



**STRONGER AND STRONGER**



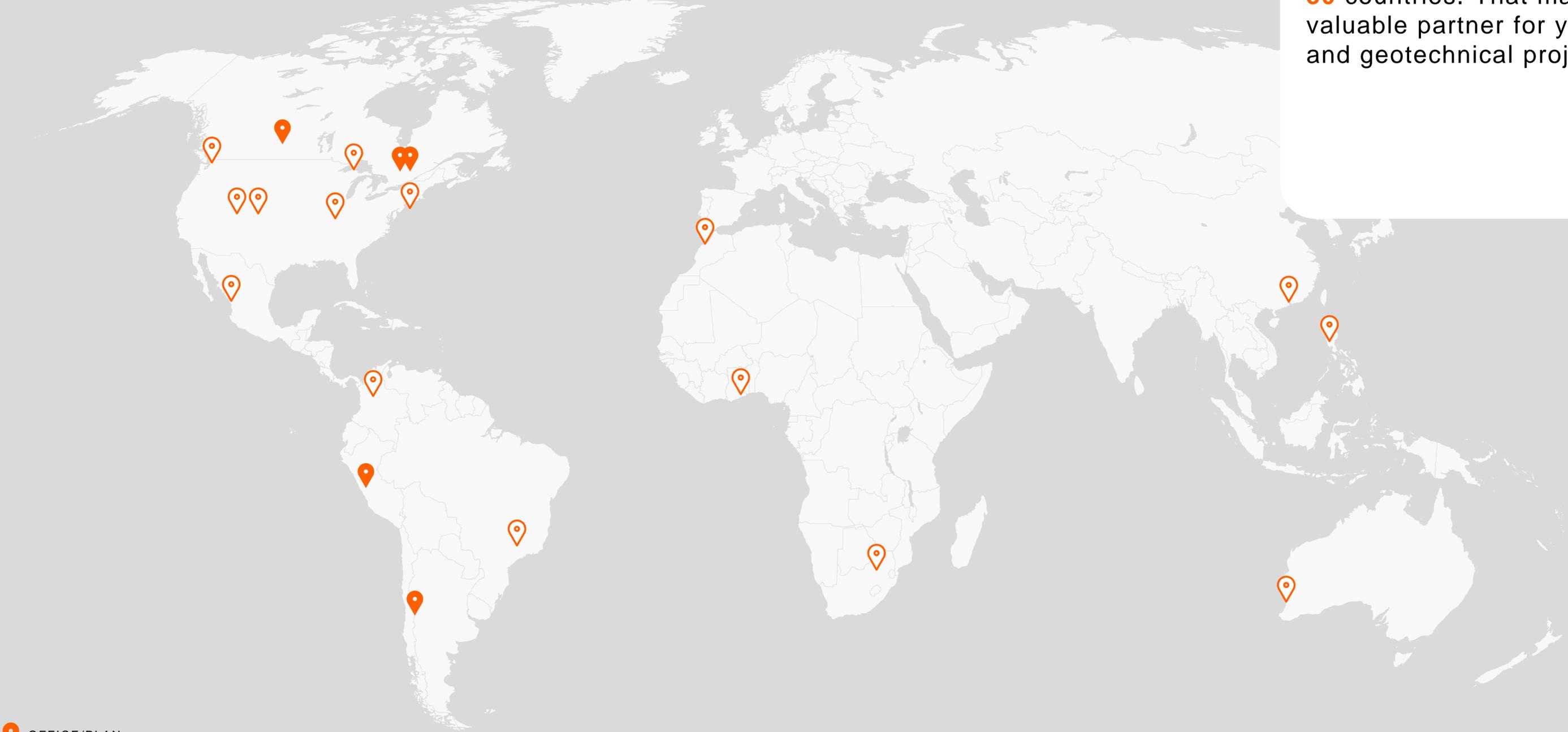
# 30 YEARS

We aim to give our customers peace of mind with comprehensive drilling solutions that are the fruit of 30 years of continuous improvement.



