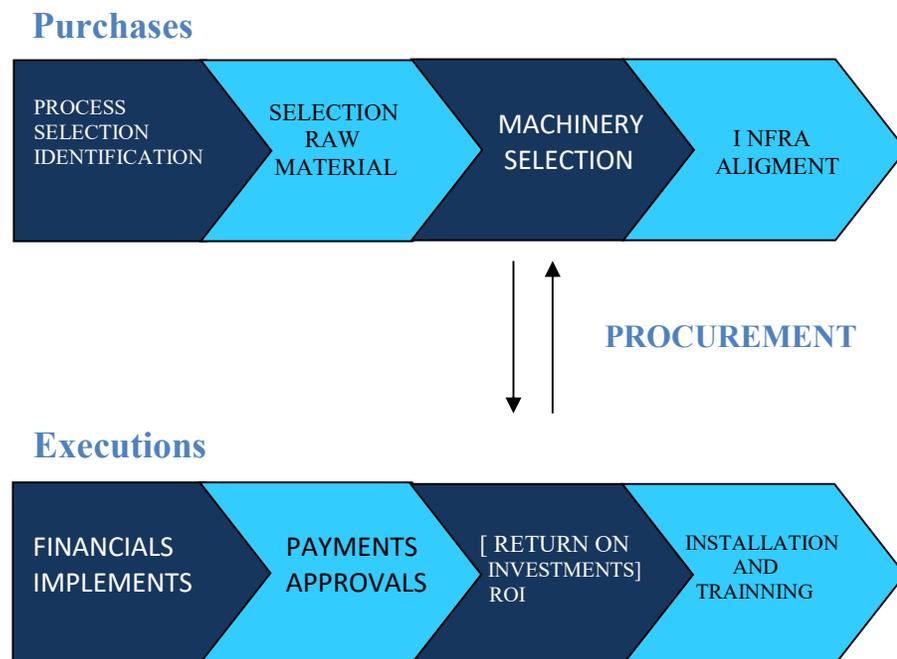


BATTERY MANUFACTURING UNIT SETUP



Observing the immense business potential of battery manufacturing, many players are entering the domain. Significantly, many small and medium enterprises (SMEs) are also trying their luck in this promising and growing sector. However, one must do thorough research before setting up a battery manufacturing plant, particularly regarding the cost of establishing a manufacturing or assembling plant



EFCS Provides Technologies Consultancy and advisory services for Lead Batteries
Our Services are:

A. Mapping

1. Technology Selection.
2. Project execution.
3. Design and development Product/Application Process.
4. Study and recommend suitability of Gravity casting, Expanded, Comcast/Control and Rolling/punching technologies based on investment and quality need.
5. Analyzing cost savings option due to weight reduction and productivity improvement.
6. Technology Road Mapping.

B. PROJECT EXECUTION

1. Calculation and Design of Grids, Plates and Batteries as well as the Tool Design for Grid Casting, Cast- on-Strap Machine and Assembly Line.
2. Supply of a customized know-how book, covering all formulas, material specifications, process descriptions and quality instructions for the battery production.
3. Depending on ground reality recommending appropriate layout and making project report.
4. Selection of suitable machines depending on technical pool availability and environment.
5. Guiding local project team technically.

C. MACHINE SELECTION

1. Complete facility and infrastructure Planning based on Greenfield Concept; Consultancy for refurbishment, rebuilding including modernization of existing Factory Buildings are offered.
2. Main machinery and sideline equipment for the battery production as well as laboratory equipment Technology Sharing & Transfer: Supply of a customized know-how book, covering all formulas, material specifications, process descriptions and quality instructions for the battery production.

D. DESIGN AND DEVELOPMENT –PRODUCT

1. Develop cost effective and quality design for: JIS, DIN, SAE type automotive batteries.
2. Flooded type Motorcycle batteries.
3. Tubular batteries for inverter,
4. Solar.
5. Railways.
6. Vrla type for cars and Motorcycle batteries.
7. Vrla batteries for Telecom.
8. UPS
9. Emergency lamps
10. Vrla batteries for E-Bike
11. Miners cap lamp.

E. DESIGN AND DEVELOPMENT –PROCESS

1. Develop inbuilt quality and robust process for:a) Plate making operation (pasted and tubular plate).b)Green plate batteries. Dry charged batteries.
2. Process from Alloy making, grid casting, oxide making, paste mixing, pasting, curing, tank forming, assembly, green plate charging and finishing

F. MATERIAL SELECTION

1. Material specification and vendor selection.
2. Defining various raw material specifications.
3. Providing test procedures for checking quality of raw material.
4. Assisting in selection of suitable vendors.
5. Material Identification Properties.
6. Modeling and Simulations.

