





# Open Pit - Drill Management System, GPS Rig Positioning, Digital Strata Mapping

## Drill Management System

Operational quality, safety and performance, with guidelines and monitoring results, on-line, gives the mine perfect foundation for drilling improvements.

Drill Rig	id	(debug)	Status	Block no	Hole no	Depth	Planned	Operator	Overdrill
• PIVpen01	2		-						
• PIVpen02	17		Out Of Serv						
• PIVpen03	18		BreakDown						
• PIVpen04	19		Idle						
• PIVpen05	20		Moving						
• PIVpen06	21		Levelling						
• PIVpen07	23		Drilling						
• PIVpen08	24		Drilling						
• PIVpen09	25		Drilling						
• PIVpen10	27		Idle						

↑↑↑ Status  
 ↑↑↑ Overdrill status (Drilling / At target depth / Over drilled)  
 ↑↑↑ Offset status (Too far from planned hole / Inside parameter)

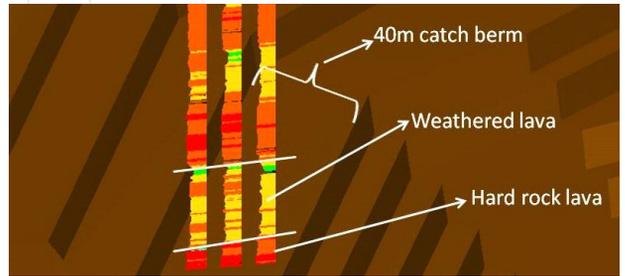
## GPS Rig Positioning

Operator can navigate to the correct drill hole position with cm precision. Antenna is placed on the cabin roof and the receiver, which is connected to the ROCKMA PC, is placed inside the cabin.



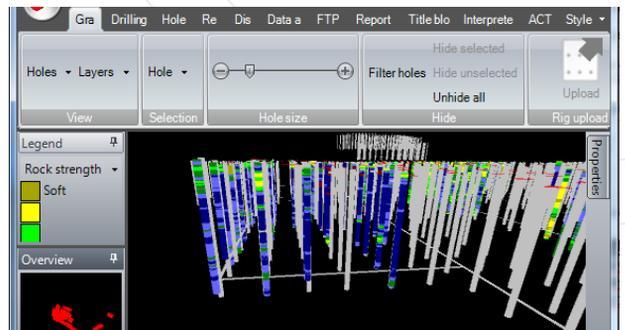
## Digital strata mapping

ROCKMA "Digital Strata Mapping" system gives detail rock information. Rock strength in MPa, fracture information can also be presented as RQD or fracture frequency. Blasting properties and other geotechnical information is available online.



## Customize

ROCKMA's profile is to customize the system to customer requirements. ROCKMA's personnel have extensive experience in mining and civil engineering.



## Online – Wi-Fi, GPRS

Receiving real time information is important for achieving all the benefit possible from this high tech ROCKMA application. Several systems can be used for data communication. Wi-Fi or GPRS is well known technology for the ROCKMA System.



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## Database

The ROCKMA application uses a real time data server and store data into a SQL data base. ROCKMA works with an open structure which makes it easy for the customer to use data with other applications. For smaller applications it is also an option to use a file based system (one file per drill hole).

