

# Forext metal end green energy Tanzania limited

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### Project Overview: Energy Storage and Green Energy Vehicle

The project aims to establish a comprehensive infrastructure for the production of green energy vehicles and energy storage solutions in Tanzania. It encompasses three main phases:

#### 1. Phase 1: Raw Material Production

- Involves the establishment of facilities for the production of essential raw materials such as lead ingots, copper ingots, and stainless steel ingots.
- Focus on proper handling and recycling of scrap materials to ensure sustainable practices from the outset.

#### 2. Phase 2: Battery Manufacturing

- This phase centers on the setup of a complete battery manufacturing unit, utilizing the raw materials produced in Phase 1.
- Incorporates advanced processes for grid casting, oxide pasting, plate curing, and battery assembly to ensure high-quality end products.

#### 3. Phase 3: Electric Vehicle Assembly

- The final phase involves the assembly and manufacturing of electric bikes and three-wheelers (Rixas) in Tanzania.
- Includes the establishment of assembly lines for electric vehicles and manufacturing units for vehicle bodies and frames.

### Key Objectives:

- Introduce green energy solutions to the transportation sector in Tanzania.
- Establish a robust manufacturing infrastructure for energy storage and electric vehicles.
- Promote job creation, economic growth, and environmental sustainability through the project's implementation.

**Scope:** This project aims to establish three large-scale manufacturing units:

#### 1. Lead, Copper, and Stainless Steel Smelting Plant:

- Establishment of facilities for smelting lead, copper, and stainless steel ingots.
- Focus on ensuring proper handling and processing of raw materials for battery production.

#### 2. Complete Battery Manufacturing Unit:

- Setup of a comprehensive battery manufacturing facility, covering all stages from raw material processing to final assembly.

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- Implementation of advanced manufacturing processes to produce high-quality batteries.

### 3. **Complete Electric Two-Wheeler Assembly Line and Three-Wheeler Body and Frame Manufacturing Unit:**

- Establishment of assembly lines for electric two-wheelers and manufacturing units for three-wheeler bodies and frames.
- Integration of battery technology developed in Phase 2 for efficient and sustainable vehicle assembly.

**Budget:** The budget allocation for each phase is as follows:

#### • **Phase 1: Lead, Copper, and Stainless Steel Smelting Plant**

- Budget: \$500,000 USD
- Allocation for machinery and scrap purchases inventory.
- Detailed machine list and specifications provided in Annexure 1.

#### • **Phase 2: Complete Battery Manufacturing Unit**

- Budget: \$400,000 USD
- Allocation for machinery and inventory.
- Detailed machine list and specifications provided in Annexure 2.

#### • **Phase 3: Electric Two-Wheeler and Three-Wheeler Assembly Plant**

- Budget: \$300,000 USD
- Allocation for establishing assembly lines for electric vehicles.

**Expected Outcomes:**

#### 1. **Employment Generation:**

- Phase 1: 80 manpower
- Phase 2: 100 manpower
- Phase 3: 80 manpower
- Total: 260 jobs created
- Description: The project aims to create a significant number of employment opportunities across various phases of implementation, contributing to job creation and economic growth in Tanzania.

#### 2. **Green Transportation:**

- Description: By introducing electric bikes and three-wheelers, the project seeks to promote environmentally friendly transportation solutions, reducing carbon emissions and dependence on fossil fuels.
- Phase 3: Complete electric two-wheeler assembly line and three-wheeler body and frame manufacturing unit will offer consumers access to green transportation alternatives.

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## **3. End-User Quality and Cost-Effective Products:**

- Description: The project is committed to delivering high-quality and cost-effective products to end-users, ensuring satisfaction and affordability.
- Phase 2: Manufacturing facility will produce batteries of superior quality, meeting international standards and enhancing consumer confidence.
- Phase 3: Electric vehicles assembled in Tanzania will offer users reliable and durable transportation options at competitive prices.

