



ANNUAL LETTER TO CUSTOMERS

2024

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This is the first year that the annual MacLean Innovation Report has been re-branded as an annual Letter to Customers. The reason being, innovation has always been and will always be central to our business model and company culture, so everything we design, build, and maintain and everything we present at industry conferences and publish online, reflects in some way, this singular pursuit.

What we don't get a chance to do publicly nearly as often, is thank our customers for their belief in our products and our people. This is an honour and a responsibility that we don't take lightly anywhere in the MacLean mining world.

R.I.P. DON MACLEAN (1937-2024)

MacLean founder and Chairman, Don MacLean, passed away in January, and as a company we are grieving this loss and celebrating his unique legacy. Don's commitment to mining equipment safety innovation is what fueled his entrepreneurial vision for five decades. It's this spirit that built a global company over five decades, one that has grown to 1,200+ employees serving the underground mining industry on four continents.



The ethos of safety and productivity that Don embodied resulted in a long list of mining equipment innovations over the decades, first and foremost the widespread adoption of mechanized bolting in Canadian hard rock mining. The introduction of the 900 Series MacLean Scissor Bolter in the early 90s contributed to a significant reduction in fall-of-ground fatalities in the Canadian mining industry in the ensuing decades. This safety improvement is perhaps Don's greatest legacy and one of the reasons he received a Safety Leadership Award from the CIM at the organization's annual convention in May of 2023.

In hindsight, this industry recognition has become even more poignant. Don lived a long and full life and MacLean Engineering was only one part of it. But it's one that he poured his heart and soul into and it's his deepfelt, lifelong commitment to improving the work lives of miners around the globe that will outlive him. It's the important work that his son, Kevin MacLean, now CEO of MacLean Engineering and President for the past two decades, continues to this day, joined by four of his adult children, all serving in different roles in the company, from branch management and product management to engineering to global sales and marketing.



2023 marked the 50th anniversary of MacLean as a company, and with Don MacLean's passing at the start of 2024, the symbolic closing of a chapter on the 'first 50' is now complete and the next chapters are yet to be written. The 'next 50' for MacLean will see a continuity of company tradition – safety first, last, and always – while also introducing new products and new services that will reflect and shape mining across the 21st century. New technologies that will drive the electrification and automation of mining and improved safety practices, as mining companies look for solutions for accessing deeper ore bodies while grappling with the long-term demographic transition of a new generation of mine worker.

Against this backdrop, the product development pipeline over the past 12 months at MacLean was typical for a company steeped in entrepreneurial urgency. Our safety innovation was focused in three key areas – the next generation of MacLean bolter, the ongoing electrification of the global mining industry, and the road to increasingly automated mining operations.

THE 985 'ABI' BOLTER

We named our newest addition to the MacLean 900 Series bolter product line the 985 Abi Bolter, in honour of Don MacLean's 85th birthday in 2023 and to honour the mining region of the Abitibi in northern Quebec, where Don grew up and where Don's father, Ducky Sr., was a mining manager in Malartic and Chibougamau. Don wore his Abitibi mining heritage with pride and the MacLean branch in Val d'Or now embodies this MacLean past and future in one of the world's premiere hard rock mining hubs.



The Abi Bolter research & development was conducted primarily at the MacLean Research and Training Facility in Sudbury across 2023, as the prototype was put through its paces in the underground environment. The new design introduces the robotic handling of bolts and screen with the operator in a cab and remotely controlling the parts of the ground support installation process that the robot can't complete on its own. The first production unit is currently in-bay in Collingwood and will be completed by mid-year, at which point the unit will be shipped up to the MacLean test facility for extensive testing prior to customer trials in 2025.

This new product is both new and novel for the mining industry and as with any introduction of technology, will require both change management and training support with early adopter customers. What it will deliver is the continuation of the MacLean bolting philosophy of bolting off of a scissor deck platform with all consumables on board, while removing the operator from the deck during drilling, bolting, and screening. This will be achieved initially using high-precision video remote and robotics, eventually opening up the potential of full tele-operated ground support installation – scaling, drilling, bolting, and screening by an operator from the surface.

The current MacLean bolter has delivered safety and productivity dividends to the mining industry for over thirty years, and the next generation of MacLean bolter is being designed with a similar time horizon. There are always challenges to introducing new technologies into underground mining with its myriad of safety requirements and logistical challenges, but change happens and shaping this positive evolution towards greater safety and productivity, remains the single most defining feature of the MacLean company culture.





