
Applied for CFE

Longitude and Latitude: 79°34'26.7"E and 13°38'32.3"N

EC status: The APIIC had obtained EC order dt. 01.09.2017 for entire IP for establishment of Electronic product manufacturing Zone, Electronic components manufacturing Zone, Semiconductor Designing and R & D Zone, in an area of 501.4 acres.

Project cost: Rs. 165.30 Crores

Project site details:

i) Total area of the land: 1,21,531 Sq. m

ii) Built up area: 88,220 Sq. m

iii) Greenery: The proponent informed that they will develop greenbelt along the compound wall.

iv) Nearest Human habitation: The nearest human habitation is Govindhavaram (V), is located at a distance of about 1.40 km from the industry.

v) Nearby water body: Rallavagu located at 740 m and Swarnamukhi River located at a distance of 920 m from the industry

vi) Surroundings of the site:

North: Vacant land.
South: EMC 2 Road.
East: Road.
West: Vacant land.

Activity: Lithium Battery.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Products</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lithium Battery</td>
<td>2,00,000 Nos./Day</td>
</tr>
</tbody>
</table>

Water consumption:

Source of Water supply: Bore well - 2 Nos located in ARGC

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Purpose</th>
<th>Quantity (KLD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Process</td>
<td>1.5</td>
</tr>
<tr>
<td>b)</td>
<td>Greenbelt</td>
<td>2.0</td>
</tr>
<tr>
<td>c)</td>
<td>Domestic</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>Total *</td>
<td>15.0</td>
</tr>
</tbody>
</table>

* (fresh + recycled)
07) Waste Water Generation:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Source</th>
<th>Quantity (KLD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Domestic</td>
<td>8.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total</strong> 8.0</td>
</tr>
</tbody>
</table>

ETP Details & Mode of Disposal:

<table>
<thead>
<tr>
<th>Source of effluent</th>
<th>Treatment</th>
<th>Mode of final disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>---</td>
<td>Disposed in to septic tank followed by soak pit.</td>
</tr>
</tbody>
</table>

08) Hazardous / Solid Waste details:

<table>
<thead>
<tr>
<th>S. No</th>
<th>Type of waste</th>
<th>Quantity</th>
<th>Mode of final disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Used Oil / Waste Lubrication Oil</td>
<td>100 LPA</td>
<td>Used as lubricant within the premises / to authorized Re-processors / Recyclers / to the Cement industries to use as alternate fuel in the kiln.</td>
</tr>
<tr>
<td>b)</td>
<td>Plastic Scrap</td>
<td>0.5 TPD</td>
<td>sent to Authorized recyclers</td>
</tr>
</tbody>
</table>

09) Air pollution:

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Details of Stack</th>
<th>Stack 1</th>
<th>Stack 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Attached to</td>
<td>Oven</td>
<td>DG set</td>
</tr>
<tr>
<td>b)</td>
<td>Capacity</td>
<td>--</td>
<td>1 x 1000 KVA</td>
</tr>
<tr>
<td>c)</td>
<td>Name of the Fuel</td>
<td>Electricity</td>
<td>HSD-120 Lts/Hr</td>
</tr>
<tr>
<td>d)</td>
<td>Stack height above ground (m.)</td>
<td>10 m</td>
<td>10 m</td>
</tr>
<tr>
<td>e)</td>
<td>Air Pollution Control Equipment</td>
<td>Natural draft</td>
<td>Acoustic enclosure</td>
</tr>
</tbody>
</table>

10) Remarks of the Inspection Officer:


2. M/s. Andhra Pradesh Industrial Infrastructure Corporation Ltd. (APIIC Ltd.), Sy No. 20, 40, 344, 345-379, 389-403, 404-418, 436, 437 & 491, Vikruthamala village, Yerpedu Mandal, Chittoor District has obtained CFE vide order No. **263/ APPCB/CFE/RO-TPT/Ho/2017 dt: 03.11.2017** for establishing **EHMC consists of Electronic product Manufacturing Zone, Electronic components Manufacturing Zone, Semiconductor Designing and R&D Zone 501.4 Ac.**

3. At present there are two units operating i.e., M/s. Dixon Technologies (India) Limited and M/s. AIL Dixon Technologies Pvt Ltd and obtained CFO of the Board and two units have obtained CFE of the Board i.e., M/s. Vinyas Innovative Technologies Private Limited and M/s. Sri Kamakshi Systems Private Limited.

