

Replacing MG ZS EV with LiFePo4

After 2+ years, my MG ZS EV 12v battery died. Rather than replacing it with a lead acid battery, I decided to go for a LiFePo4 or Lithium Phosphate battery. After the battery died, I jumped with a smaller LiFePo4 battery and it came back to life. So I was pretty sure that it would work. Plus I have already been replacing my UPS lead acid batteries with LiFeP04 for more than 2 years and have had no problems.

The objective was not to reduce investment cost, but to become more maintenance-free with a longer battery life and thereby reduce the total cost.

The original MG ZS EV battery was SAIC 12v 63ah



The new battery size was L 22cm x W 12.8cm x H22cm

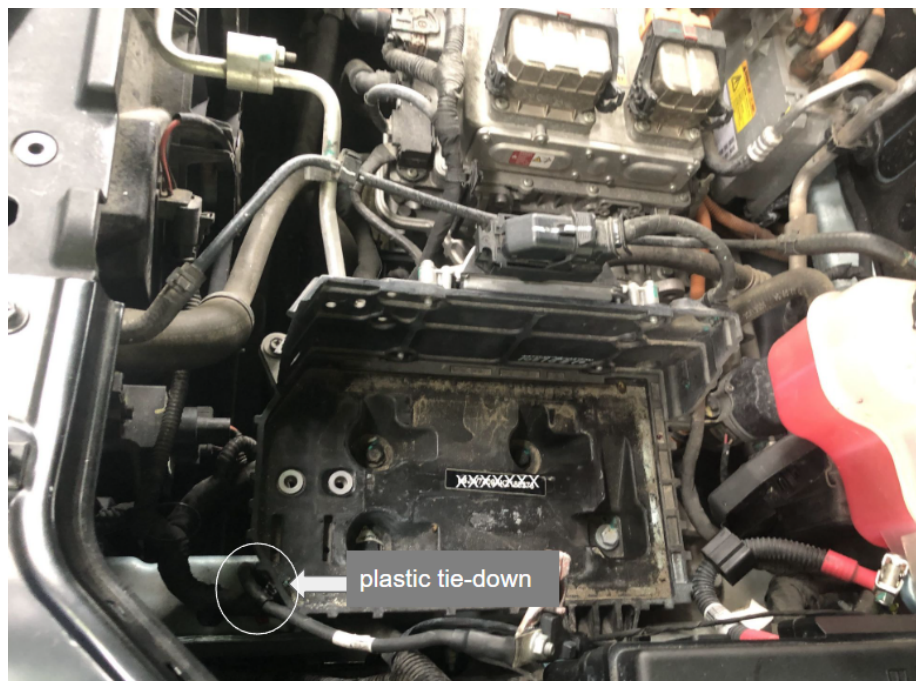
The battery I chose had a rating of 50ah vs the 63 ah. I figured the lower AH would not make a difference since there is no cranking of the engine involved. The battery was probably sourced from available mfg of ICE.

The battery I chose was assembled in Thailand, but I think it can be locally procured anywhere.



