MODULAR PLANTS FOR AFRICA

Coal, Coke & Carbon in the Metallurgical Industry

Melrose, Johannesburg, June 2013

Danie Krige
TECHINT GROUP

USD 24 billion
>75,000 people

Tenova 5%
Istituto Clinico Humanitas 3%
Tecpetrol 5%
Ternium 38%
Tenaris 38%
Tenova Organization

- TAKRAF
- PYROMET
- DELKOR
- BATEMAN PROJECTS
- BATEMAN TECHNOLOGIES

- DIRECT REDUCTION PLANTS
- MELT SHOPS
- COLD ROLLING MILLS
- REHEATING FURNACES
- HEAT TREATING FURNACES

- ROLL GRINDERS
Tenova Mining & Minerals

EPCM/Projects Business Area

Mining Business Area

Minerals Business Area

EPCM, Engineering Services & Project Management

Open Pit Mining & Underground Solutions, Bulk Handling & Specialised Equipment

Differentiated, Project specific Technology & Modular Plant Solutions

Bateman Founded in 1921

A slide per company attached for distribution
Tenova Mining & Minerals

EPCM/Projects
Business Area

Mineral
Business Area

Open Pit
Mining & Underground
Solutions, Bulk Handling & Specialised Equipment

Differentiated, Project specific Technology & Modular Plant Solutions

Bateman Founded in 1921
Tenova Bateman Technologies (TBT)

Tenova Bateman Technologies

Modular

Process Technologies

Water

Sulphuric Acid Plants

Resin in Pulp

Hydrometallurgy
Modular Plants

- Modular plants are the preferred choice for fast track projects
- Design and supply of modularised mineral processing plants for beneficiation and recovery of wide range of commodities, including diamonds, coal, graphite, copper, magnesite, andalusite, chromite, platinum, gold and iron ore
Modular Designed Plants

Modular Plants allow for:

- Short time to delivery and production
- Factory erection and pre-commissioning of modules
- Ease of transport to remote terrains
- Minimal site infrastructure
- Fast erection on site with low skilled labour
- Configuration to process requirements
- Stand-alone facilities or incorporated into permanent processing circuits
Modular Plants for Africa

- Modular Plants for African conditions (manual or automated)
- Competitive processing in difficult terrains
- Support from an African office
- After sales support for commissioning and spares

- Mozambique office
- Gaborone office
- Nigeria office
- Another West Africa office on the cards
Products

Modular Plants comprising:

- Front End
- DMS Process Plants
- Mineral Processing
- Refining
- Recovery Plants

Short Delivery time
Base Metal or U Modular Flowsheet

- Primary Crushing
- Scrubbing
- Stock-piling
- Milling
- Ore Dressing
- Leaching
- RIP
- L/S
- Solvent Extraction
- Electrowinning/Precipitation
- Product handling and QA

L/S
Au and Ag Modular Flowsheet

Primary Crushing ➔ Scrubbing ➔ Stock-piling

Primary Crushing ➔ Leaching ➔ Ore Dressing ➔ Milling

Primary Crushing ➔ RIP CIP ➔ Electrowinning ➔ Product handling and QA
Bulk Processing Modular Flowsheet

- Primary Crushing
- Scrubbing
- Crushing and Screening
- Gravity
- Crushing
- Cobbing via DMS or Jigging
- Stock-piling
- Fractions Screening
- DMS of fractions
- Product handling and QA
Modular Plants - Most Recent Projects:

- MODULAR ALLUVIAL DIAMOND PROCESS PLANTS, Zimbabwe
  - 4 X 150 tph front-end and 4 X 100 tph DMS modules
  - 1 X 120 tph front end with 1 X 60 tph DMS module

- CHEMAF, DRC 1 X 100 tph copper DMS concentrator plant

- CENTRAL RAND GOLD, South Africa, 1 X 30 tph modular gold flotation concentrator plant

- KUMBA IRON ORE, RSA, 50 tph UHDMS pilot plant

- ANNESLEY, RSA, 1 x 30 tph Modular DMS for Andalusite

- AGD, CIS, 5tph drill-chip diamond recovery plant, 1x1tph and 2x60tph DMS plants

- ALMAZY ANABARA, CIS
  - 2x5 tph, 2 X 50 tph, 1 X 70 tph and 2 X 100 tph diamond process plants

- HOPE BAY, Canada
  - 1 X 40 tph modular gold process plant

- JAGUAR (through Como), Australia – 1 X 50 tph copper/zinc pre-concentration DMS plant

- TALISON TITHIUM (through MSP), Australia – 1 X 50 tph spodumene beneficiation DMS plant

Reduced risk in difficult environments
Modular Plants from Africa for Africa

- Niche, state-of-the-art technologies
- Proven Modular Designs that Reduce risk
- Fast Track Projects
- Highly experienced Project team
- Process guarantees
- Minimum Time Zone differences
- Contracting flexibility to Execute LSTK projects
- Ability to operate in regions with developing economies
- Delivering process plants Quick turn around times
- Proven Modular Designs that Reduce risk
- In Company Equipment Support
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When to choose modular units

- The important of analyzing your company capability: what do you have and what do you require
  - Balance sheet financing or not
  - Engineering company that operate successfully in Africa

- Evaluating the modular plant advantages for coal mines in Africa
  - Quick start-up
  - Risk vs time
  - Support from an experienced team

- The best practices and technologies for coal processing
  - More than conventional DMS only
Thank you
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