



Rollei 6000/6008 Battery LiFePO4 Replacement

Step-by-Step guide how to replace a dead NICD-Battery with LiFePO-Batteries.

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INTRODUCTION

Rebuild a dead Rollei battery with modern LiFePO4 cells.

Note that the voltage of a fully charged LiFePO4 drops slightly when power is used by the camera. This causes the camera to display an almost depleted battery (at least my 6008AF does that). This is nothing to worry about, especially since LiFePO4 batteries keep their voltage level pretty well during discharge.

TOOLS:

- Soldering Iron (1)
- Solder (1)
- Utility Scissors (1)
- Phillips #0 Screwdriver (1)
- Slip Joint Pliers (1)
- Flush Wire Cutters (1)
- File Set (1)
- Sand Paper (1)
- Multimeter (1)

PARTS:

- 14500 LiFePO4 battery (3)
Soshine N4 700mAh LiFePO4
high constant power output (I had success with batteries having a continuous discharge:10C and pulse: 20C)
- 8A 9.6V PCB BMS Protection Board for 3 Packs 18650 LiFePO4 LiFe Battery Cell 3S (1)
T-5016A15
I picked the one with highest current I could find, since the Rollei has a high draw if switched on.
- Nickel-plated Hilumin metal strips (1)
- Electrical Tape in 6 Assorted Colors (1)
- Thin Electrical Wire (1)
- Foam (1)
- Glue Gun (1)
- For Tray: 3D Printer, Socket, Pins/Small nails (1)

Step 1 — Dismantle battery



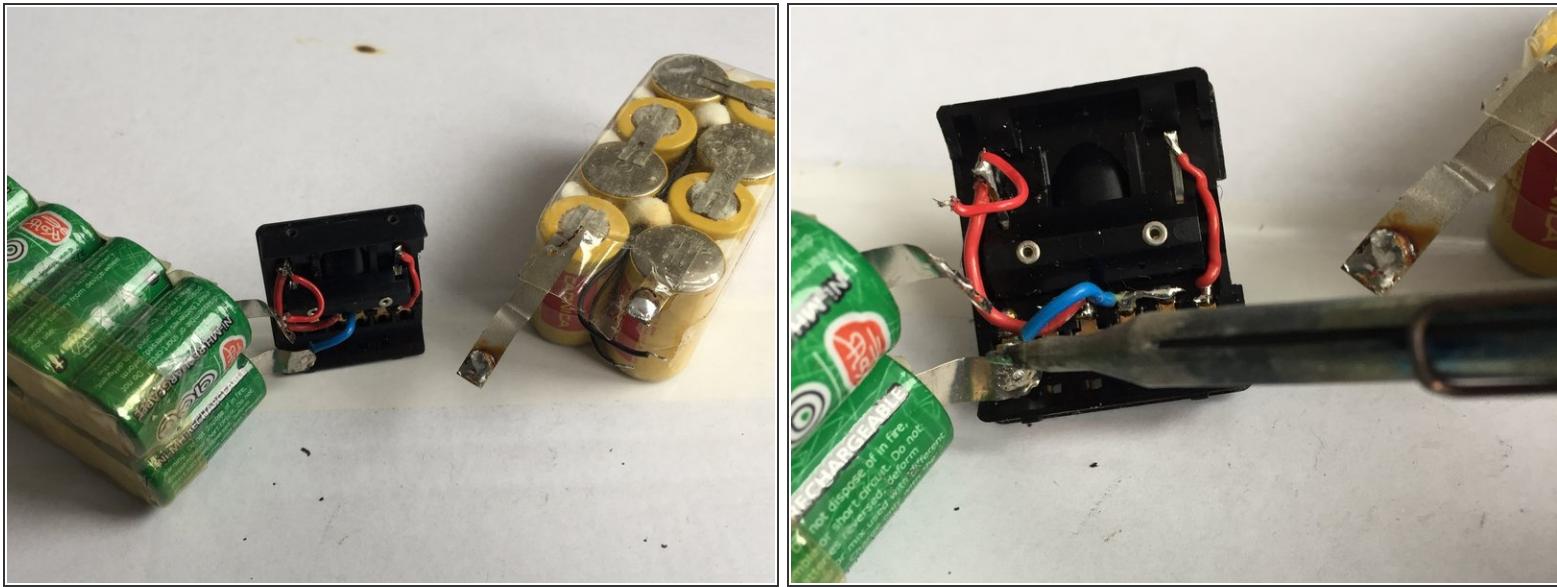
- Save the tiny screws. They are easily lost and hard to replace.
- Watch out the cables inside may very short.