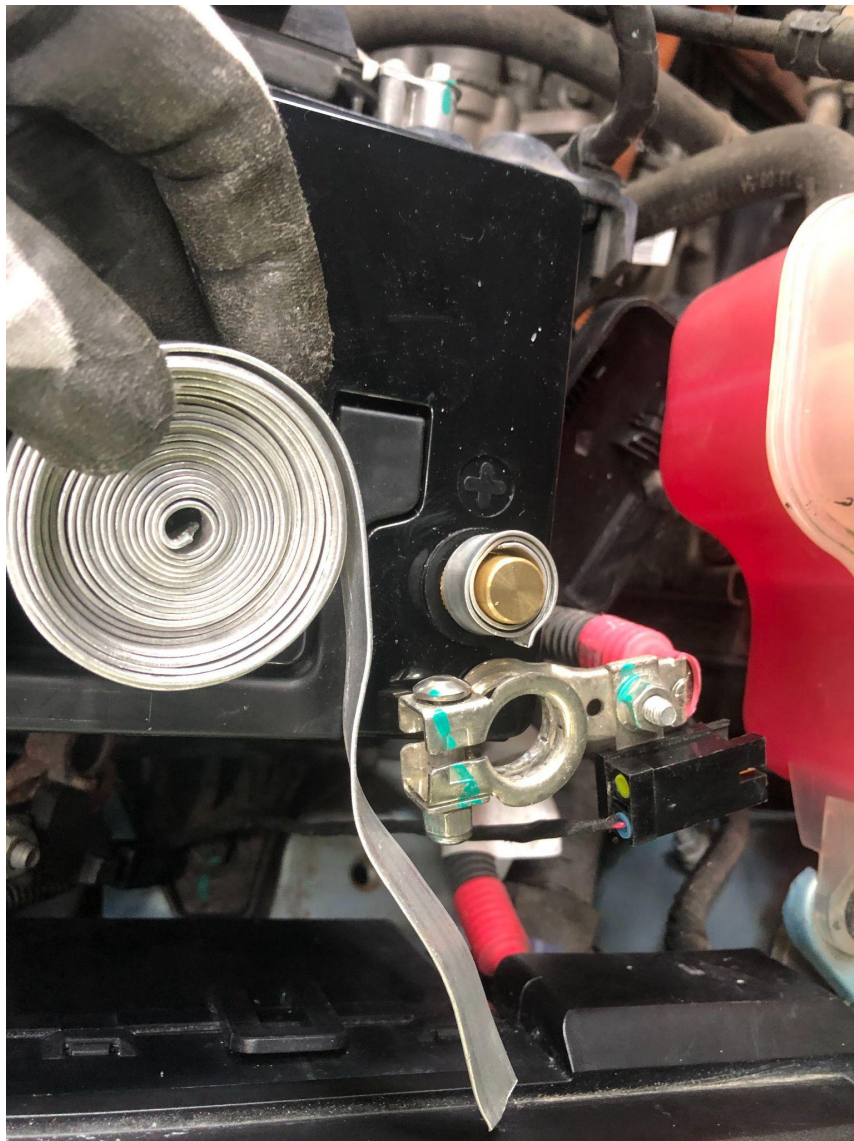
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|-----------------|--------------|---------------|--------------------|
| Model | LFP 12V 50Ah | Capacity | 50Ah 640Wh |
| Rate Voltage | 12V | Voltage Range | 12V-14V |
| Max Charge | 100A | Continue | 100A-600A |
| Circuit Protect | BMS | BMS | Start Car 130A |
| Connector | Car Terminal | Battery Type | Prismatic |
| Weight | 5.5Kg | Battery Size | 197*128*220mm |
| Temp Rang | -20° - 70° | Protection | OVP, LVP, OVT, SCP |
| Cycle | >4000 | Design life | > 10 Years |

The SAIC battery size was L 24cm x W 18cm x H18cm
 Note that the new battery is smaller except for the height which is 4 cm higher. This necessitates that the plastic tie-down of the battery cable had to be removed in order for the battery clamp to reach the higher battery terminal height.



This picture shows the holding tray minus the old battery. The battery is held down by a clamp on the left side of the tray and was removed by just screwing it out using a 10mm wrench.

The next step was to put the new battery in. It came fully charged at 14.4v



The new battery had smaller terminals at 12 mm. The old battery was 15mm. I had to improvise by using some lead strips to fill in the space.