## **4. Proper Handling and Utilization of Recycled Materials:**

- Description: The project prioritizes sustainability by incorporating the proper handling and utilization of recycled materials, contributing to waste reduction and resource conservation.
- Phase 1: Scrap battery smelting plant will ensure proper disposal and recycling of hazardous materials.
- Phase 2: Utilization of recycled materials in manufacturing processes will minimize environmental impact and promote circular economy principles.

These expected outcomes highlight the project's multifaceted benefits, ranging from economic empowerment through job creation to environmental sustainability through the adoption of green technologies and practices.

## **Annexture-1**

### **SPECIFICATION AND SCOPE**

#### **EFFLUENT TREATMENT PLANT**

BATTERY CUTTING MACHINE

#### **FURNACE AND THEIR EQUIPMENT**

FURNACE OF FLUE GAS CHAMBER

AIR POLLUTION CONTROL DEVI

CE AIR COMPRESSOR

#### **JUMBO INGOT MOULD & TRACK AND TROLLEY & MELTING KETTLE**

JUMBO INGOT MOULDS

TRACK & TROLLEY SYSTEM FOR JUMBO INGOT

MELTING KETTLE

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## **(I) MELTING KETTLE**

### **EQUIPMENT SPECIFICATION / SCOPE OF SUPPLY**

<b>S.</b>	<b>ITEM</b>	<b>MAKE</b>	<b>QTY.</b>	<b>SPECIFICATION</b>
1.	LEAD HOLDING KETTLE	<b>ASTECH</b>	1 No.	<p>-Capacity: 5.0 T/Batch</p> <p><b>INNER POT:</b></p> <p>-Diameter: 1000mm (ID)</p> <p>-Height: 750mm</p> <p>-Inner Pot Construction:</p> <p>Side Walls: MS, 16.0mm Thk</p> <p>Bottom: MS, 20.0mm Thk.</p> <p>Flanges: MS, 20.0mm Thk.</p> <p>-Flange: 225mm wide</p> <p><b>MIXER:</b></p> <p>-Structure for fitting of mixing arrangement made of ISMC 75x40 and plates 8.0mm Thk. MS</p> <p><b>-Fixed Type Structure</b></p> <p>-Mixing Shaft SS-304, 60mm Dia with SS Blades</p> <p>-Pulley, Bearings, V Belts etc., complete with Mounting Platform</p> <p>-Motor: 3.0HP x 960 RPM</p> <p>-Complete with Motor Platform</p>

## **BATTERY CUTTING MACHINE** **EQUIPMENT SPECIFICATION**

S.	ITEM	MAKE	QTY.	SPECIFICATION
1	BATTERY CUTTING MACHINE	<p>Rotomotive/P BEL/ PETC</p> <p>Crompton/ ABB</p> <p>Crompton/ ABB</p> <p>Rotomotive/P BEL/ PETC</p> <p>Parts of Schneider/ L&amp;T Make</p>	1 No.	<p>-Machine Dimensions: 1000mm x 1000mm</p> <p>-Machine Height: 1600mm</p> <p><b>-Conveyor</b></p> <p>-Conveyor Dimensions: 600mm x 4000mm</p> <p>-Conveyor Height: 750mm</p> <p>-Rubber Belt conveyor with supporting rollers with individual bearings</p> <p>-Conveyor Drive-Chain &amp; Sprocket Type</p> <p>-Geared Motor: 2.0HP x 50 RPM</p> <p>-Conveyor tensioning arrangement</p> <p><b>-Cutting arrangement</b></p> <p>-Cutters (2 Nos.) <b>Bosch</b></p> <p>-MS 5.0mm Thk. With High Carbon Bits</p> <p>-Cutter Motors (2 Nos.)</p> <p>-7.5 HP x 2800 RPM</p> <p><b>-Height adjustment arrangement</b></p> <p>-Cutting height adjustment mechanism</p> <p>-Motor 1.0 Hp 960 rpm</p> <p>-with suitable worm &amp; pinions</p> <p><b>-Width adjustment arrangement</b></p> <p>-Width Adjustable guide arrangement.</p> <p>-Geared Motor: 0.25 HP</p> <p>-Guide angles: ISMA65x6 with suitable Rack and pinion.</p> <p><b>-ELECTRICAL PANEL</b></p> <p>-Suitable starter for above written motors</p> <p>-7.5 Hp x 2 Nos.</p> <p>-2.0 Hp x 1 No.</p> <p>-1.0 Hp x 1 No.</p> <p>-0.25 Hp x 1 No.</p> <p>-with suitable limit switches for cut-off</p> <p>-all the starters, suitable relays, pushbutton, indicators etc.</p> <p>-Panel body MoC: 1.6mm thk MS</p>