# AN INTERNATIONAL PRESENCE

Our expertise and our dedication to building relationships of trust can be found in each of our **4** offices and **15** distributors across more than **30** countries. That makes us a valuable partner for your exploration and geotechnical projects.



-  OFFICE/PLAN
-  DISTRIBUTOR

# AGENDA

- ❑ Why we developed the autonomous drill?
- ❑ Development timeline
- ❑ Features and Advantages
- ❑ Control Panel Characteristic
- ❑ Innovation
- ❑ Future Development
- ❑ Video Demonstration



# WHY WE DEVELOPED IT?



## AUTONOMOUS DRILL RIG

### Performance features built for optimal results

- This drill is outfitted with optical scanning technology and LTE services. It can be operated by a single worker while providing direct communication with supervisors and the support engineering team.
- A powerful piece of equipment that will keep your workers safe and provide you with real-time data reading and feedback.

# WHY WE DEVELOPED IT?



## Safety

- Equipped with optical scanning technology
- Reducing touch point
- Minimizing strenuous labor

## Real time access to organized and accurate data

- Ability to analyse consumable data to optimize cost
- Access to detailed specifications of drilling parameters

## Workforce

- Industry resources are competitive
- Counterpart industries tend to be less volatile
- New generation is comfortable with technology, change and advancement
- Striving to achieve one man operation by implementing safety policies and procedures
- Integrated rod handler with autonomous system gives contractors option to make up for the lack of workforce

# DEVELOPMENT TIMELINE



**2015**  
Concept Inception

**2020**  
Prototype Developed



**JANUARY 2021**  
**DECEMBER 2022**  
Algorithm Testing and  
Adjustments

**AUGUST 2023**  
1<sup>st</sup> Commercially built  
KmN1.4UA Delivered to  
Site

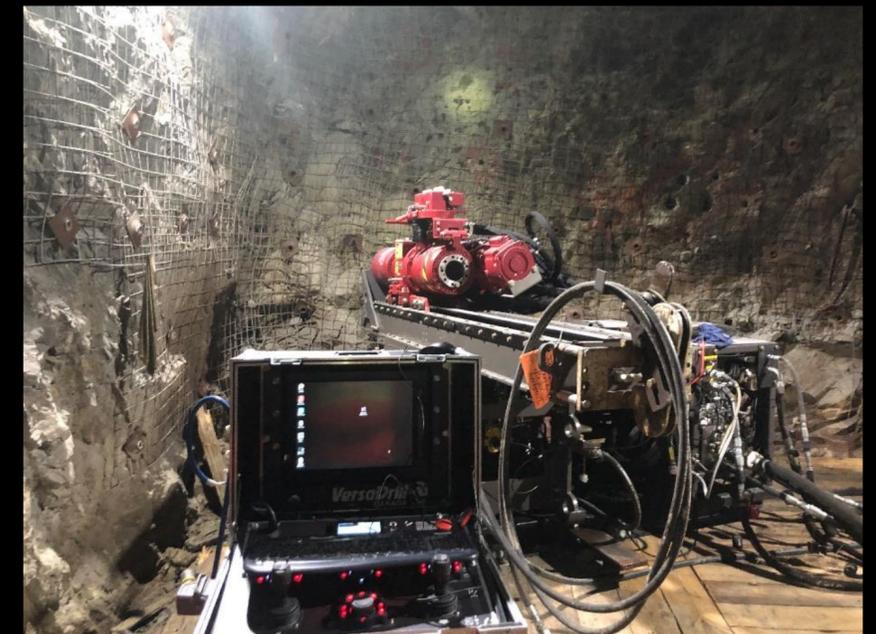


**2017-2019**  
Concept design

**2021**  
**January:**  
Rod Handler Developed  
Autonomous Drill Mobilize at Goldex

**2021 October:**  
Rod Handler Introduced to Site

**MARCH 2023**  
KmN1.4UA  
Commercially  
Launched at PDAC



# FEATURES & BENEFITS



## Communication

- Drillers can receive instant feedback from system and supervisors
- LTE service allows for direct communication with supervisors and supporting engineering team