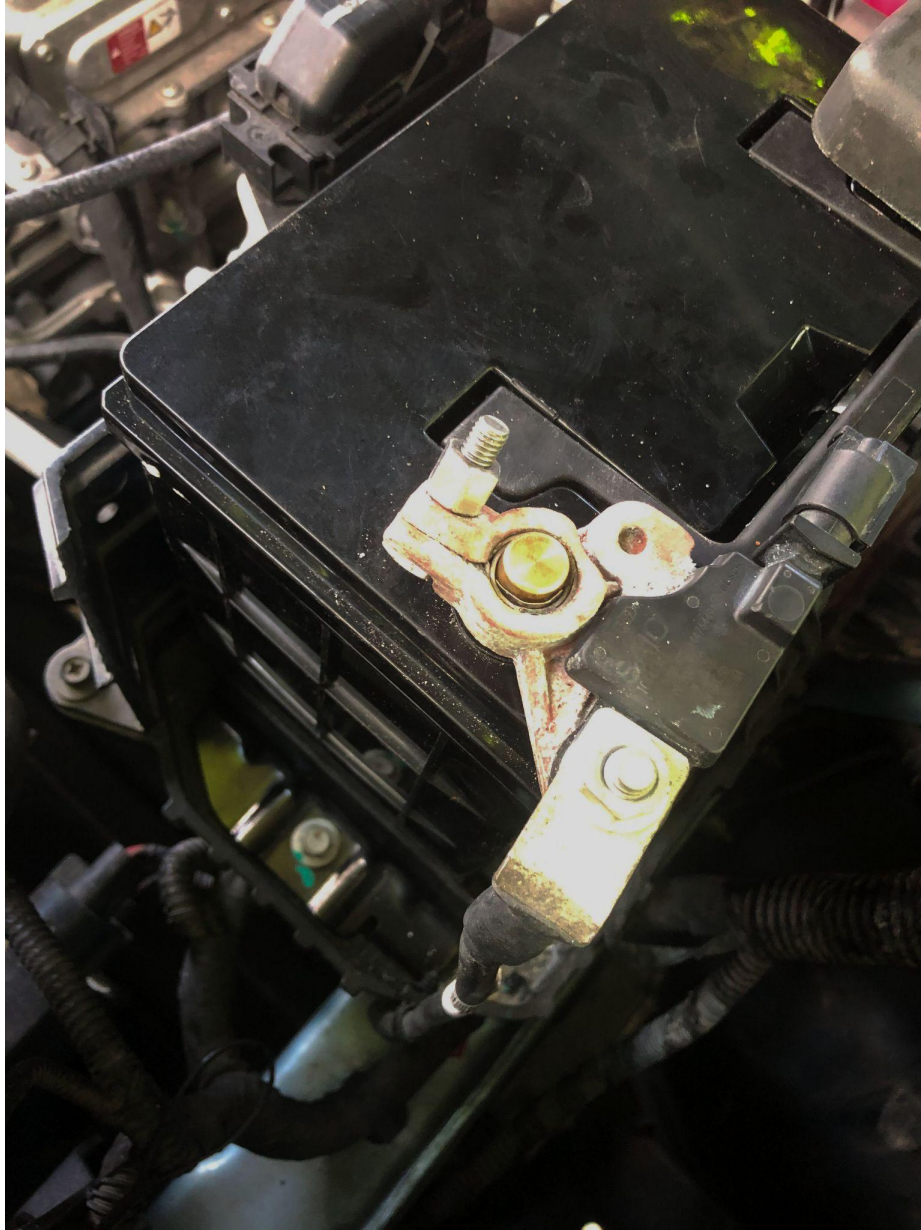
I found out that making rings to put on the terminal was better than winding the strip around it.



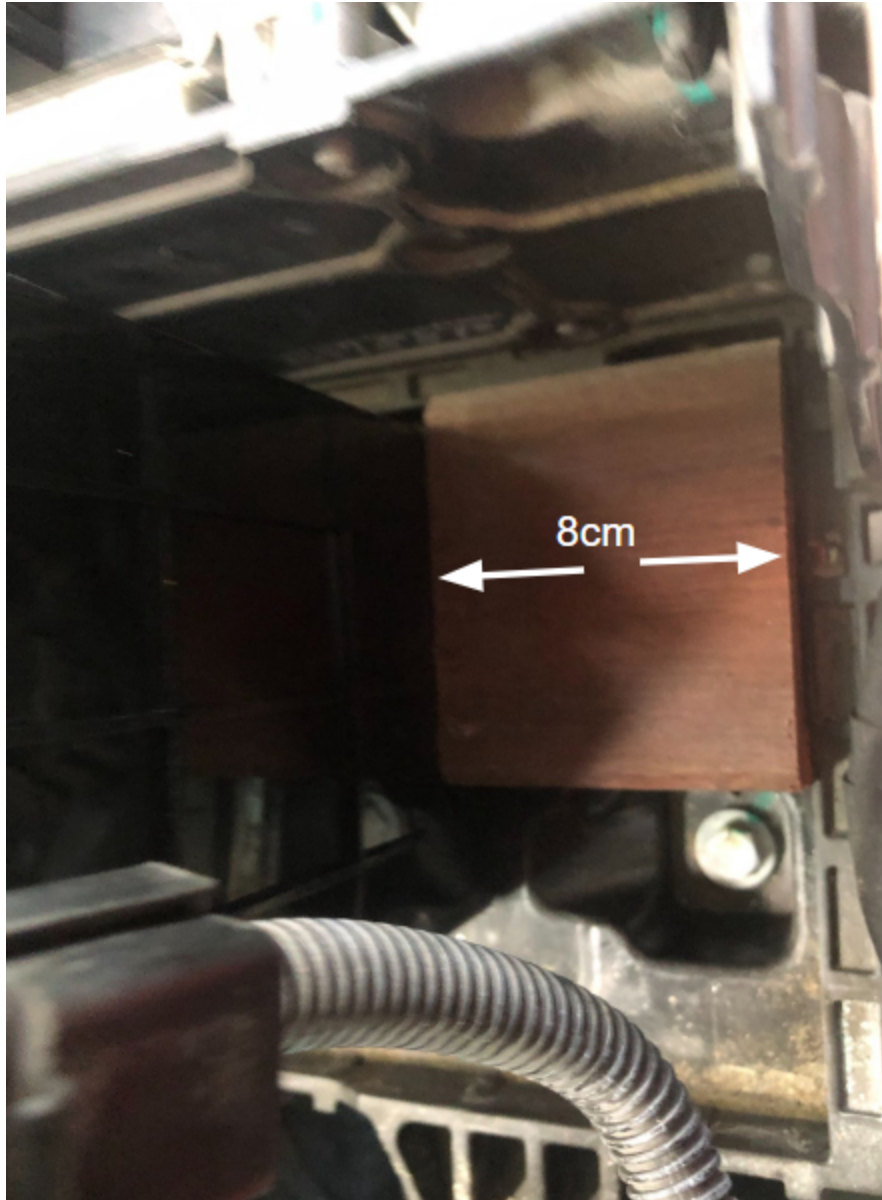
I plan to replace them with commercial ones like these.



