

**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.



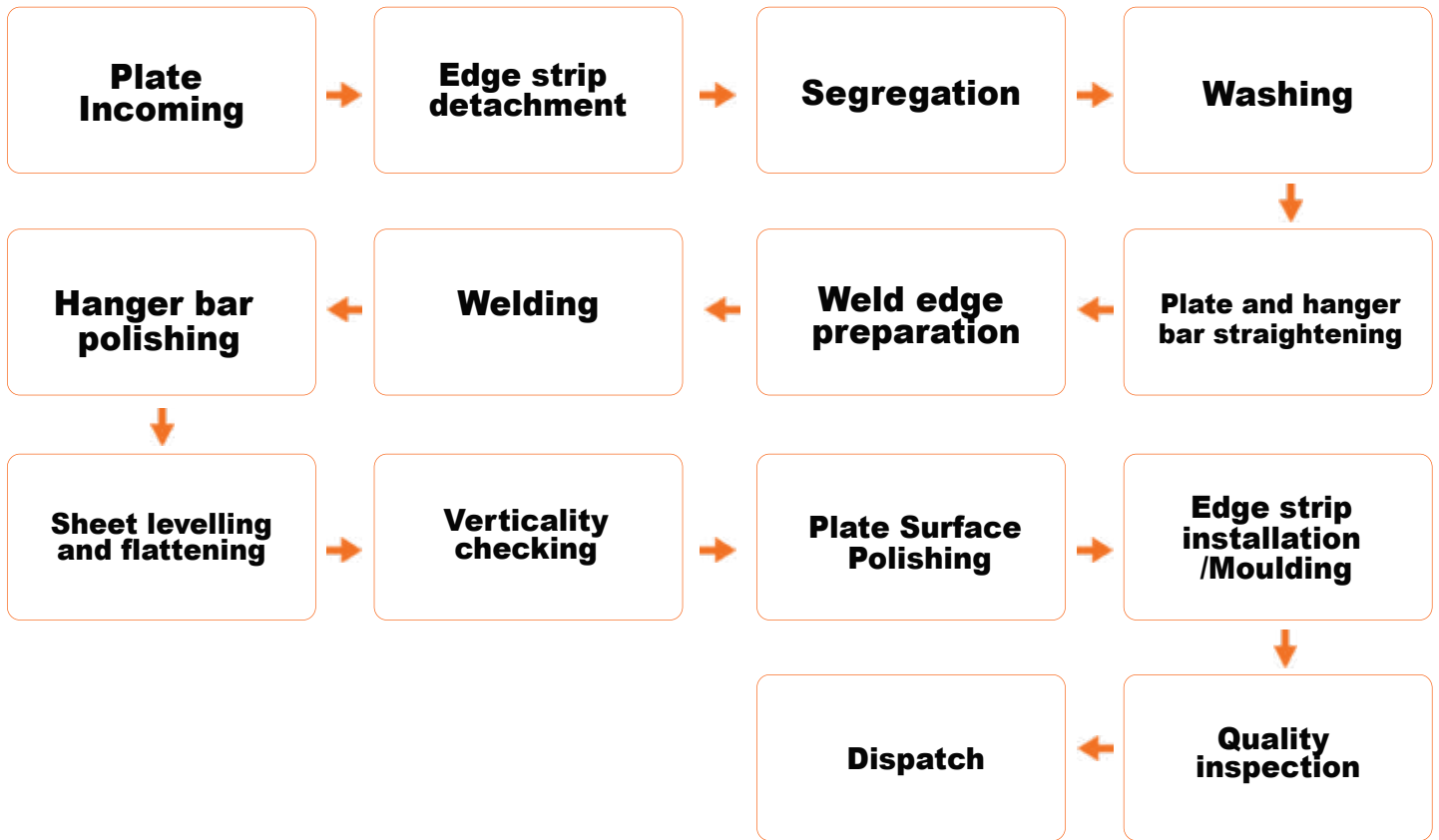
## Strength of MES

- 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



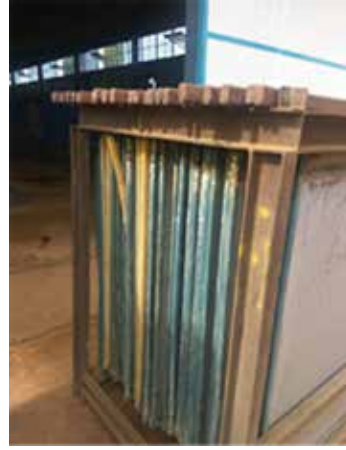
## Electrowinning Operation Benefits

- 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 SARL (KCC)
- Somika Mining
- Golden Africa Mining
- Tiger Mining
- Ruashi Mining

## Group Presence

### RD CONGO

**SOMIKA SARL** - manufacturer of Copper & Cobalt Hydroxide

**MMR SPRL** - Mining & Trading in Cassiterite and Coltan

**KIMIN SAS** - Mining in Copper and Cobalt

**SOTRAFER SARL** - Manufacture of Rebars

**TERRA SARL** - Commercial Agriculture

**SOLUTION FOR AFRICA SARL** - Borewell & Geological Drilling

**MCS SARL** - Chemical supplies & Trading

### DRC Corporate Offices of MES



### Our Associates across the globe

**Tanzania - Dar Es - Salaam**

**VINMART LTD**

P.O. Box 77007, 419, 4th floor, Harbour View Tower (J.M. Mall), Samora avenue Road, Dar Es Salaam, Tanzania

**U.A.E - Dubai**

**VINMETAL SYNERGIES FZCO**

Room - 908, JAFZA VIEW 18, Post Box 263104, Sheikh Zayed Road, Jebel Ali, Dubai UAE

**INDIA - VADODARA**

**EXCELSOURCE INTERNATIONAL PVT. LTD**

301/302, Sampatti Complex Sardar Baug Lane, Race Course, VADODARA - GUJARAT. 39007, INDIA

**CHINA - Gaungzhou**

**VINMART**

1707, R&F Tian He Commercial Building, Lin He Dong Road, Opp. Guangdong, Tobacco Building, Tian He District, Guangzhou - PIN 510610, China

**ZAMBIA -KITWE**

**METMIN LTD**

P.O. BOX . 23566, Plot No. 3709, Mansa Road, Light Industrial Area, Kitwe - Zambia

**SOUTH AFRICA**

**ROSVIN PTY LTD**

The Form Building, 15th Floor, 2 Maude Street, Sandton 2196



[www.messar.com](http://www.messar.com)



MINING ENGINEERING SERVICES

Committed to Serve

✉ [info@messar.com](mailto:info@messar.com)

📍 794, Deviation Route Likasi, Lubumbashi, DRC

📍 524, Avenue Industrial, Commune Manika, Kolwezi, Lualaba

☎ +243 900458347 +243 991007250  
+243 999977486

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