## Hardware on rig

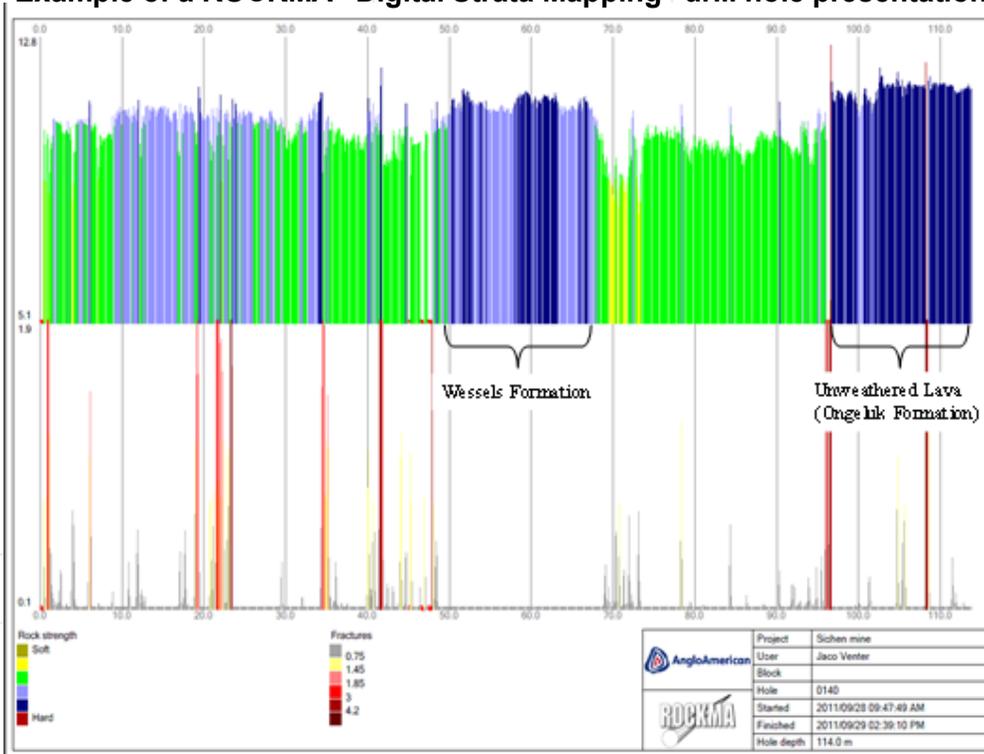
ROCKMA uses very robust equipment for all applications onboard the rig. The computer and all connectors are military standard.

## Drill rig and drilling method flexibility

Rotary drilling, percussion drilling or combinations, both for production and exploration drilling can use the system, also DTH drilling, RC drilling as well as all brands and models. ROCKMA have extensive experience working with percussion drill methods for tunneling, mining and explorations drilling.

All drill types can use the same software and present the result on the same views. In all applications the ROCKMA "Digital Strata Mapping" system can be used to provide very accurate rock property mapping.

Example of a ROCKMA "Digital Strata Mapping" drill hole presentation





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## Our customers

ROCKMA is more or less a standard in Scandinavian tunnelling with more than 100 tunnel systems being sold since year 2000. ROCKMA has also sold to mining and open pit applications to Finland, Sweden and Norway.

One of the world largest mines, **Sishen Iron Ore Mine**, situated in Kathu in South Africa, and owned by Anglo American Corporation's Kumba Resources, after one year of testing different systems recently decided to choose ROCKMA as their supplier to equip all their drill rigs with ROCKMA GPM+ system.

Trials are scheduled to take place at other mines shortly.



## Other application that uses ROCKMA.

- Exploration drilling (rotary and percussion)
  - DTH drilling
  - RC drilling
- Geotechnical drilling in soil and rock
- Core drilling for exploration

## Contact details

<b>ROCKMA</b>	<b>Skellefteå</b>	<b>Tel +46 910 83440</b>
Commercial inquiries	Kari Bro,	<a href="mailto:kari@rockma.com">kari@rockma.com</a> cell +46703755040
Technical inquiries	Patric Mårthensson	<a href="mailto:patric@rockma.com">patric@rockma.com</a> cell +46703755042
<b>ROCKMA South Africa</b>	<b>Johannesburg</b>	<b>Tel +27 11 482 8838</b>
ROCKMA representative	Groundwork Consulting	<a href="mailto:phil.piper@groundwork.co.za">phil.piper@groundwork.co.za</a> cell +27836006291