## Operates between shifts

- Increases productivity

## Reduced wiring

- Allows for quicker and safer drill moves
- Reduces the wiring in the operating area

## Drill rods placed and retrieved faster and safer

- Done by a single worker
- Optional inner tube puller
- Fully integrated rod placer

# FEATURES & BENEFITS



## Make and Break Automation

- Autonomous makes and breaks complete rod string
- Tripping in and out

## Access to Real Time Data

- Customizable
- Machine performance
- Daily reports
- Optimize consumables costs

## Optical Scanner

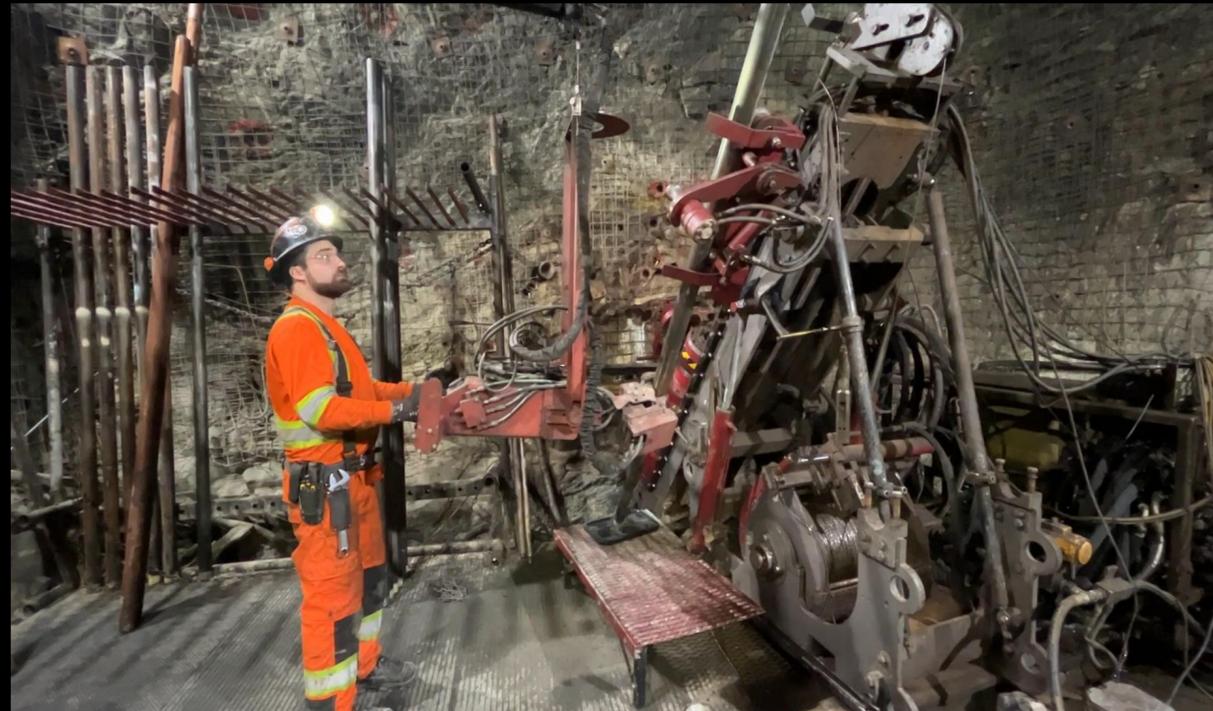
- LiDar 2D Technology
- Customizable safety zones
- Green, yellow, red