## FURNACE 5.0 TON

### EQUIPMENT SPECIFICATION

S.	ITEM	MAKE	QTY	SPECIFICATION
1	FURNACE		1 No.	<b><u>Process Detail:</u></b> -Description :1000 Kg /Batch(raw material feed) -Batch time:1hours -Molten metal temperature:500 <sup>0</sup> -600 <sup>0</sup> C -Outlet Gases Temp.: 500 <sup>0</sup> -600 <sup>0</sup> C -Fuel : coal  <b><u>Equipment Specifications:</u></b> -Capacity: <b>1.0 T/Batch Raw Material Feeding</b> -Furnace coal and oil

## FLUE GAS CHAMBER

### EQUIPMENT SPECIFICATION

S.	ITEM	MAKE	QTY.	SPECIFICATION
1	FLUE GAS CHAMBER FOR ROTARY FURNACE		1 No.	-Dimensions: 5000mm x 4500mm -Vertical Height: 2500mm + Cone -Construction: 4.0mm Thk. MS -Fastening by Flat 65 x 10, ISMA 65 x 8 & ISMC 125 x 65 -With Maintenance Door

## AIR POLLUTON CONTROL DEVICE

### EQUIPMENT SPECIFICATION

S. No.	ITEM	MAKE	QTY.	SPECIFICATION
1	BAG HOUSE (PULSE JET)	Radicon/ Rotomotive	1 No.	<ul style="list-style-type: none"> <li>-5544mm x 2360mm x 3625mm H</li> <li>-Construction out of 3.0mm thk. MS Sheet; fastening with 65 x 8 MS Flat &amp; ISMA; Tube sheet 5.0mm thk.</li> <li>- Pyramidal Hopper MS 3.0mm Thk.</li> <li>-Lug Supports ISMA 100x10</li> <li><b>-Filter Bags: 240 Nos.</b>, 150mm Dia, Polyster Non Woven, Water resistant</li> <li>-Top Mounted Wire Cages</li> <li>-Solenoid valves, 1.5" Dia, Double Diaphragm Type</li> <li>-Sequential Controller(12 Ch x2Nos.)</li> <li>-Air Lock Rotary Valve x 2Nos.</li> <li>-Geared Motor (1.0 HP x 2Nos.)</li> </ul>
2	GRAVITY CHAMBER		3 Nos.	<ul style="list-style-type: none"> <li>-2500mm x 2500mm x 2500mm H</li> <li>-Construction: 2.0 mm thk. MS</li> <li>-Fastening with 50 x 6 MS Flat</li> </ul>
3	TRIMA CYCLONE		1 Set	<ul style="list-style-type: none"> <li>-Construction: 3.0mm thk. MS</li> <li>-Diameter: 1200mm</li> <li>-Height: 4000mm</li> <li>-Lug Supports with frame</li> </ul>
4	INDUCED DRAUGHT FAN		1 No.	<ul style="list-style-type: none"> <li>-20000m<sup>3</sup>/Hr. Capacity</li> <li>-1150 RPM x 325mm WG</li> <li>-Complete with Fan's Foundation Casing, Fan side Pulley, Connecting Flanges and Flexible Connection Pieces</li> </ul>
5	INDUCTION MOTOR FOR ID FAN	Crompton/A BB	1 No.	<ul style="list-style-type: none"> <li>-Power Rating: 50 HP</li> <li>-RPM: 1440</li> <li>-Foot Mounted</li> <li>-Complete with Motor side Pulley and V- Belts</li> </ul>