Step 2 — Remove old battery and obsolete stuff



- Depending on battery type this may look a bit different.
- Sometimes the batteries have a very tight fit and are not to easy to remove. Try pulling with pliers

Step 3 — Desolder old battery



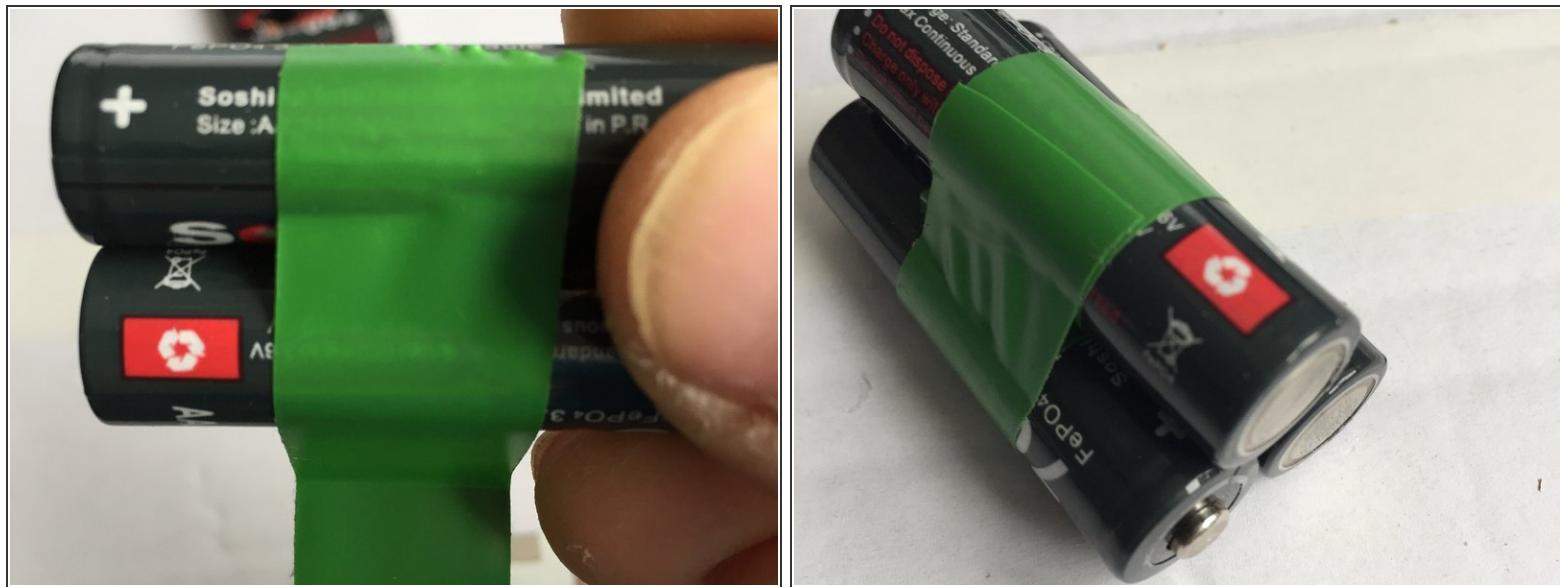
- The original NiCd batteries had two additional cables for a temperature sensor. See yellow one, which also has the original plastic housing.
- **Be sure to dispose the old battery pack properly. They contain harmful chemicals and need special treatment for waste disposal!**

