

# LIM SOLUTION FOR DRILL & BLAST

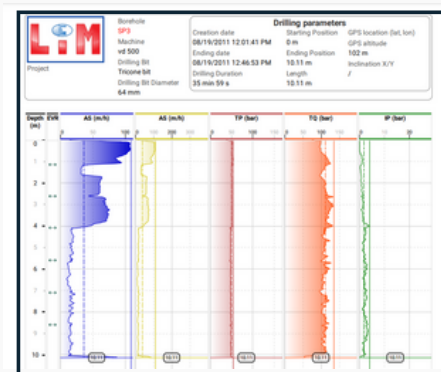
Drilling Parameters (MWD) -  
Drill rig GPS guidance and real time monitoring



## NaviLIM - Drill rig GNSS (GPS) guidance



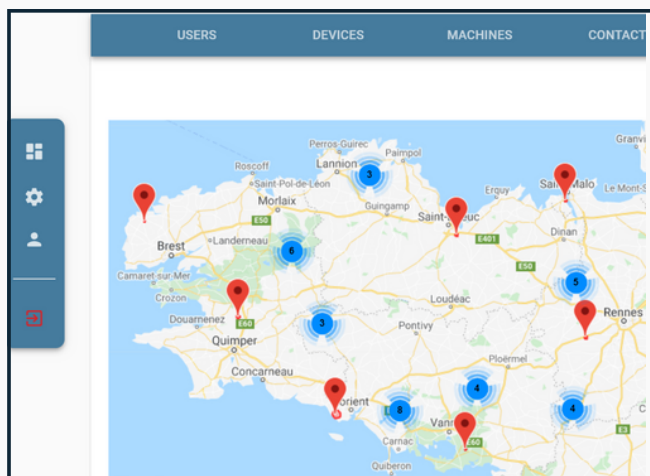
## PocketLIM - Drilling parameters vs depth



Drill mast positioning - Drilling parameters recording (MWD)

## Drill@LIM

Real-time monitoring of drilling machine operation with geolocation



Machines	Devices	Faults	Operator	GPS position	Engine Speed (rpm)
DX700A-03HT088000	52114		Valentin -	(41.5554199, 9.1556892)	1200
FRD05-09HT108000	53003	J1939_5584	Jean Luc -	(46.9216652, 6.2853231)	1196
D50A-03FT085000	52149		Jose -	(45.7350273, 4.5208445)	
TMB26A-04FT087000	52124		Christophe -	(47.1303558, 5.5410066)	
T40B-03HT083000	52123		Olivier -	(45.6945229, 4.4387465)	1521
DX700A-03HT088000	52114		Valentin -	(41.5554047, 9.1557188)	1807
FRD05-09HT108000	53003	J1939_5584	Jean Luc -	(46.9217300, 6.2852893)	2198

## NaviLIM

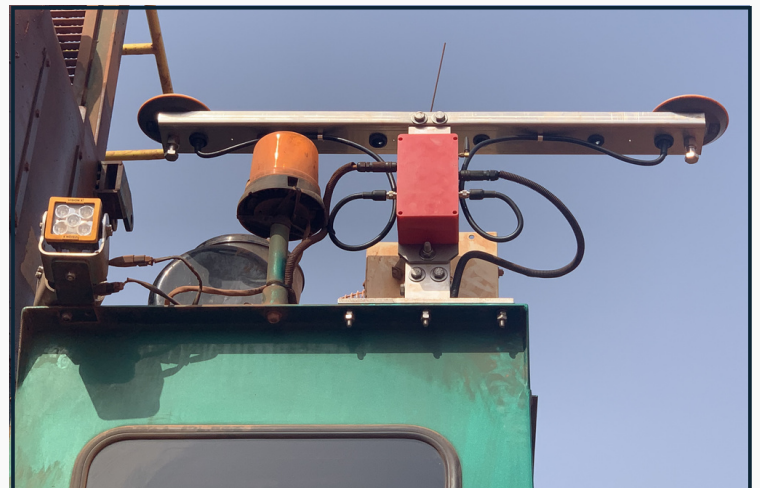
### HIGH PRECISION GPS GUIDANCE OF THE DRILLING MACHINE

Intended for drilling machines for quarry or open pit mining, **NaviLIM** is a **PocketLIM** application which allows the operator to position with very high precision (<5cm) the drilling bit at the planned location of the hole to be drilled whether it is vertical or inclined (angle precision <0.15 °). The blasting plans (IREDES, CSV format, etc.) should have been downloaded beforehand in the **PocketLIM**.

