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CUSTOMER STORY | DECEMBER 2019

Resurrecting Dormant Mines With Autonomous Aerial Cavity Mapping

ASCOT RESOURCES

How can you reopen a 70 year old mine safely & efficiently?

In 2019, geologists at Ascot Resources, a Canadian mining company specializing in silver and gold, began investigating an old mine in the Big Missouri Ridge that had been left inactive since the 1940s.

They knew from surface drilling programs that there was still some gold but required further inspection to determine the extent of the resources.

Typically, surveyors would enter with handheld cavity monitoring tools but narrower tunnels and more limited vehicle access due to the constraints of 1940s technology presented logistical challenges for human teams that would attempt to survey the mine.

Key Issues:

- Traditional CMS systems are cumbersome, requiring excessive manpower and time to scan a single underground cavity

- Collecting a complete map requires hand carrying a CMS throughout the entire mine

- More manpower and time underground introduce a significant risk to personnel

- Potential for inaccuracies in the models built from the data could accrue and make further calculations incorrect

An Exyn Field Engineer setting up an Exyn beta system at Ascot's mine in 2019.
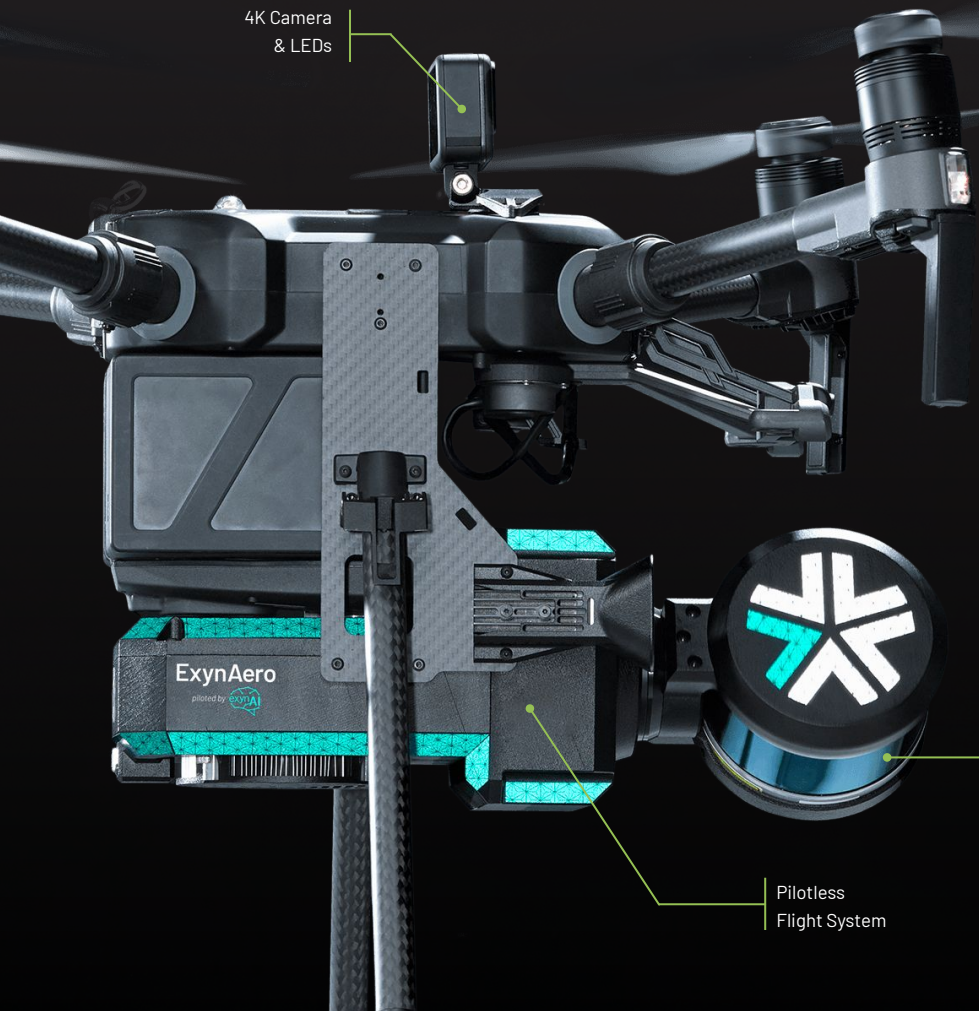
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4K Camera & LEDs

Products Used

ExynAero™

The ExynAero is a fully autonomous cutting-edge system that maps entire stopes in minutes, keeping surveyors safe, and maximizing beyond-line-of-sight data collection.