We call it the 'MacLean Way' but it's not really about us, it's about the mining industry as a whole. How can we push ourselves to drive improvements, how can we collaborate with producers and other OEMs to get further, faster, all in the name of safety. This is what Don pushed us to do while he was alive, and it's what his memory underscores. This work is never done even though we can point to successes along the way.

When we introduced the Abi bolter to the broad mining industry at the CIM Convention in Montreal in May of 2023, our tagline was 'The Future is Here.' It is, and we could have said at that time, 'The Future is Being Written,' because in truth, the innovation and product development pipeline isn't fixed in time or in place. It is continually evolving and iterating, in ways both big and small. Sometimes innovation is a culmination of continuous improvements, and sometimes it is the result of completely new ways of thinking and doing.

The 985 Abi Bolter is combination of both approaches to innovation, given that it remains true to many of the fundamental precepts of the MacLean bolting philosophy that have been proven out over the past three decades, but with the introduction of industrial robotics, it also introduces something new and novel to the mix. Stay tuned for more updates and videos from our Research and Training Facility in 2024, as we get ready to commercialize this innovation in 2025.

EV SERIES

We brought one of our first battery powered Bolters to MINExpo in 2016, at a time when the mining world was just beginning to consider viable options for running diesel-free mobile fleets. The former Goldcorp was first out of the gates with their Borden Gold project, where MacLean delivered its first EV Series fleet starting in 2016. Since then, most of the major producers in Canada have followed suit with at least the trialing of one or two battery electric mining vehicles (BEVs) in their operations, while three companies in particular have designed underground mines leveraging the benefits of battery electric fleets from the outset.



Agnico Eagle in Malartic, Quebec, with their Odyssey Mine has taken the lead in this regard, developing what will become the largest underground gold mine in Canada, right beside the largest open pit gold mining operation in Canada, while harnessing the benefits of electrification in the process.

Glencore Canada's Integrated Nickel Operations (INO) in Sudbury, Ontario has also been a first mover in mining electrification, as their long-awaited Onaping Depth project in Levack, Ontario, just outside of Sudbury, is moving through its development phase and is on track to be fully operational with EV support and production equipment in the coming years.

Finally, the Canadian producer Torex Gold has made the transition to electrification with a diesel-free fleet at its Media Luna project in Guerrero State, Mexico, currently being developed. To our knowledge, this is the first minesite in Mexico to push a widespread adoption of battery electric mining vehicles.

MacLean has already delivered a fleet of BEVs to the Agnico Eagle Odyssey Mine and will be shipping BEV fleets to both the Onaping Depth Project and the Media Luna project, across 2024.

MacLean has taken a global leadership position in production support fleet electrification, having electrified 20+ mining truck models over the past eight years, with a half million operating hours logged across the fleet since the launch of our fleet electrification program in 2016. By the end of 2024, the MacLean EV Series fleet deployment will top 100+ units in Canada, the United States, Mexico, and Australia

New EV Series models introduced in 2023 included a battery electric RB3 Mobile Rockbreaker, the first ML5 Multi-Lift elevated work platform. For 2024, the line-up for new EV Series model introductions will include the first MC5 Mine Charger in Australia, and the first EV GR5 Graders. MacLean also introduced CCS1 and CCS2 offboard charging for the first time in 2023, providing customers with a greater range of options to fit their unique mine designs and support fleet duty cycles.

We were early to the EV mining frontlines in 2016 and since then have racked up significant learnings working in collaboration with mining customers, adjusting and improving our EV Series product line and site support at every step. Mining electrification engineered for life underground means that we prioritize this customer dialogue in everything we do. Our product development isn't theoretical, it's for and of the real mining world with the safety of workers our immovable top priority. Diesel-free mining delivers a work environment that the next generation of mine worker is increasingly expecting. Electrification also addresses ventilation cost issues as mines get deeper and hotter pursuing harder to access ore bodies.

AN OPERATING SYSTEM FOR MINING IN THE 21ST CENTURY

Since purchasing an underground test facility in 2018, MacLean has fundamentally reshaped its engineering efforts, a shift that is reflected in the formation of the company's Advanced Vehicles and Technology (AVT) team based out of the MacLean Research & Training Facility. The MacLean AVT group now numbers 50+ team members, and is leading the company's development of electrification, automation, and digitalization initiatives.

