35 technicians in Level 2 before the end of the year. All new technicians will complete Level 1 training during the year.

Scheduling is directed by Training Coordinator Kari Lamoureux and together their team has successfully set a strong benchmark for global operations to strive to meet.

MASTER DRILLER PROGRAM TRAINING OPTION


TRAINER JEFF LAMOUREX

These internal training achievements were accomplished even as external training programs vied for the training team's resources. One of the largest currently underway is an ambitious initiative to implement the Master Driller program through several drill rig families.

The training department has already been using a SmartROC D65 simulator with full-size cab and motion platform, as well as an Atlas Copco Boomer and Simba light version simulator. The light version does not have a full cab. The Canada training team is waiting for delivery of a full-sized cabs for the Simba, Boomer and Boltec simulators. MRS is looking at a simulator for Pit Viper blasthole rigs as well.

The Master Driller program trains new as well as experienced operators so that they can utilize the full capacity of Atlas Copco. Throughout the three-level curriculum, safety is a top priority and that by the end of the course a company will see higher productivity from skilled use of their Atlas Copco equipment. Since new operators are learning in a secure environment, they aren't slowing production or risking damage to rigs while they learn.

The Bronze, Silver and Gold levels of the Master Driller program combine theory with practical training for the conditions and tasks an operator faces in real-life mining or construction applications.

The Bronze level uses E-learning or classroom training to give students mastery of such basic knowledge areas as rock types, minerals, drilling technique, and shockwave theory, as well as correct nomenclature and care of equipment such as rock drills, shank adapters, drill bits, couplings and drill steel.

The Silver level is hands on with a simulator. An Atlas Copco equipment specialist provides demonstration and guided practice in simulators, and then evaluates student performance of specified tasks for tramming, setup, calibration, positioning, navigation and drilling. The simulator features large LED monitors mounted in the window spaces of the rig's cab so the environment appears real. For example, the SmartROC D65 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 autolevel 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.)

The Gold level of the Master Driller program is conducted by an Atlas Copco product operator training specialist at the customer's site. The specialist provides one-on-one training with each operator enrolled in the program. The specialist also evaluates each operator in the performance of the tasks taught in the simulators.

Throughout the process Atlas Copco trainers keep detailed documentation of exercises completed at all levels of testing, including checklists, tests and certificates and makes copies of this information available to their customers at any time.

After successful completion of the Gold level, students receive their Atlas Copco Master Driller diploma.

RIG Scan

New technology for optimum performance

Monitoring the condition of a drill rig on the spot is now easier and quicker thanks to new technology.

To carry out a general inspection or locate the source of a potential problem on a drill rig normally requires a certain amount of dismantling and reassembling work. But not any more. Atlas Copco, in cooperation with a Canadian mine and technology partners, has developed a system for performing "health checks" on Atlas Copco equipment.

Called Atlas Copco Rig Scan, it enables service personnel to collect and analyze data on the spot using a variety of intuitive, high-technology devices.

Jaime Toogood, product manager in Atlas Copco's Mining and Rock Excavation Service division explained, "This is a mobile application involving the use of non-invasive technology for fast, accurate assessments of equipment performance."

She added, "Real-time inspections are crucial to ensure continuous uptime and avoid costly component failures. On-the-spot aggregation of real-time and historical data will give the Rig Scan expert the power to ensure safe and efficient operation, ultimately leading to reduced maintenece costs and avoidance of lost production."

Atlas Copco Rig Scan helps to

- Avoid lost production through predictive analysis.
- Increase productivity and reduce operational cost through comprehensive performance analysis.
- Reduce maintenance costs through faster troubleshooting.
- Improve safety, health and the environment through early detection of potential hazards.
- Improve engine efficiency.

The new technology also means that fleet maintenance can be streamlined, ultimately increasing uptime, productivity and profitability. The Rig Scan application will be available for all Atlas Copco equipment.

Toogood concluded, "Atlas Copco is committed to sustainable productivity and Rig Scan offers our customers the very best practice in predictive support, safeguarding the performance of our equipment and complementing our other service solutions such as service agreements, remote monitoring, remanufactured components and fluid management."