(Latest version of the product shown here, the customer may have used an older version of the product, the A3R, in this case study.)

3D Velodyne Lidar Sensor

Pilotless Flight System

ExynAero
piloted by EXYN AI

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A smart drone, that can pilot itself around unknown obstacles.

While Ascot management weighed their options, they contacted Exyn Technologies after learning about our autonomous aerial LiDAR-based mapping technology.

Surveyors at the Big Missouri Ridge were able to take a single Exyn robot and tablet to map the entire mine, sometimes resorting to hand carrying the robot through narrow opening before launching autonomous flights into open cavities — often called stopes.

The Ascot team was able to gather the data retrieved by the Exyn drones to create a report of existing mine openings, and determine how much gold there was left to be mined onsite to present to potential investors.

Manipulating 3D data collected from the stope in real-time, during the flight.

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Safer, faster, and more precise operations

Surveyors were able to scan stopes in two-to-three minutes and collect more than 20 million points of data in real-time, capturing a highly accurate view of the entire stope.

Exyn's autonomy enabled the robot to fly throughout the stope eliminating any hidden points or shadows. The new stope scanning method also allowed surveyors to spend less time underground and farther away from dangerous brows.

This specific examples proves that using SLAM-based autonomous aerial vehicles can enable operators to safely assess long-disused mines that may still have valuable materials inside.
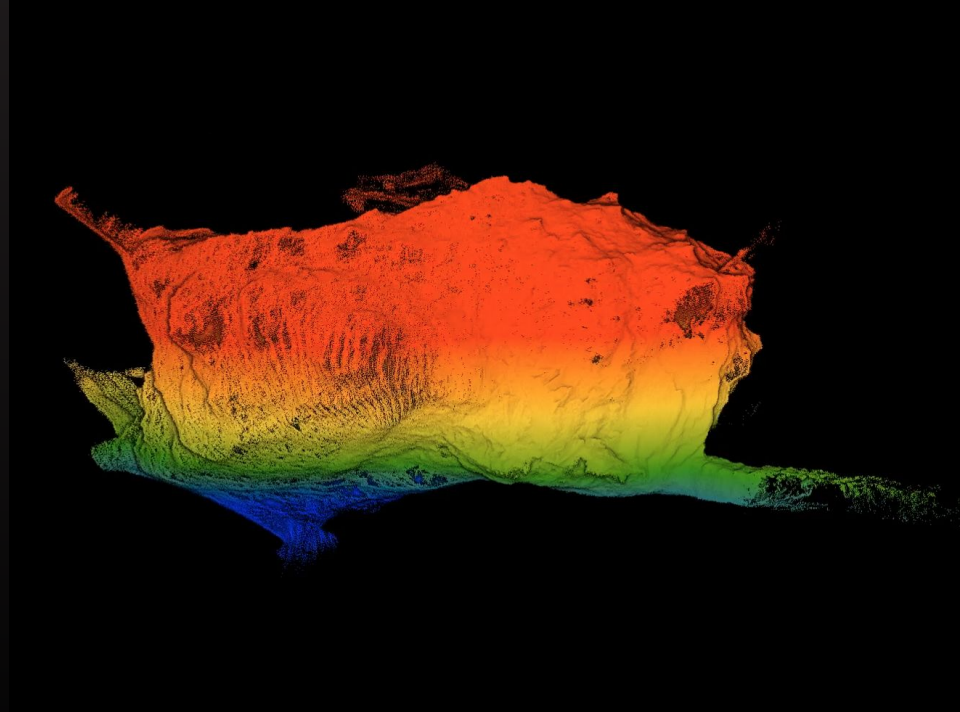
A point cloud collected at Ascot's Big Missouri Ridge mine site during flight.

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"Exyn came to our site to show us the autonomous capabilities of their drone technology, **and were very impressed with the timeliness and quality of the data acquired.** Looking forward, we think this technology will be used to **safely explore and evaluate** the condition of underground mines, while also potentially providing **cost savings** in mine surveying and ventilation monitoring."

— John Kiernan, COO,
Ascot Resources

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Visit our website for more information, or to request a live virtual demo.

www.exyn.com