5. The category of the industry i.e., manufacture of Lithium Battery is not mentioned in the CPCB categorization. As per new CPCB Categorization issued vide order dt.21.03.2016 S.No. 7 Lead acid battery manufacturing (excluding assembling and charging of lead-acid battery in micro scale) is categorized under RED – Haz category and S.No. 73 Dry cell battery (excluding manufacturing of electrodes) and assembling & charging of acid lead battery on micro scale is categorized under Orange – Haz category. But proponent proposed to manufacture Lithium batteries and industry paid CFE fee of Rs. 75,000/-, Dt. 29.05.2019 through online Receipt No. 758417125 under Green category against the investment of Rs 165.30 Crores. But, Regional Office, Tirupati requested to pay CFE fee under Red – Haz category and industry has to pay balance CFE fee of Rs. 2,25,000/-.  

6. The proposed manufacturing process for manufacturing Lithium batteries is as follows:-

The Lithium batteries manufacturing process stages are Electrode Production Process – Anode, Electrode Production Process – Cathode, Formation and inspection Process, Assembly Process, Packing Process & Battery with PCM. The processes used for manufacturing Lithium batteries are very similar to those used in the production of Nickel Cadmium cells and Nickel Metal Hydride cells with some key differences associated with the higher reactivity of the chemicals used in the Lithium cells.

**Mixing:** The first process in lithium ion cell production involves mixing of the active materials (Anode – Graphite, Conductive carbon, Cab boxy methyl cellulose (CMC),

Styrene butadiene and Cathode – Lithium cobalt oxide (LCO), conductive carbon, polyvinyl pyridine (PVDF). It contains different components and results in a coating mass known as slurry. The component are first pre processed by drying in ovens to remove moisture in the powder. The second stage is wet mixing in which the pre processed powder and the solvent for the binding agent and also additives are convey to the mixing system and dispersed to form as slurry.

**Coating and Drying:** The Slurry/paste is coated on the current collectors, for Negative electrode is copper and for Positive electrode is aluminum. During the process it is require to control the solvent concentration. After coating the electrodes are passing through an oven to dry out the solvent.

**Calenading:** During this process the electrodes are compressed by drying them through massive cylindrical rolls by applying pressure 300 – 2000 Kg: cm². The electrodes thickness is reduced and the porosity is reduce around 40%. As a result the adhesion of electrode materials is include and the density is increased.

**Slitting:** The electrodes are cut / punched in to a strips of a desire shapes.

**Baking:** After completion of slitting the electrode rolls are kept in dry ovens for 8 hours to avoid moisture in the electrodes.

**Tab Welding:** Electrodes attach with tab (Nickel tab to copper electrode Aluminum tab to aluminum electrode which keep on the jig to start tab welding.

**Winding:** The tabbed electrodes are wounded together with the separator.

**Shell insertion:** In this process the electrode jelly is integrated into the housing for evacuating gases arise during the formation.

**Point Bottom Welding:** In this process cells are moved to spot welding machine and bottom tab welded at this stage.

**Drying:** In this process the jelly rolls in SS cans are arranged in trace and keeping them in drying ovens for 8 hours to remove the moisture in the rolled electrodes and separators.
Injection: In this process the electrodes are injected to achieve maximal wet ability.

Cap welding: In this process they insert the went cap assembly, bend the upper part of
the cap and seal in cylindrical battery assembly.

Cleaning: after brush cleaning foreign body and external surface of cell by pressure of
pump using DI water and drying by Air nozzle.

Heat shrink sealing: cleaned cell into tubing machine into consistence length insert
punched washer to cell upper side. First shrink cell upper and lower portion and second
shrink tube in shrink tunnel tube.

Formation: Cell assembly is complete the cell must be put through at least one precisely
controlled charge/ discharge cycle to activate the working material transforming them into
their useable form.