G. QUALITY SYSTEM

1. Quality system for making consistently good quality battery.
2. Audit system for checking product quality periodically.
3. System for continuous improvement.
4. HALT - Highly Accelerated Life Test
5. HASS - Highly Accelerated Stress Screen.
6. Specification Development.
7. Chemical laboratory for incoming and in process material.
8. Testing methods for In-process materials and controls.
9. Testing of final product.
10. Selection of battery testing equipment and installation and commissioning of Testing laboratory confirming to IS&JIS specification Manpower requirement.
11. Test Program Development

H. MANUFACTURING SYSTEM

1. Lean manufacturing system and maximizing the production to reduce scrap defects and waste.
2. Modeling and Simulation of Components and Systems.

I. MIS

- 1.Establishing system to generate proper MIS report.

J. R&D

1. Establishing state of art R&D center and test house.

K. FAILURE MODE AND ANALYSIS

1. System for studying failure modes and taking appropriate corrective and preventive actions.
2. Solve the production and process issues.
3. Solutions for inadequate lead recovery.
4. Solve the existing problems related to production and pollution control equipment.
5. Refurbish the plant with modern plant equipment compliant to latest pollution control norms.
6. Control the spares and consumables for the recycling plants.

L. TECHNICAL TRAINING

1. Technical Training and Courses.
2. On-Site Expert Resource managers in production quality and service fields.
3. Specialist in providing training in hybrid vehicle.
4. Technology for lead refining / special lead alloys.
5. Plastic and sodium sulfate crystals treatment.

M. AUDITING

1. Manufacturing plant audits.
2. ERP & CRM Sales & Operations Planning system.
3. Investor Due Diligence.
4. Prototype Evaluations.
5. Supplier Assessments.

N. SAFETY

1. Regulatory Consulting of all Safety Aspects
2. Assessment of Conformity to Regulations and Standards.



O. MANAGEMENT

1. Thermal Management System.
2. Risk management in based on FMEA and grey relational analysis in Battery Manufacturing process Industry.
3. FMEA - Failure Mode and Effects Analysis. Reliability, Safety, and Failure Investigations.
4. SPC - Statistical Process Control.
5. Awarding and rewarding the people.
6. Productivity improvements to better utilization of manpower.
7. Patent search and research projects
8. Expert witness and expert consultant work for legal or patent cases
9. Cost reduction
10. Quality improvements
11. Improved m/c utilization
12. Reduction in turn round time
13. Inventory control
14. Reduced lead time
15. Manufacturing as per dispatch plan
16. Follow FIFO system
17. CTO - Critical-To-Quality product characteristics.
18. Six Sigma Process Yellow, Green, and Black Belt Levels, Responsibilities - International & Roles Certification & Training.
19. PSM - Process Safety Management.
20. BMS - Battery Monitoring System data online process
21. CE Marking.
22. Standardization development status of batteries technology worldwide.
23. Road mapping for the Defense Material Administration.
24. Testing and evaluation of PEMFC and DMFC systems.
25. Technology trends and developers/suppliers worldwide.
26. Solutions for Lead and Battery recycling process (including smelting into lead ingots)
27. Project Reports.
28. Support in documentation for obtaining Environment Clearance for the plant.
29. Warranty Investigations.
30. Selection of Optimal Power Source.

P. ELECTROLYTE

1. Water Treatment System.
2. Acid dilution System.
3. Acid Gel dilution System.
4. Automatic Control System
5. Electrolysis of water
6. Chlor-alkali and chlorate process
7. Potential and current distribution modeling
8. Stray current modeling
9. Electroplating
10. Electro winning.
11. Ventilation System.
12. Acid and acid gel filling and leveling system

KEY FEATURES WITH US

NEW Technology Analysis

- VRLA valve regulatory lead acid
 - SMF sealed maintenance free
 - Raw Material technology analysis
- In terms lead-calcium alloy, lead selenium alloy.

Market Analysis

- In two wheeler batteries every year 2.5 cr batteries are sold
- In four wheeler 50 to 80 lakh batteries are sold
- Ups market is around 10cr batteries sold every year

Supplier and vendor Analysis

- Provides out-of-box analysis of spend along multiple dimensions like category, item, plant, buyer, vendor, payment terms and purchase methods
- Shows spend trends by vendors over time
- Provides simple, interactive charts to explore and export the insights for All dimensions
- Provides interesting out-of-box observations for all dimensions

EFCS provides feasibility report to clients that including raw material cost ,running cost ,vendors ,suppliers ,process, technology transfer ,market rates , distribution channel rates , end customer retail outlet rates , land requirement ,government terms and condition ,margins ,surplus , standard models as per ISO , BATTERY BUREAU , BRMS[Battery Regulation Management System]

Key Benefits

2 -3X

Reduction in transaction processing costs

30 –40%

Increase in annual savings from unmanaged spend on goods

> 90%

Compliance on policies related to unmanaged spend on goods

EFCS

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