



WORLD CLASS MINERALS AND ENERGY SECTORS THROUGH SUSTAINABLE DEVELOPMENT

DEPARTMENT OF MINERALS AND ENERGY

Practical experience-Acceptance as a
candidate



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AA Coutinho-Manager Mine
Safety

Practical Experience

Requirements

WINDING PLANT(60 days)

1. Various winding systems
 - 1.1 Double drum
 - 1.2 Single drum
 - 1.3 Multi Rope
 - 1.4 Automatic
 - 1.5 Stage winders
2. Control Systems
 - 2.1 A C
 - 2.2 D C closed loop
 - 2.3 Variable



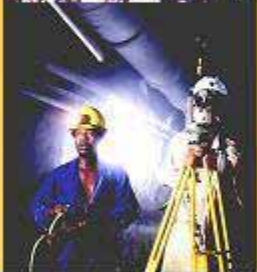
3. Signalling and safety devices
4. Wire ropes and attachments
5. Front and back end rope cuts
6. Sheaves, shafts and shaft bearings including sheave profile
7. Cages, skips and other types of conveyances
8. Rope, steel, timber, and timber and rail guides
9. Loading and unloading arrangements for persons, material and minerals
10. Headgear's, bins and loading chutes
11. Shaft sinking
12. Signalling systems
- 12.1 Safety devices

LIFTING EQUIPMENT(10 days)

1. Lifting Machines
2. Lifting tackle

LIFTS (ELEVATORS)(10 days)

1. Type of LiftsACDC Rack and Pinion Lift
2. Safety devices
3. 3. Ropes and Chains
4. 4. Hatchway and cars



5. Motor room and controls

6. Inspections and tests

CHAIRLIFTS(10 days)

1. Safety devices
2. Ropes and Splices
3. Chains
4. Chairs and attachments
5. Brakes
6. Boarding/Alighting station
7. Travelling clearances

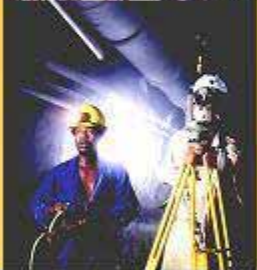
COMPRESSED AIR AND RETICULATION (10 days)

1. Air compressors
 - Rotary
 - Screw
 - Piston
2. Ancillary equipment
3. Control of safety devices
4. Transmission
5. Distribution



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6. Measurement of compressed
7. Compressed air motors
8. Testing of air compressor systems

DRILLS(20 days)

1. Rotary and percussion machine for drilling
2. Machine cutting rock
3. Rock drill machine
4. Raiser bore
5. Diamond and shot drills
6. Drills and drill bit machine
7. Drill sharpening

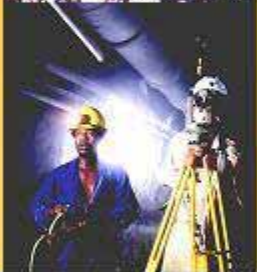
ENVIRONMENTAL ENGINEERING(25 days)

1. Ventilating and cooling including main and aux fans
2. Air conditioning
3. Refrigeration including balance
4. Dust and fumes: cause and prevention
5. Noise: cause and prevention
6. Hearing protection
7. Illumination of working places



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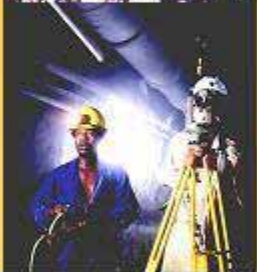
MATERIAL/ORE HANDLING EQUIPMENT(50 days)

1. Conveyors
2. Scraper winches
3. Endless rope and mono-winch installation
4. Rocker-arm loaders
5. Underground rail bound transport
6. Underground trackless transport
7. Use of flame proof diesel engines in fiery mines and hazardous locations
8. Man-riding conveyors
9. Mono-rail systems

FLUID HANDLING(30 days)

1. Stope drainage
2. Haulage water drainage
3. Mine de-watering pump station
4. Underground settlers
5. Underground dams/plugs
6. Multi-stage pumps
7. Sludge pumps
8. Water treatment
9. Measurement of flow





