

**PRODUCT
CATALOGUE
CATHODE**



Introduction

Mining Engineering Services S.A.R.L. (MES) was established in the year 2010 for Project Management Support to Somika S.A.R.L. in Democratic Republic of the Congo (DRC) & across Africa Region.

Today MES has established itself as a one stop service provider for all types of EPC (Engineering, Procurement & Construction) projects involving Electrical, Mechanical and Civil designs, all types of material supplies, erection and commissioning.



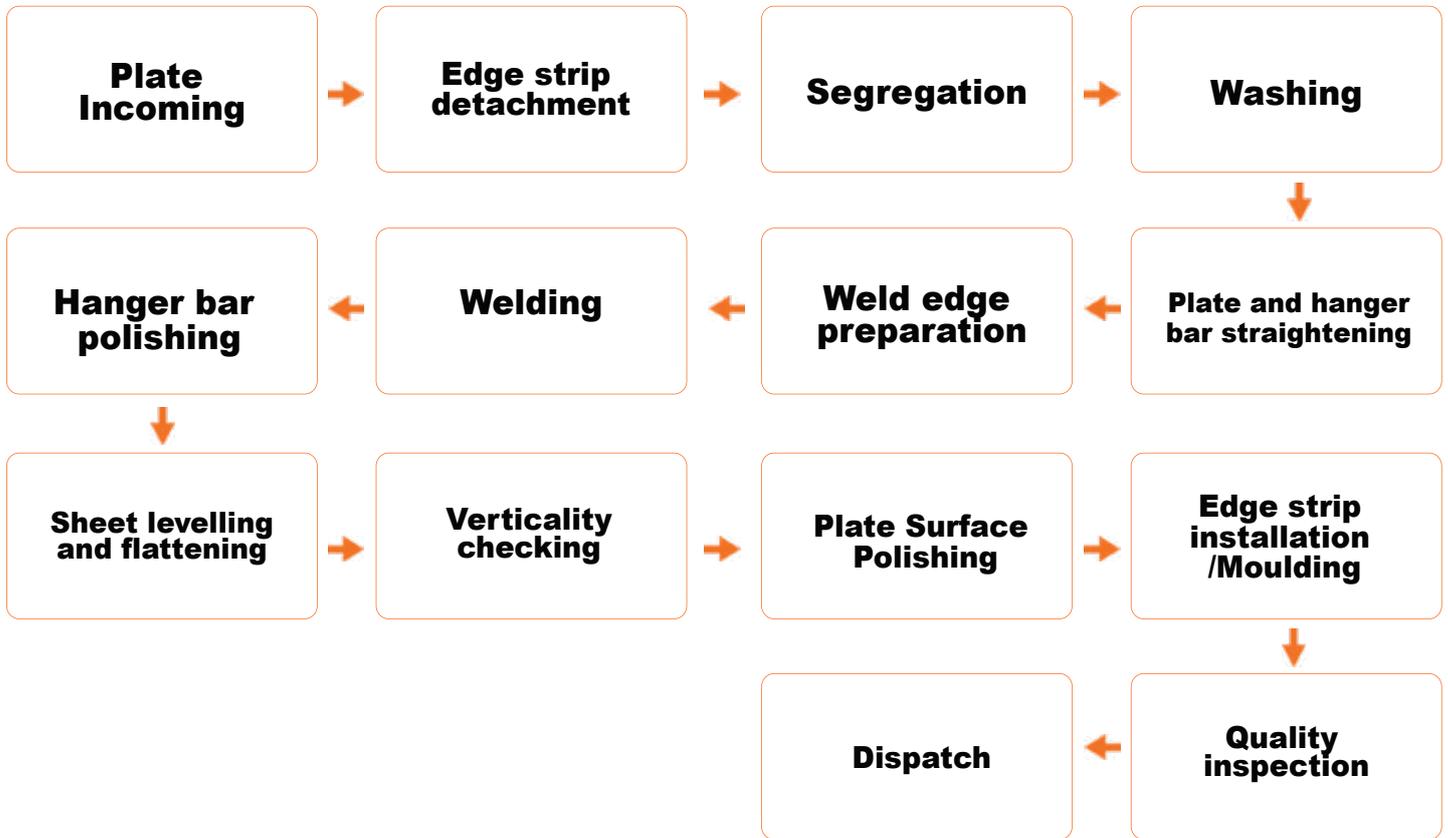
Strength of MES

- Presence in DRC with more than 3 decades. Strong, committed and motivated team for efficient procurement, logistics and construction.
- Friendly, flexible and adaptive organization with a workforce of over all 2700 employees.
- Strong logistics support from the group companies in China, India, UAE, Tanzania, Zambia and South Africa.
- Large warehousing facilities and efficient delivery system across Africa Region.
- Stringent Quality Management System subjected to continuous improvement.



MES offers cathode maintenance services that ensures a failure free process, enabling higher efficiency, reducing energy consumption in the tank house and extending the lifetime of the cathodes. MES cathode maintenance services can be created depending on the customer's needs.

Cathode Refurbishment Procedure



Verticality check

The cathode plate is hanged on the stand and checked for vertical deviation by a laser distance meter.