## Hydrostatic vs Open Loop

- Allows the system to operate under higher pressure

## Component Fault Recognition

- Each component equipped with sensor
- System recognizes faults i.e., filtration
- Indicates location of fault



# FEATURES & BENEFITS



## Optimized Drill Head

- No transmission
- Two motors
- More torque
- Less reliant on transmission spares

## Completely Integrated Rod Manipulator

- One man operator
- Safety features
- Touch points
- Autonomous operation

## Manual Joysticks

- Allows for manual operation under critical drilling conditions



# CONTROL PANEL



## Customized data

- USB equipped

## Set Parameters

- Pre-set parameters (lock by supervisor) for accuracy or controlled limitation for nonexperience driller
- Set pressures based on drilling conditions and application
- Fluctuation controlled based on set pressures

## Monitoring Sensors

- Identified on panel
- Recorded in detail

## Secured Incasement

- Water resistance
- Approximately 25 lbs
- Lockable

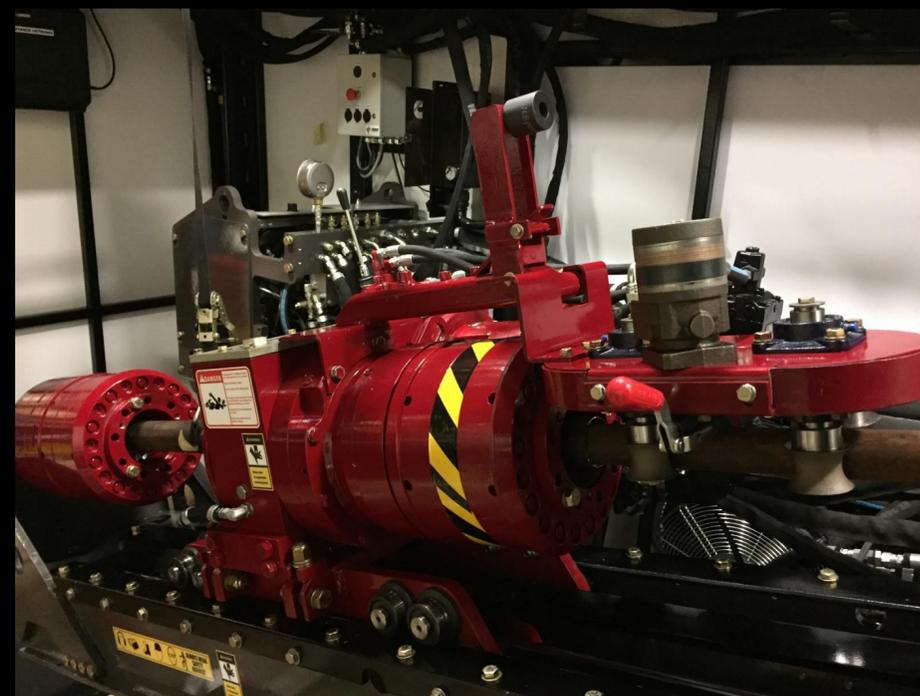


# INNER TUBE PULLER



## Inner Tube Puller

- Cut down on work injuries
- Boost meters drilled per shift
- Compatible with all drill brands
- Available for BWL, NWL, HWL
- Patent pending