For now, lead strips will have to do.

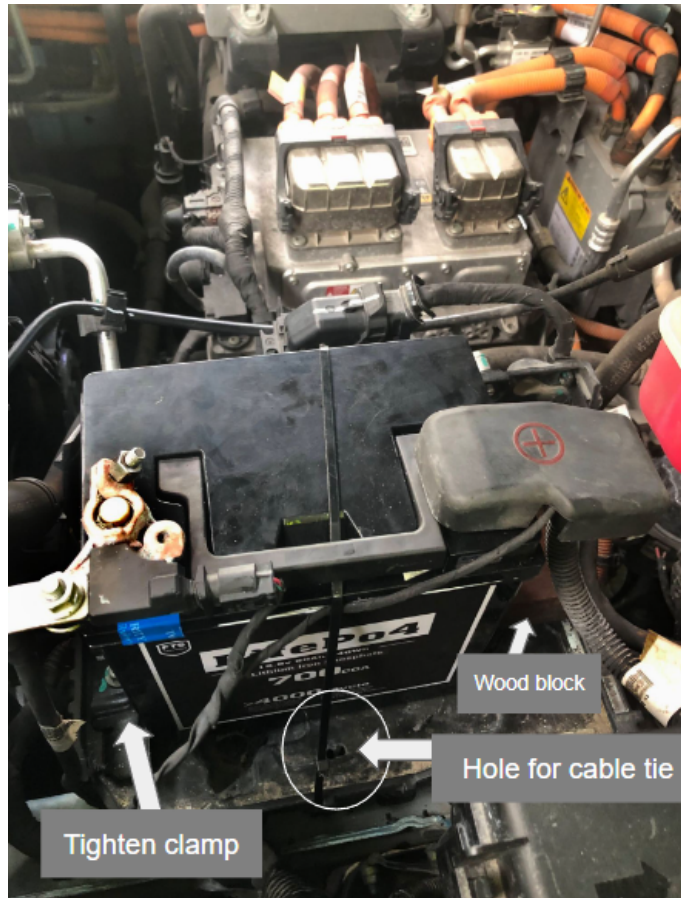


The battery is now in place. I positioned it to the left butting up against the clamp. This left about 8cm of space to the right as the new battery is considerably smaller than the original.



To fill in the space and be able to have the clamp push the battery up against a stop, I cut an 8cm block of wood and laid it on the battery tray.

Now the battery is in place and the clamp keeps it from moving laterally.



To keep the battery from accidentally bouncing out, I drilled a hole in the plastic tray and tied a cable around it. I plan to replace it with a bigger cable later.

All finished and car started immediately. It cannot tell the difference between the batteries. I drove it and it drives normally. Charging should not be a problem and when plugged in, I understand that the charging system also charges the 12v battery.

