

15 YEARS+ MANAGING  
DRILLING & BLASTING  
IN FULL AUTONOMY FOR A  
WORD'S TOP 5  
AFRICAN BAUXITE MINE



Tuesday morning HSE Briefing for part of EPC's team at CBG

CLIENT	CBG
SITE	SANGAREDI BAUXITE MINE
LIEU	300KM NORTH CONAKRY, GUINEA
PÉRIODE	2001-PRESENT



## OBJECTIVES & CONSTRAINTS

- Guinea is the world's richest bauxite holding country (estimated resources 7,400mt or 26% of the world's total)
- Located 300km North of Conakry, the Sangaredi mine is Guinea's largest bauxite mine, producing over 14Mt/year
- Owned and operated by the country's principal bauxite producer Compagnie des Bauxites de Guinée (CBG), joint venture between the Guinean Government (49%) and Halco Mining (51%), a joint venture between Dadco Mining and Rio Tinto Alcan
- Covering more than 300km<sup>2</sup> Sangaredi open pit mine is a single cut ore body widely extended on plateaus
- NITROKEMINE (EPC GROUPE) is fully integrated in CBG's bauxite mining process, being in charge of drilling and blasting in full autonomy, including all the maintenance, warehousing and logistics for the last 15 years

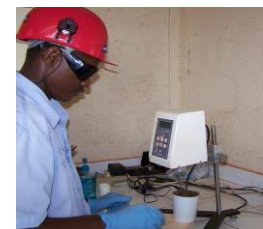
## KEY FIGURES



- 113 personnes on site
- 50.000 holes (300.000m drilled per year)
- 5000 MT of 100% site manufactured bulk explosives per year (2500 MT of bulk emulsion & 2500 MT of ANFO)
- 50.000 surveyed points per year, using RTK GPS
- 4500 MT of Technical Nitrates supply and storage per year
- 8 Million BCM blasted / year for 15 years
- Ramp up to 11 Million BCM scheduled in 2016 mining plan
- 400 blasts/year with a 28/29m<sup>2</sup> pattern
- Average energy: 1,87 MJ/m<sup>3</sup>
- Distance to next main city (Conakry): 300km
- Mining site area: 300km<sup>2</sup>

## EQUIPMENT FLEET

- 4 UMFES
- 3 DRILLS (2 Atlas Copco DM30 & 1 DM45)
- Secondary conversion Fleet of 4 equipment including a CAT 329
- 3 excavators (2 CAT 30t & 1 Komatsu 24t)
- 1 Drill & excavator trailer 30t
- 1 Fuel tank truck 6000l





### SOLUTIONS & BENEFITS FOR THE MINE

#### **FOCUS ON HSE PERFORMANCE**

- Excellent HSE track record (no personnel injuries)
- No Light and Heavy vehicles accident in 2014)
- Remote Control Blast Box with 2km visual range
- -25% on diesel oil consumption per m<sup>3</sup>
- Successful recycling policy for waste oil

#### **A UNIQUE EPC's APPROACH OF SOCIAL RESPONSIBILITY FOR AFRICA**

- Strong committment towards local communities
- Innovative HR policy towards local workforce
- Comprehensive and permanent training policy for field Surveyors, Shotfirers (CPT & blasting control) and Operators

#### **D&B PROCESS OPTIMIZATION THROUGH HIGH QUALITY PRODUCTS, ENGINEERING & EQUIPMENT**

- **TAILORED EXPLOSIVES MANUFACTURING**
- Quality Control: field control and through in-house laboratory for matrix, emulsion and ANFO
- Emulsion formulas optimization to fit local rock type specifics (Blendex 30, 80, 100) and keep mine's economics in line with operators objectives.

- **OPTIMIZED DRILLING & BLAST GEOMETRY**

- Drilling optimization leads reducing from 4 to 3 the number of drills and from 3 shifts of 8 hours to 2 shifts of 6,5 hours
- More efficient drill rigs' using depthmeter
- New drilling tools (new tricones bits, 3-wings bits)
- Pattern Optimization (x2,2 in size) based on average hole depth & geology of the ground
- Surveying holes with RTK GPS for better accuracy
- -57% on oversize blocks (>600mm)
- Blocks secondary breaking by EPC dedicated fleet

- **TUNED BLASTING ENERGY**

- Rising up blasted volume by 48%
- Specific blast design (loading & timing) for each blast to address the varying thickness of the bauxite layer (3 to 15m)
- By blast tuned level of explosives energy per m<sup>3</sup>

- **INTEGRATED MAINTENANCE & LOGISTICS**

- Facing daily maintenance challenges in full autonomy at 300km from Conakry thanks to a dedicated team and on site facilities
- Example: average 93% mechanical availability of rockbreakers

