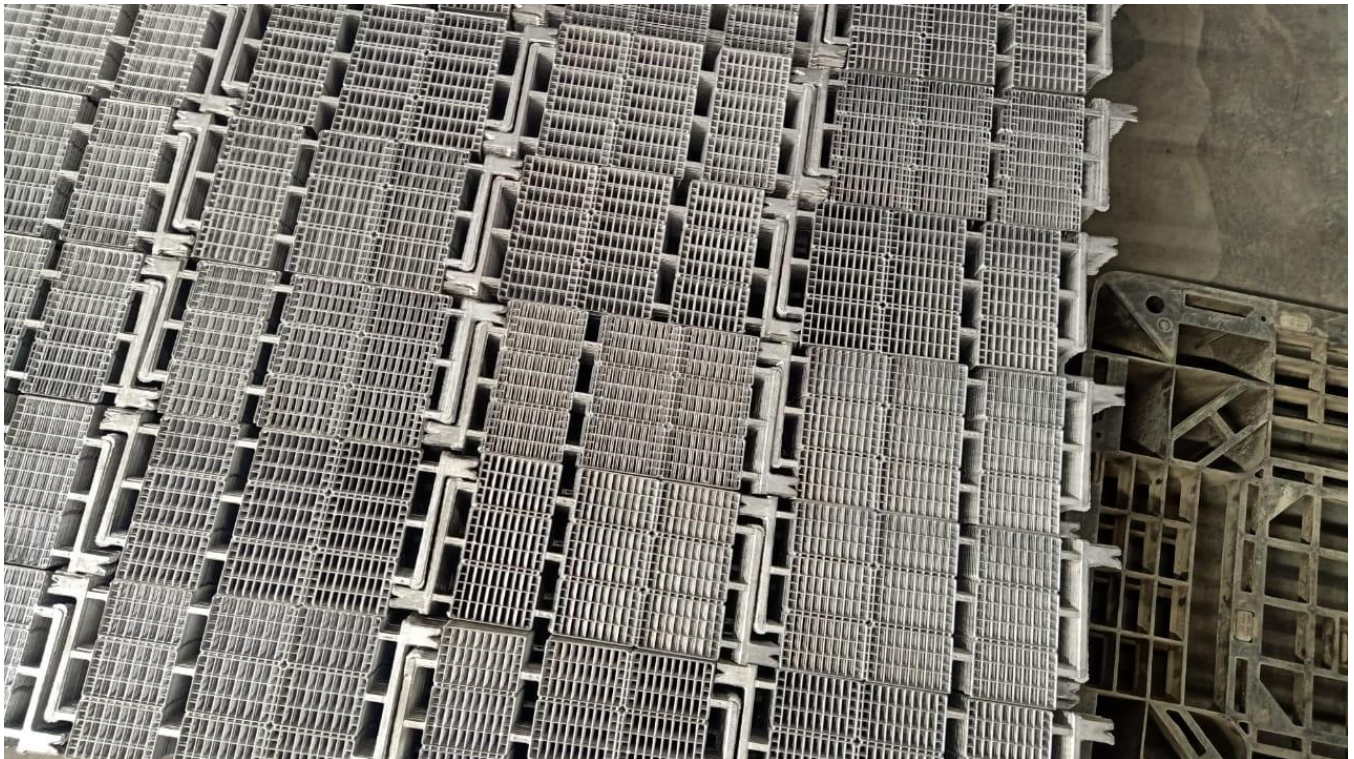


INDUSTRIAL VISIT 2022

On 15th march we have visited Autonova solutions ltd. At Bareja. They manufacture Lead acid batteries as well as electrodes for Batteries. Co owner of company Mr. Dinesh bhai elaborate us whole process of manufacturing. He divided production 3 phases first molding of lead then pasting and last one is curing process.

In first they melt lead and molded into thin lead grid. In this process mostly grid is lead but there are some impurity present in it.



After this pasting process is started in pasting process paste of lead oxide and sulfuric acid is pasted on grid of lead. After this process amount of lead is nearly 70% present.



Strength of bond between paste and grid is not strong as well as percentage of lead is not upto mark so to overcome those points curing process is done.

In curing process whole pad is placed in curing chamber where humidity is very high. After placed hours in chamber bond between grid and paste is strong.



Dark one plate is for Cathode and bright one is cathode. After this plates cut into 3 pieces. After this plates placed into batteries in acid and charging process is done. After complete process of their 1 plant we then had little snacks and beverages. Their hospitality s very good.

- **Basic principle of lead acid batteries**

As sulphuric acid is used as an electrolyte in the battery, when it gets dissolved, the molecules in it are dispersed as SO_4^- (negative ions) and 2H^+ (positive ions) and these will have free movement. When these electrodes are dipped in the solutions and provide a DC supply, then the positive ions will have a movement and move towards the direction of the negative edge of the battery. In the same way, the negative ions will have a movement and move towards the direction of the positive edge of the battery.

Every hydrogen and sulfate ions collect one and two-electron and negative ions from the cathode and anode and they have a reaction with water. This forms hydrogen and sulphuric acid. Whereas the developed from the above reactions react with lead oxide and forms lead peroxide. This means at the time of the charging process; the lead cathode element stays as lead itself whereas the lead anode is formed as lead peroxide which is dark brown in color.

After they took us to their second assembly plant where they manufacture batteries with having circular plates. They first weld lead into battery box with high flame. They also mold lead connection at their facilities



Lead acid batteries is currently has huge stake in industrial market. Most of vehicle comes with lead acid battery with different Ampere hour rating. Autonova solution mainly manufacture 12V with different Ah rating. Eg 20ah, 50ah, 100ah , 150ah.

Their batteries comes with around 1300 charging and discharging cycles. Depending upon use cycles may vary



They had their own transformer for step downing voltage and increase current. After Connection they charge batteries in series parallel combination with 10A current in parallel.

Overall it is very good experience we learn lot of things from and got knowledge about how batteries designed and manufactured. Also we can research something new from it. Explanation given by Mr.Dinesh bhai is exceptional, they explained us like we were their students.

REFERENCES

For battery principle:-<https://www.electrical4u.com/working-of-lead-acid-battery-lead-acid-secondary-storage-battery/>

For company inquiry:- <https://goo.gl/maps/y3tBhYNKYrL25wiT7>

Visit website Autonova solution pvt ltd for details about company.

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Thank you !