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6	INTERCONNECTING DUCT		1 Lot	<ul style="list-style-type: none"> <li>-MS Ducting, 650mm Dia, 3.0mm Thk(Length:45m)</li> <li>-Mitre Cut Bends, 3.0mmThk.</li> <li>-Machined Flanges in 10.0mm Thk MS</li> <li>-MS Dampers</li> </ul>
7	AIR STACK		1 No.	<ul style="list-style-type: none"> <li>-Self Supported, 30mts. H</li> <li>-Top Diameter:600mm</li> <li>-Bottom Diameter: 1100mm</li> <li>-Construction:5.0mm, 3.0mm thk MS</li> <li>-Bottom Flange:16.0mm thk. MS</li> <li>-Stairs</li> <li>-14.0 mts.H, 15.0mmNB B Class MS Pipe, Flat 50 x 10</li> <li>-Semi Circular Working Platform</li> <li>-Port Hole</li> <li>-Complete with Wire Ropes and Foundation Bolts</li> </ul>
8.	WET SCRUBBER		1 No.	<ul style="list-style-type: none"> <li>-Dia: 1600mm</li> <li>-Construction: 3.0mm Thk. MS</li> <li>-Height: 1875mm</li> <li>-Lug Supports with frame 75x40</li> <li>-1 No. Internal Spray Shower</li> <li>-1 No. Mist Eliminator</li> <li>-1 No. Perforated Plate</li> </ul>
9.	PUMP	Kirloskar	1 No	<ul style="list-style-type: none"> <li>-Capacity: 8.0 Cmh</li> <li>-Head: 12m</li> <li>-Motor : 1.0 Hp</li> </ul>
10.	PIPELINE	Polyindia/ Prince/ Jindal/ Ravindra	1 Lot	<ul style="list-style-type: none"> <li>-Complete External Pipeline with fittings like Bends, Flanges etc.</li> <li>-PVC Pipeline</li> <li>-Suitable Valves</li> <li>-PVC Pipeline and Fittings</li> </ul>

**AIR COMPRESSOR**

**EQUIPMENT SPECIFICATION**

<b>S.</b>	<b>ITEM</b>	<b>MAKE</b>	<b>QTY.</b>	<b>SPECIFICATION</b>
1	AIR COMPRESSOR	ATL AS COP O/ Crompton  Crompton/ ABB	1 No.	-Two Stage -Two Cylinder -Free Air Delivery: 19 cfm -Maximum Pressure: 10 Kg/cm <sup>2</sup> -Operating Pressure: 5-7 Kg/cm <sup>2</sup> -Belt Driven -Motor 1 No. x 7.5 HP -Tank: 220 Lts. -Automatic Pressure Switch -Safety Valves -Non Return Valve -Visible Oil Indicator -Oil Remover -Moisture Remover -WITH SUPPLY PIPELINE

**JUMBO INGOT MOULD**

**EQUIPMENT SPECIFICATION**

<b>S.</b>	<b>ITEM</b>	<b>MAKE</b>	<b>QTY.</b>	<b>SPECIFICATION</b>
1	INGOT MOULDS		10 No.	-Capacity: 800 Kg Lead -Top Size: 600x600mm -Bottom Size : 400x400mm -Vertical Ht : 350mm -MoC: MS. -Side Wall Thickness: 40mm -Base Thickness: 40mm -Lifting Lugs : 100mm

## TRACK & TROLLEY SYSTEM OF JUMBO

### EQUIPMENT SPECIFICATION

S.	ITEM	MAKE	QTY.	SPECIFICATION
1.	Track & Trolley System for Jumbo ingot	ASTECH	1 No.	<p>TRACK</p> <ul style="list-style-type: none"><li>-Size : 800mmW x 10mL</li><li>-Moc : MS Rail 80mm</li><li>-Support structure : ISMC 75X40</li></ul> <p>TROLLEY</p> <ul style="list-style-type: none"><li>-Size: 3750x800mm</li><li>-Moving on Rail channel</li><li>-Movement : Motorised</li><li>-Construction of ISMC 200X75</li><li>-Top Base Plate : 16mmThk.</li><li>-Wheels MoC : Tested MS</li><li>-Shaft EN8</li></ul> <p>-Winch for movement</p> <ul style="list-style-type: none"><li>-Geared motor 2.0HP</li><li>-Wire Drum : 300mm</li><li>-Wire, Pulley arrangement</li></ul>