Atlas Copco cited among world's most sustainable companies

Atlas Copco ranks 18th among the 2013 Global 100 Most Sustainable Companies—a list presented on Jan. 23 at the World Economic Forum in Davos, Switzerland. This is the seventh time that Atlas Copco has appeared in the Global 100 rankings.

"Sustainability lies at the heart of Atlas Copco's innovative products and employee mindset," said Jim Levitt, president, Atlas Copco North America LLC. "As a company with a long and cherished history, we know that being socially and environmentally responsible is not only the right thing to do, but is critical for developing and growing our business in a profitable way."

Atlas Copco sustainability initiatives, both globally and in the U.S., include:

- Boosting customer energy efficiency by at least 20 percent between 2010 and 2020 by continuously designing and developing more efficient products.
- Membership by Atlas Copco Compressors with the U.S. Green Building Council.
- An initiative between Atlas Copco Secoroc and the U.S. Department of Energy, as part of President Obama's challenge to generate 80 percent of U.S. electricity from clean energy sources by 2035, to develop a down-the-hole (DTH) hammer design capable of low-cost, high-production drilling in the high temperatures of deep geothermal wells.
- Reducing Atlas Copco's water consumption and promoting clean drinking water in countries in need. The employee run Water for All organization will pass $200,000 in donations in the U.S. in 2013.
- Increasing employee diversity in both nationality and gender.

The Global 100 list is based on a selection of 4,000 developed and emerging market companies, which are measured against key performance indicators such as revenues in relation to consumption of energy and water. For more information, visit **http://global100.org**.

Dynapac launches new interim Tier 4 compliant paver range

To meet the new emission regulations, Atlas Copco Dynapac's upgraded paver series has been equipped with the Cummins QSB 6.7 liter interim Tier 4 engine. The engine delivers 220 hp at 2000 rpm or 230 hp at 1800 rpm. The Cummins interim Tier 4 engine also provides a direct flow air cleaner and new technology in the form of Exhaust Gas Recirculation, Diesel Oxidation Catalyst, and Diesel Particulate Filter systems.

Dynapac adjusted the paver duty cycle so that regeneration of the DPF system occurs without disturbing the paving operation in most conditions. A high pressure fuel injection system reduces fuel consumption up to 5 percent over earlier engines. The interim Tier 4 engine reduces exhaust emission of particulate matter by 90 percent and NOx by 45 percent.

The new cross-flow cooling system features a hydraulically driven, temperature-dependent cooling fan that reduces the overall noise level. The system exceeds performance requirements to deliver a 120 degree Fahrenheit capability.

Dynapac's new auger-conveyor, feed-control system ensures continuous flow of material for quality paving. The feed controller uses four independent, ultrasonic sensors to maintain the head of material precisely.

Visibility has improved with the paver's platform height of 78 inches and a 63-inch deck height – currently the lowest deck height in the industry. The low height allows full visibility to all working areas around the paver. This low center of gravity provides balance between the paver and screed delivering accurate edge geometry and the best mat quality.

Operation controls have been upgraded with dual swing-out operator panels that are interactive. The panels feature a functional switch layout and toggle switches to improve efficiency and productivity for the operator.

At 34 kW, the hydraulically driven generator delivers a constant 60 Hz frequency regardless of the engine speed or load. This unique capability allows full screed heating at idle, which saves fuel during daily warm up. The generator will heat screed extensions, heat end-gates and provide night lighting if needed.

The Dynapac F1000 pavers offer easy maintenance with the use of standardized components. Common parts have been used in both the track and wheeled pavers. Manual override valves, relays and illuminated DIN connectors are provided. For easy identification, the pavers are designed with group placement of components and individually marked hoses and wires.