# INNOVATION



## Rod Manipulator

- Continuous operation
- Fewer touch points

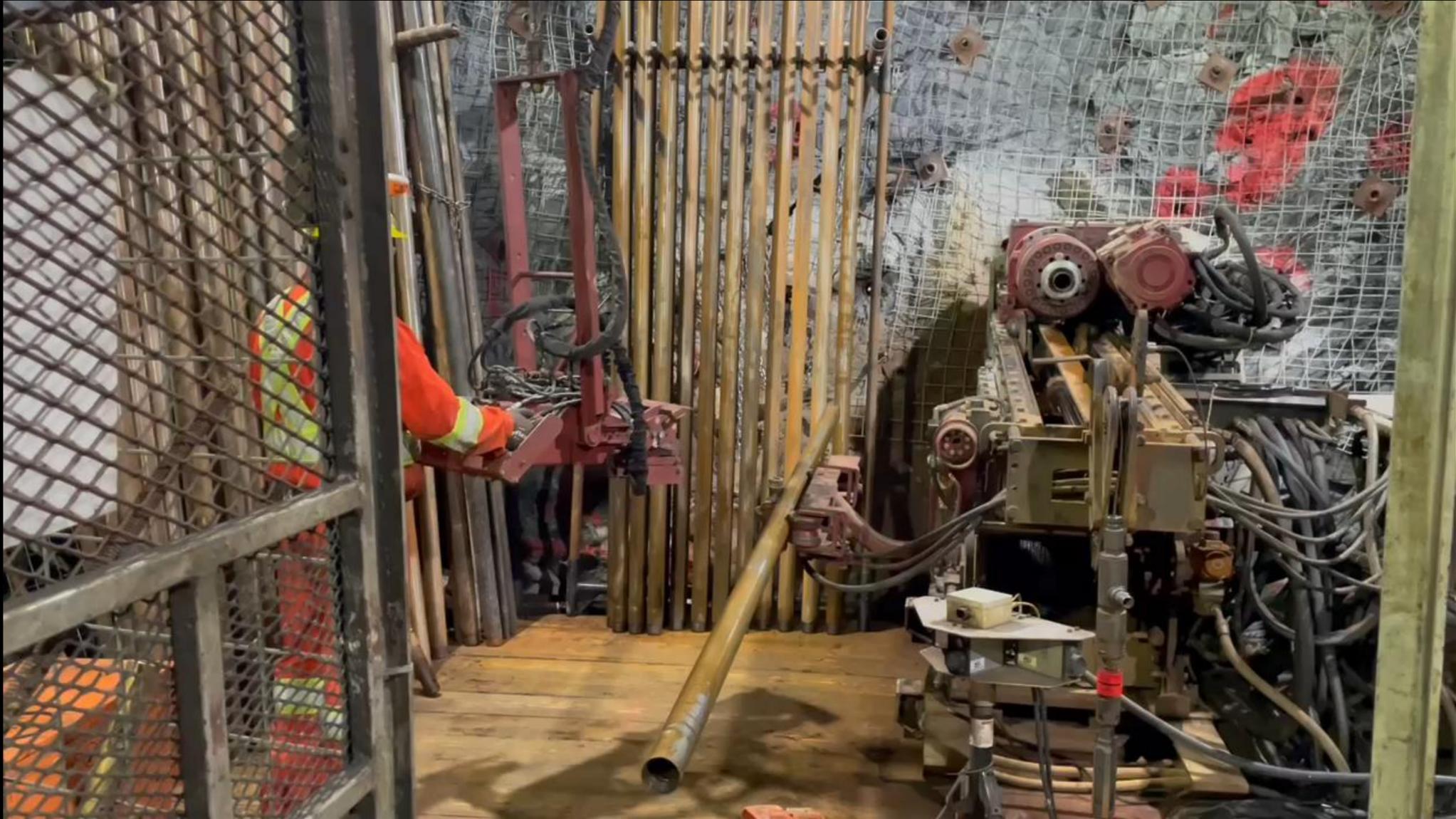
## Latest Technology

- Latest technology used into the algorithm which supports its reliability

## Inner Tube Puller



# PROTOTYPE TESTING 2021



# DEVELOPMENT ROADMAP



## Drill 6/9m Autonomously Between Shifts

→ Increasing productivity

## Develop Second Rod Placer

→ Ability to retrieve water swivel rod

## Phone Application

→ Improving communication and access to data

## Improved Communication With Mine

→ Adaptable to requests

## Video Communication

→ Live streaming

→ Improved support