## MELTING KETTLE

### EQUIPMENT SPECIFICATION

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1.	LEAD HOLDING KETTLE		1 No.	-Capacity: 5.0 T/Batch <b>INNER POT:</b> -Diameter: 1000mm (ID)  -Height: 750mm -Inner Pot Construction: Side Walls: MS, 16.0mm Thk Bottom: MS, 20.0mm Thk. Flanges: MS, 20.0mm Thk. -Flange: 225mm wide  <b>MIXER:</b> -Structure for fitting of mixing arrangement  made of ISMC 75x40 and plates 8.0mm Thk. MS <b>-Fixed Type Structure</b> -Mixing Shaft SS-304, 60mm Dia with SS  Blades -Pulley, Bearings, V Belts etc., complete with Mounting Platform -Motor: 3.0HP x 960 RPM -Complete with Motor Platform

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## Annexure-2

S/N	Description of Goods	Qty (Set)
1	High Furnace Grid Casting Machine	2
2	Grid Mould	18
3	Fully Automatic X-Y Plate cutting & brushing Machine	1
4	Fully Automatic Plate side Brushing Machine	1
5	Fully Automatic adjustable AGM wrapping & stacking machine	1
6	VRLA Battery COS machine inc. 1 water cooling tank, 1 lug cutting & brushing machine, 1 COS mould, 3 jig boxes, 1 plate inserting mould etc	2
7	Extra VRLA COS moulds Set (1 COS mould + 3 jig boxes+1 plate inserting mould)	7
8	MTL-CSC Battery Charger and discharger, 360V/3A, 24 circuits in one Cabinet	4
9	MTL-CSC Battery Charger and discharger, 360V/20A, 12 circuits in one Cabinet	1
10	MTL-FCK100*12 Vacuum Acid Filling machine. 2 battery in one operation	2
11	Online HRD Tester (MTL-TDA 12V600A)	1
12	Multi-Function Online tester (IR and HRD)	1

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## Projected Profitability

### **PROJECTED PROFITABILITY STATEMENT**

(in Lacs USD)

<b>PARTICULARS</b>	<b>1st year</b>	<b>2nd year</b>	<b>3rd year</b>	<b>4th year</b>	<b>5th year</b>
Capacity Utilisation %	50%	55%	60%	65%	70%
<b><u>SALES</u></b>					
<b>Gross Sale</b>					
400 Tone matel	31.20	32.76	34.40	36.12	37.92
<b>Total</b>	31.20	32.76	34.40	36.12	37.92
<b><u>COST OF SALES</u></b>					
Raw Material Consumed	20.16	21.17	22.23	23.34	24.50
Electricity Expenses	2.76	2.90	3.04	3.20	3.35
Depreciation	1.80	1.89	1.98	2.08	2.19
Wages & labour	2.16	2.27	2.38	2.50	2.63
Repair & maintenance	1.20	1.26	1.32	1.39	1.46
<b>Cost of Production</b>	28.08	29.48	30.96	32.51	34.13
<b>GROSS PROFIT</b>	3.12	3.28	3.44	3.61	3.79
	10%	10%	10%	10%	10%
Salary to Staff	1.08	1.13	1.19	1.25	1.31
Rent	0.24	0.25	0.26	0.28	0.29
Selling & Administrative Exp.	0.24	0.25	0.26	0.28	0.29
<b>TOTAL</b>	1.56	1.64	1.72	1.81	1.90
<b>NET PROFIT</b>	1.56	1.64	1.72	1.81	1.90
	5%	5%	5%	5%	5%
<b>PROFIT (Before Tax)</b>	1.56	1.64	1.72	1.81	1.90