10.U/G water system

11.Pelton wheels

12.Water balance

ELECTRIAL(50 days)

1. Electrical powertransmission

2. Transformers

3. Switchgear

3.1 Oil

3.2Mineral oil

3.3Vacuum circuit breaker

3.4 SF6

4. Underground and surface electrical distribution

5. Electrical powercontrol andmeasurements

6. All type of electrical motors

6.1 AC

6.2 DC

6.3 Synchronous motors

7. Emergency power generating installations

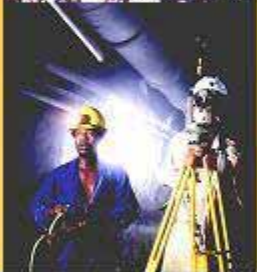
8. Heating equipment

9. Lightning Equipment



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10. Protection against lightning surges
 11. Earth leakage and overload protection including discrimination and testing of equipment
 12. Fault current calculations
 13. Power factor and power factor corrections
- Equipment
14. Power costs and tariff calculations
 15. Explosion protected apparatus
 16. Classification of hazardous locations
 17. Repair and manufacturing of electrical equipment

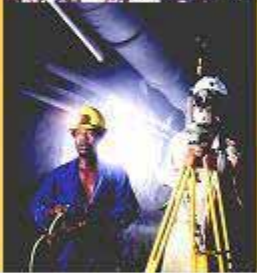
ORE PLANT(20 days)

1. Crushing plant and equipment
2. Storing, screening, washing plant
3. Grinding plant (mills)
4. Mill product thickening
5. Filtering
6. Vacuum systems
7. Recovery
- 7.1 Flotation
8. Residue handling and storage



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STEAM GENERATING

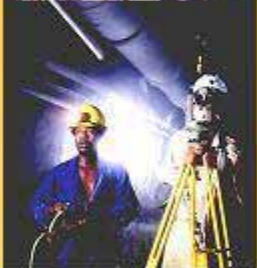
(15 days)

1. All type of boilers
2. Boiler fuels
 - 2.1 Gas
 - 2.2 Coal
 - 2.3 Electrical
 - 2.4 Oil
3. Safety devices
4. Ancillary equipment
5. Steam piping systems
6. Autoclaves
7. Super heaters
8. Condensers
9. Water treatment
- 10 Boiler inspections and tests

WORKSHOPS(30 days)

1. Electrical workshop
2. Fitting shop
3. Boiler shop
4. Carpenter shop





5. Mine store
6. Workshop organisation
7. Cable repair shop
8. Garage workshop

STRUCTURES(20 days)

1. Buildings erected to house machinery
2. Provision for cranes and lifting gear
3. Underground chambers support of excavation
4. Lifting arrangements

CONCRETE WORK(10 days)

1. Reinforced concrete
2. Composite beams
3. Shuttering and concrete hardening
4. Protection against chemical wear

STEEL AND ALLOYS(5 days)

1. Mechanical properties of various type of steel and alloys
2. Stress in structures
3. Composite beams
4. Corrosion and abrasion protection of steel
5. Effects of fluctuating temperatures





LUBRICATION(10 days)

1. Elementary theory of lubrication
2. General properties of oil and greases
3. Modification of properties by additives such as detergents
4. Extreme pressure additives and antioxidants
5. Condition monitoring

FIRE PREVENTION AND CONTROL(5 days)

1. Fire prevention and control
2. Use of different types of fire extinguishers
3. Maintenance and repair of fire prevention systems

OPERATION AND MAINTENANCE OF PLANT (30 days)

1. Care
2. Operations
3. Planned maintenance
4. Supervision and inspection/audits
5. Safety precautions
6. Safety devices
7. Automation in operating or production processes
8. Financial control
9. Commissioning of projects



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PROJECT MANAGEMENT (20 days)

1. Planning methods
2. Control and implementation of projects
3. Critical route scheduling
4. Gantt-chart
5. Nett present values
6. Retention payments

Engineers Signature:

Date:

Certificate Number:

Shaft:



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