

Inside MacLean Engineering's Ducky underground testing and training facility near the Ontario mining hub of Sudbury



Almost-reality training for mine workers

MacLean Engineering's newly upgraded Ducky test mine in Sudbury, Canada, is growing in size and capabilities. Donna Schmidt finds out more about the facility.

By Donna Schmidt

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When it comes to testing both equipment and the skill of miners, having a realistic environment makes the task much more effective. Realism boosts the experience and the achievements made, from training to testing.

Many former and active operations, underground facilities and tunnelling projects still serve the mining industry in various ways. One in Canada is now home to MacLean Engineering's equipment testing, automation research and development, training and more.

The Ducky Test Mine Research and Training Facility in Lively, near the Ontario mining hub of Sudbury, has grown to be much more than simply a helpful place for the company to run machines through their paces.

The underground testing facility was bought in late 2018 and since then has been improved and upgraded to increase its functionality.

At the heart of the property is a 300-metre (984-foot) underground ramp at a depth of cover between nine and 12 meters and a 15% average grade.

The tunnel itself was designed at 5m x 5m with 240 meters of ramp access, and two faces are built on the ramp at 100m and 240m. There is room within the 100ft vertical depth to potentially expand with another 100ft lateral on a 15% grade.

“In 2017, conversations began about MacLean owning our own test mine,” general manager for Sudbury operations Stella Holloway says.

“Some of the driving factors behind this initiative included being able to fast-track our innovation road map, develop and test our new technology and equipment in an environment that we can control. “[Now] having our own dedicated facility aimed at the development of our future products and the improvement of current products is a game changer for MacLean.”

THE BEST ELEMENTS

MacLean certainly wants the test facility to help in expanding the services it can offer there. Currently, its most significant use is the life-like environment to aid in technology developments, followed by the ability to improve its testing and quality assurance for all of its products.



It can oversee practical training for its own staff and its customers on any product MacLean offers. It is moving into greater community relations and engagement and is growing its presence on a global scale as well as strengthening its strategic relationships.

Being able to offer such a real-life underground experience, the company's goal is to reach out to high schools, colleges and universities for boosting an interest in mining-related careers.

Holloway told *Mining Magazine* that the potential for mine rescue training has also been presented to MacLean as a future capability, and the company is certainly open to the idea.

For the time being, MacLean is focusing on electric technologies and automation at Ducky.

"A large focus of MacLean's growth over the last few years since we acquired our test facility has been on the development of green technology like electric vehicles, or advanced technology like our remote control and autonomous vehicle pathways. Our EV program is doing its part to help improve the general health and safety underground (no emissions, quieter) and decreasing the carbon footprint on the environment," Holloway says.

THE SAFETY QUOTIENT

Whether the beneficiary of testing and training at Ducky is a MacLean employee, customer or other stakeholder, safety is a key priority for the company and for the facility.

On entering the facility, individuals will sign in at the gate house where the Operation Manager hands out tags and holds a safety briefing. An automatic gate and sensor access system is in place for security.

There are four safety bays which can be seen on the trip inby, as well as a refuge station at the 180m depth point and supplies of self-contained self rescuers. An emergency response plan is in place and well-rehearsed by the facility's trained first responders.

In September 2020, MacLean Engineering announced its collaboration with Maestro Digital Mine for the placement of a connectivity network at the Ducky lab in the form of Maestro's Plexus PowerNet gigabit network for data and power.

The coaxial cable-based system is a high speed, low-latency digital communication network offering PoE+ power to access points (APs), cameras and other internet protocol (IP)-based devices.

Plexus PowerNet can be installed and maintained internally, the company said at the time of the announcement, and utilised with or without a fiber optic network.

"It supports existing underground mine infrastructure and provides network connectivity to new IIoT [Industrial Internet of Things] devices and automation technologies for digital mines, such as the MacLean R&D facility," the companies said.

The Ducky lab now has just one cable for its network connectivity, and the system's EZ Advance nodes help to terminate, troubleshoot and

deploy connected devices via an embedded network switch.

"Collaboration up and down the supply chain is critical to making innovation happen in the underground mining sector at home and around the globe," marketing and communications VP Stuart Lister points out. "It will be backbone of our automation product development [at the facility]."

Between MacLean's service and support branch in Sudbury and the Ducky Research and Test facility just a 10-minute drive away, the company currently has a staff of 120.

Many of those in the group are engineers who will be lending their expertise to the advancement of its product line into electric-powered and autonomous offerings that are originating from its branch locations in Canada, Mexico, Peru, South Africa and Australia.

While the site is already in use internally, the official ribbon-cutting for the Ducky Test Mine Research and Training Facility has still not occurred – it had been planned for earlier this year – and much of its plans to bring in external groups has been put on hold due to the ongoing global pandemic.

It will happen in time, promises Lister, who adds that MacLean is anxious to receive the industry's feedback to this research-focused site. ▼

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Mining operator at the Ducky underground training facility