**NaviLIM** uses GNSS technology and works with GPS and GLONASS satellite systems.



A dual antenna system with a spacing of at least 1 m, installed on the cabin roof (vertical boreholes) or at the top of the mast (inclined boreholes) of the drilling machine receives the GNSS (GPS) RTK signal.



A fixed base antenna, located on a high point of the quarry or open-pit mine, emits the GPS RTK correction



## REAL TIME ACQUISITION OF DRILLING PARAMETERS (MWD) INTERNET DATAFILES TRANSMISSION - DATA PROCESSING IN THE CLOUD

### PocketLIM-Drill & Blast

#### Technological advantages:

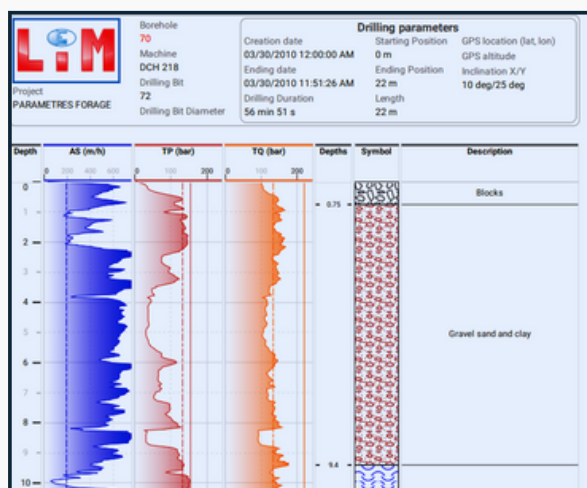
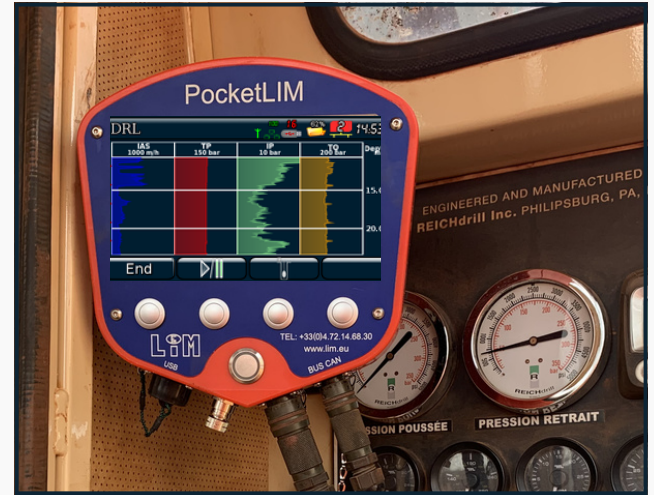
- ✓ Drill mast X, Y angle display function with azimuth compensation for angled drilling;
- ✓ CANBUS technology, CAN open protocol;
- ✓ GPRS 3G/4G modem and Wifi module for data transmission and information in real time;
- ✓ Real-time display on a remote screen (laptop, tablet, smartphone).

#### Drilling parameters recorded vs depth:

- ✓ Drill bit Instantaneous Advance Speed (Penetration rate);
- ✓ Pull down Pressure;
- ✓ Air Pressure;
- ✓ Rotation Torque Pressure.

#### Applications:

- ✓ Geology: differentiation of geological formations;
- ✓ Geotechnics: detection of seams / faults / voids, detection of hard levels / soft levels;
- ✓ Blasting: explosives loading optimization in the boreholes;
- ✓ Rationalization of drilling.



### LIM@mail - GEO-LOG4

- ✓ Management of the data files transmission via the Internet (3G / 4G, Wifi);
- ✓ Automatic pre-processing with generation of the PDF graphic report and email sending;
- ✓ Borehole logs layout with geotechnical geological interpretations.