Sorting and Grading: During formation data on the cell performance such as capacity
and impedance, are gathered and recorded for quality analysis and traceability and finally
packing and dispatch.

7. Regarding Water Pollution: Water is used for Process, Cooling, Greenbelt & Domestic
and consume about 15.0 KLD. Industry generates waste water from Domestic section
only i.e., about – 8.0 KLD. Industry proposed to provide Air cooled condensers and there
is no water consumption for the proposed cooling. Industry consumes water for process
mixing in Anode Production Process which will be consume in the product it self and there
is no waste water generation from the process activity.

8. Regarding air pollution: industry has proposed to install oven and also proposed to
provide DG Set of capacity 1 x 1000 KVA and provided acoustic enclosure as standby of
AP Transco supply.

9. Regarding solid waste: industry proposed generate solid waste from Waste Oils – 100.0
LPA, Plastic Scrap – 0.5 TPD are sent to Authorized recyclers.

10. As per the Board circular Dt: 26.07.2017 all the applications received through A.P. Single
Desk System shall be inspected without seeking clarification. All the required missing
information shall be collected during the inspection only. Clarification shall not be sought
by the Regional Officer. The inspection report shall be forwarded with the available
information to the Zonal office or Head Office as per the delegated powers, along with
clear marks of the Regional Officer including payment of balance fee, adequate
information to be furnished etc., within a week from the date of receipt of CFE and CFO
(fresh) applications.

11. During inspection, Sri C. Chandrasekhar Christopher was present and has shown the site
and unable to give missing information in the application. He informed that the proposed
manufacturing category comes under Green category only. The representative informed
that will use Anode – Graphite, Conductive carbon, Cab boxy methyl cellulose (CMC),
Styrene butadiene and Cathode – Lithium cobalt oxide (LCO), conductive carbon,
polyvinyl pyridine (PVDF).

12. As per the delegation of powers issued vide circular dt.14.08.2018, Red category of
industry sectors greater than 100 crores is under the purview of Board office. Hence the
project cost of the industry is more than Rs. 165.30 Crores as per the APOCMMS
application. Hence this office is forwarded CFE Verification report to Board office. This
may be examined

In view of the above, issuance of CFE to the unit may be examined only after collecting
Balance CFE fee, detailed process and also after deciding the category of the industry as
the industry applied through APOCMMS under green category

11) Recommendations of the Regional Officer:

In view of the above, Board Office may examine the issue of CFE of the Board for Lithium
ion Battery unit duly stipulating the necessary conditions and also after deciding the
category of the industry.
12) **Head Office Remarks:**

a) The following points are observed from the justification submitted by the project proponent (forwarded by the EE, RO: Tirupati vide mail dt. 06.06.2019):

i. The unit operations involved in the process are more or less similar to Lead Acid Battery manufacturing unit.


ii. In the Baking process, the Anode and Cathode Electrodes are dried in a dryer. The emissions contain solvents are scrubbed with water. 95% of N-Methyl-2-Pyrrolidone (NMP) is recovered. Rest 5% will be absorbed using a zeolite wheel / scrubber and the water used in scrubber is sent to Decentralized waste water treatment plant (DEWAT).

iii. In the cleaning process, the cell is cleaned by sprinkling DI water and brushing it. The waste water is sent to decentralized waste water treatment (DEWAT). Thus, the industry installs effluent treatment plant.

iv. The quantity of the effluent generated from different sections, characteristics of effluents, components of waste water treatment, mode of final disposal of treated effluents are to be furnished by the project proponent.

v. N-Methyl-2-Pyrrolidone (NMP), considered as hazardous material (toxic) is stored in the separate warehouse. Flammable materials such as carbon black are stored in insulated room. The room will be equipped with fire suppression accessories.

vi. The waste oil / used oil generated from the industry are classified as Hazardous waste.

vii. Storage of Carbon black, used as an additive in cathode and anode is classified as Red category due to its high calorific value.

In view of the above, the proposed Lithium Ion Battery is to be classified as “Red category”. The proponent has to pay balance CFE fee of Rs. 2,25,000/- under Red Hazardous category.

**The item is placed before the CFE Committee for taking a decision.**