The work of engineering mining vehicle solutions tailored for the new generation of underground mining takes many forms, from large projects to small. From the introduction of robotics to ground support, to on-vehicle shotcrete technologies that deliver real-time measurement of spray coverage and shotcrete accelerant savings, to real-time data on concrete mix quality during transport underground, to useful and accessible vehicle telemetry available in real-time for customers, to a whole new operating system that is the foundation for all 5 Series BEV units now rolling out of the MacLean factories. The breadth and depth of our product development pipeline is what built this company's reputation over the first 50 years, and this focus on innovation continues to this day.

The future is definitely here, now, when it comes to mining electrification and our EV Series is helping to shape it.

The MacLean Operating System or MOS delivers best-in-class electronic controls, as foundation for automation and interoperability that mining companies increasingly expect. It is a vehicle control a platform that delivers a modern interface and enhanced diagnostics. This will quickly expand to include driver assist features, and collision avoidance compatibility. With complete digital control it also means a full range of remote-control operation, from line of sight to video remote to full tele-remote control from the surface. Finally, it is also the foundation of eventual autonomous vehicle operations, depending on what customers needs are for whatever stage of technological deployment they are at. And all these telemetry data points and remote operation capabilities are delivered in a cab environment with state-of-the-art screen controls and ergonomic design that provide operator safety, comfort, and enhanced productivity in the underground environment

The ML5 Multi-Lift is the latest addition to the MacLean suite of certified elevated work platforms. As a complement to the existing SL3 Scissor Lift and LR3 Boom Lift, the ML5 adds another layer of application versatility, depending on drift size and type of mine services maintenance or construction work being performed at heights. The initial unit is set to be trialed in the first half of 2024 at a Western Australian mine.



NEW PRODUCTS

2023 saw the completion of designs on two new MacLean mining vehicle models, the ML5 Multi-Lift and the MC5 Explosives Charger. Both models are being rolled out initially to the Australian mining industry across 2024. These new models were designed in close consultation with the MacLean Australasia team and their direct connection to the application requirements of Australian miners and contractors. But the ML5 and MC5 are just as relevant to Elevated Work Platform requirements in underground mines around the globe.



The MC5 is the first 5 Series MacLean explosives charger, one that delivers ergonomics, automation readiness, full telemetry, and optionality for emulsion or ANFO packages. It has class-leading rear mounted payload, offering the most flexibility and productivity for production and developing charging activities. The first unit is set to arrive in Australia mid-year. Stay tuned for field trial updates in the latter half of 2024.



Finally, 2024 will also usher in the rollout of a new and improved utility vehicle cab design for both our 3 Series and 5 Series UTVs. The new design provides more headroom and a more comfortable operator envelope, along with better sightlines, enhanced driver ergonomics, placement of components, upgraded heating and air conditioning, and air filtration. Overall, a series of relatively small but taken together, significant improvements in the operator environment.

A CONTINENTAL MANUFACTURING PLATFORM

Our full production facility in Queretaro, Mexico has been on a rapid growth curve over the past several years and is now a cornerstone of our integrated, continental manufacturing platform. It is the single largest production facility in the MacLean factory footprint, at over 100,000 square feet (close to 10,000 square meters) and 150+ local employees. We made the decision to invest in our Queretaro build-out because of value that in-country manufacturing and parts and technical support bring to our customer base across Latin America. This combined with full rebuild capacity at our Sudbury and Val d'Or branches, along with assembly and rebuild capacity at our South African and Australian branches, means that we now have a truly global manufacturing infrastructure that can deliver optimal production flexibility and customer responsiveness in each of our key markets.



FINAL WORD

The MacLean Way means that we listen more than we speak when we're with customers. To that end, please let us know where we can improve our products and our support services. We will be rolling out a full-spectrum online Customer Portal in 2024 (Telemetry, documentation, field service and order history, capital build status), and this platform will be another channel for feedback. Please use it and help us improve our value proposition to the mining industry.

With Don's passing we're all aware that pushing his vision forward after he's gone will require a collective effort, work that Don wouldn't need to put into words to convey the depth of its importance: make mining safer for miners and the companies that employ them; build products and customer relationships that stand the test of time. These are Don MacLean values, built to last beyond his lifetime.

As Don always said, if you love what you do you don't work a day in your life. So to one and all, here's to a work pursuit that fills you with as much meaning and positive contribution as Don forged while he was with us.

Stuart Lister
Vice-President Marketing & Communications
MacLean
Collingwood, ON CANADA