### DRILLING MACHINES FLEET MONITORING IN REAL TIME WITH GEOLOCATION

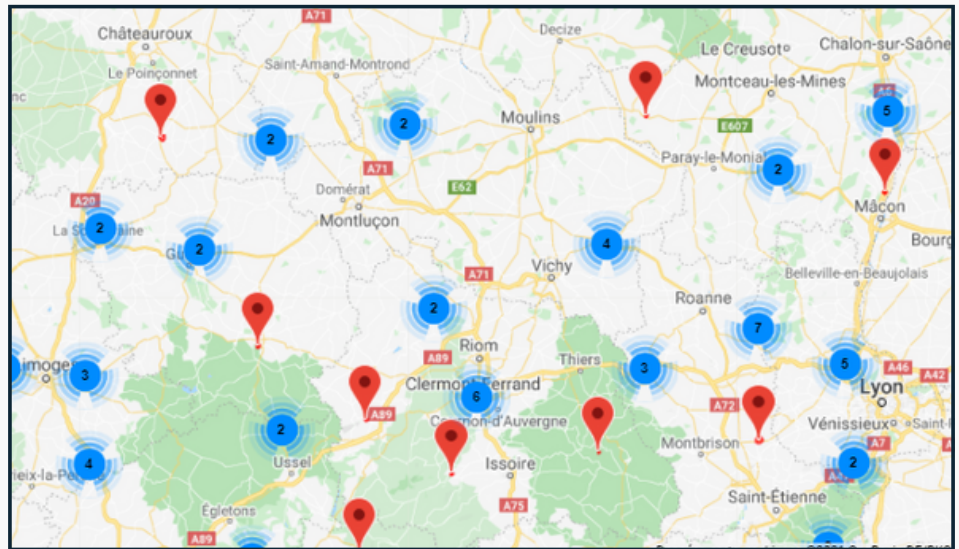
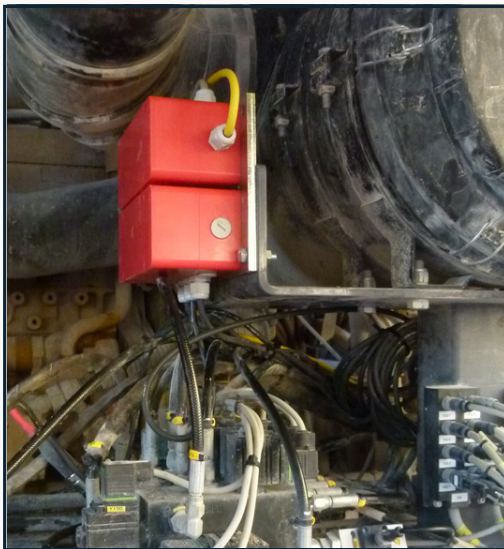
**Drill@LIM** is a cloud solution that provides real-time information on the operation and geolocation of the drilling machine.

**Drill@LIM** concerns any drilling machine, whatever the type, model and manufacturer, on which a PocketLIM data logger is installed.

**Drill@LIM** is aimed at managers in charge of the operation and equipment of a fleet of several drilling machines.

Record date	Machines	Devices	Faults	Operator	GPS position	Engine Speed (rpm)	Engine Hours Total
30/07/2021, 14:54	FRD03-04HT082000	52110		David -	<a href="#">46.8521805_5.9155607</a>	2191	3245:00:00
30/07/2021, 14:52	FRD07-09HT110000	53010		Frederic -	<a href="#">47.5254478_6.7902498</a>	1789	1345:03:00
30/07/2021, 14:48	DI450A - 02FT091000	53018		Lim			
30/07/2021, 14:45	FRD05-09HT108000	53003	J1939_6588	Lim	<a href="#">47.1753273_6.2068229</a>	1197	2052:57:00
30/07/2021, 14:45	FRD05-09HT108000	53003		Lim			2052:57:00

#### CANBUS interface boxes



Thanks to its CANBUS CAN OPEN protocol technology, the PocketLIM is easily connected to the main parts of the drilling machine, which are the motor and the hammer, thus allowing **Drill @ LIM**:

- ✓ to notify in real time all incidents occurring on the machines;
- ✓ to inform about the usage times of the engine and the hammer of the machine thus allowing a good maintenance management for the planning of oil changes and overhauls;
- ✓ to automatically edit reports not only on engine and hammer data but also on statistics related to production.