Straightening Stand



Finishing

The cathode passes through high speed rollers of finishing machine to achieve good surface finish.

For cathodes plate surface cleaning, we are using two polishing machines.

After polishing, QC verification is done.



Edge strip installation: Polypropylene edge strip installation is done by injection moulding machine.

Injection Moulding Machine



Punching

For better edge strip bonding, holes are suitably punched on the new plate.

6mm hole is done for better strength of plastic edge strip during the moulding process.

After punching, plastic edge striping is done.

Welding

We use both GTAW process (Gas tungsten arc welding) and Arc Welding process depending on welding requirement.

For repairing of cathode plates where SS to SS welding is required, we use normal Arc Welding without inert gas.

For fixing hanger bar on the SS cathode plate, we use Gas Tungsten Arc Welding

Refurbished Cathode



Dispatch



Advantages of Cathode Refurbishment

- Improvement in production of Copper cathode
- Reduction in cost of production
- Better shapes of cathode for better presentation
- Improved operation in EW
- Enhanced electro conductivity
- Increase in production efficiency
- Reduction in maintenance cost
- Improvement in copper quality

Electrical conductivity / Production Efficiency

Due to repeated operation, the surface of the cathode plate (made of stainless steel) and copper hanger bar gets deteriorated. So refurbishment of the cathode plate is required to get better copper deposition on the plate during EW process. Refurbishment of cathode improves electrical conductivity during EW process thereby ensuring better copper deposition on the cathode plates.



Productivity After Cathode Refurbishment

With Cathode Refurbishment, Current efficiency/electrical conductivity during EW Process improves.

The quality of Cathode plate, Anode plate and Edge strips impact the productivity of the process. With cathode refurbishment, there is guaranteed increase in productivity



Electrowinning Operation Benefits

- Extended cathode lifetime
- Improved tank-house efficiency
- Reduced operation and maintenance costs
- Reduced energy consumption
- Minimized downtime of the tank-house machines
- Improved copper deposition
- Better copper removal by striping operation



Incoming Cathode Blanks



After Refurbishment



Why Cathode refurbishment is required?

1. Due to repeated operation, the surface of the Cathode plate (made of Stainless Steel) and Copper hanger bar gets deteriorated. Also the cathode plates get bent during the process. So refurbishment of the cathode plate is required to get better copper deposition on the plate during EW process.

Following are some of the reasons why Cathode plates get deteriorated during the EW process :

- I. The cathodes bend after grading because of its shape and size
 - II. Physical erosion caused by the two knives of the stripping machine
 - III. Crane operators are also a cause of bending if they don't handle the cathode gently
 - IV. Pressure from the two cylindrical structures used to unclog the copper that is stuck in the plate
2. Without refurbishment, following problems occur during EW process with repeated use of Cathode plates:
 - I. Poor electrical conductivity
 - II. Poor quality of copper as final product
 - III. Too much copper plugin in the plates leading to wastage
 - IV. Scratching of the plates resulting in short life of the plates
 3. With Cathode refurbishment, Current efficiency/electrical conductivity during EW Process improves.
 4. Plastic Edge Strips get broken during EW process, which also gets replaced during cathode plate refurbishment.
 5. The quality of Cathode plate, Anode plate and edge strips impact the productivity of the process. With cathode refurbishment, there is guaranteed increase in productivity.
 6. Smooth and shiny surface of the cathode plate ensures better presentation.

Why Edge Strips replacement is required?

1. Plastic Edge Strips get broken during EW process because of the following reasons :

- i. Chemical reaction during EW process
- ii. Due to misalignment of stripping machines and cathode support assembly.
- iii. Joint of edge strips not sealed properly in case of temporary edge strips.



Benefits of Permanent Edge Strips that we offer?

- We offer Permanent Edge Strips which bring down the total maintenance cost of Cathode Plates against temporary Edge Strips.
- Major difference between Permanent Plastic Edge Strip and Temporary Edge Strips
 1. The temporary edge strips are made manually. So joints are not sealed properly and silicon is required to fill the gaps to improve sealings. The permanent edge strips are melted directly in the plate. So the sealings are tight
 2. Life of Temporary edge strip is almost 1 to 2 months (average 1.5 months). Life of Permanent edge strip is almost 12 to 18 months (average 15 months)
- Using permanent edge strip over temporary edge strip will give significant cost saving



Our Valuable Customers

- TFM
- MMG
- Boss Mining
- Mutanda Mining (MUMI)
- Kisanfu Mining (kimin)
- Kamoto Copper Company SARM (KCC)
- Somika Mining
- Golden Africa Mining
- Tiger Mining
- Ruashi Mining

Group Presence

RD CONGO

SOMIKA SARM - manufacturer of Copper & Cobalt Hydroxide

MMR SPRL - Mining & Trading in Cassiterite and Coltan

KIMIN SAS - Mining in Copper and Cobalt

SOTRAFER SARM - Manufacture of Rebars

TERRA SARM - Commercial Agriculture

SOLUTION FOR AFRICA SARM - Borewell & Geological Drilling

MCS SARM - Chemical supplies & Trading

DRC Corporate Offices of MES



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