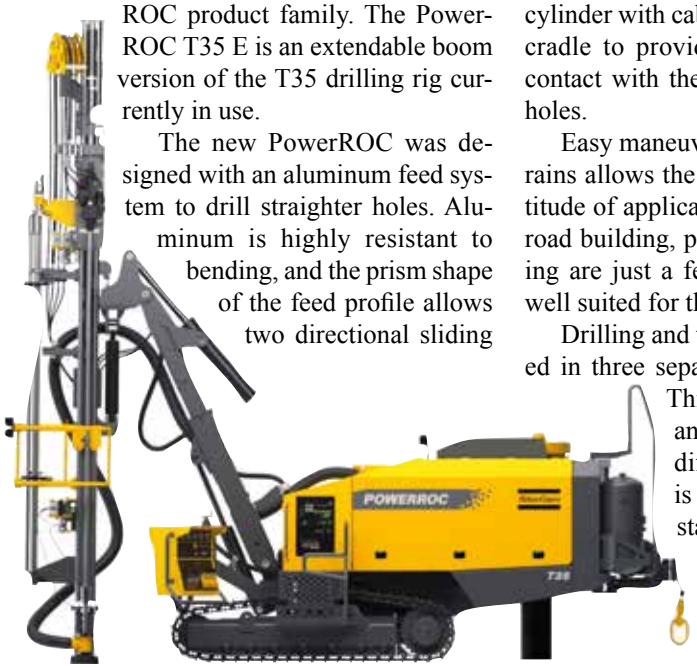
The F1000 is also engineered with a multi-function display based on calibration so there is no need for a laptop. The direct flow air cleaner is positioned for optimum air flow and serviceability. The DPF is also ideally positioned so that it can easily be removed for regular maintenance once every 2000 hours.

To learn more about the interim Tier 4 F1000 pavers, watch the video at **http://www.dynapac.com/Global/Sub_sites/Launches/F1000GEN2/InteractiveWeb.htm**

PowerROC T35 E surface drill rig

Atlas Copco introduced the T35 E surface drill rig, the latest addition to the PowerROC product family. The PowerROC T35 E is an extendable boom version of the T35 drilling rig currently in use.

The new PowerROC was designed with an aluminum feed system to drill straighter holes. Aluminum is highly resistant to bending, and the prism shape of the feed profile allows two directional sliding surfaces as a stable guide for the rock drill cradle. The T35 E feed system also uses a cylinder with cables that drives the rock drill cradle to provide more consistent ground contact with the drill bit for higher quality holes.



Easy maneuverability on a variety of terrains allows the T35 E to be used in a multitude of applications. Housing foundations, road building, pipeline building and trenching are just a few of the construction jobs well suited for the T35 E.

Drilling and tramming controls are located in three separate areas on the machine. This allows operators to safely and efficiently run the T35 E in difficult environments. There is no need for the operator to stand next to the feed, resulting in less dust and noise exposure.

New PL350TD compact planer released by Dynapac

Dynapac's new PL350TD compact planer offers a variety of new technical developments, including the Easy Level leveling system and milling drum technology. It is well suited for milling of joints, flush cutting, removing road markings and other jobs where defective asphalt or concrete surfaces are cut.

The PL350TD is equipped with a Cummins B 3.3 engine and 60 hp (45 kW) motor power. It mills 13.8 inches wide to a depth of 3.9 inches with a cutting diameter of 20.5 inches. With both a left and right steering angle of 75 degrees and a milling radius of only 3.9 inches, the PL350TD is specifically designed for flush milling of manhole covers, but it also makes it easy to maneuver in narrow construction sites with little effort.

The PL350TD offers excellent improvements for the operator, such as speed control, a new instrument panel with waterproof switches and backlighting for night operation. There is an automatic mode for the conveyor belt and water spray bar, relieving the driver of constant repetitive movements. The automatic mode is activated during milling and turned off when the milling stops. Operators are able to save water and time between refills of the 106-gallon water tank.

The Dynapac PL350TD, smallest in the compact planer range, is well suited for a multitude of applications. I

The Easy Level system provides easy-to-use, accurate levelling during daily milling operations. Menu options are easy to read, and the four values of left, right, actual, and target are clearly displayed. Sensor selection is easy to find and clearly shown. Slope regulators, ultrasonic sensors and height sensors are controlled by the levelling system. The Easy Level system's lift mode automatically elevates the machine to a pre-set value, reducing the number of steps to remove road markings or to drive over obstacles.

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