Step 4 — Prepare batteries for soldering



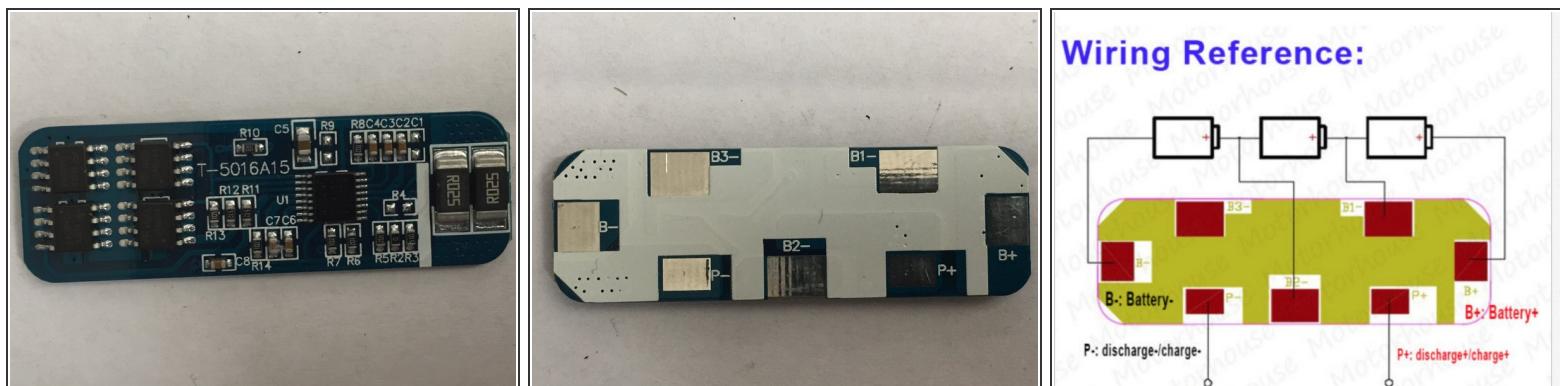
- This step helps later to have the solder stick to the batteries

Step 5 — Align the batteries



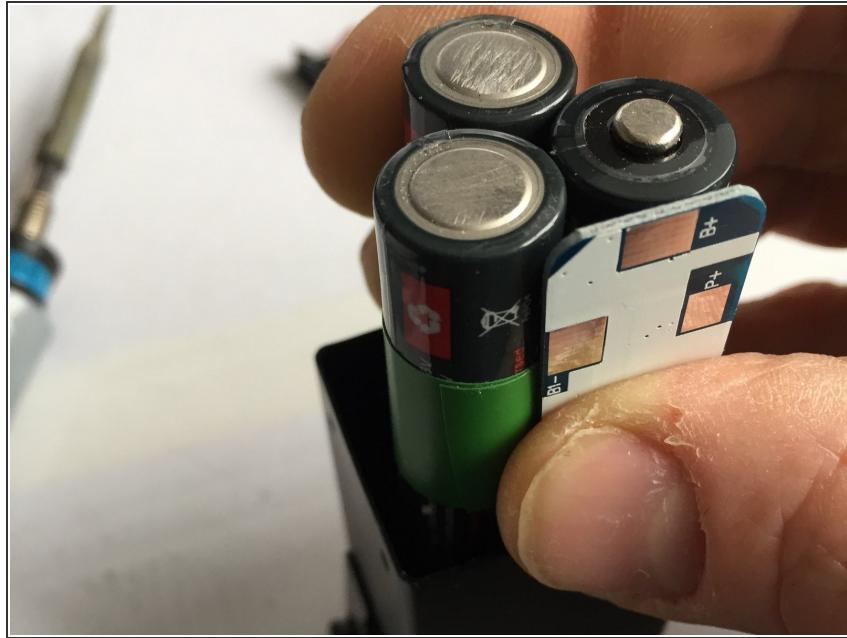
- I had to turn around one of the batteries later in the guide to allow easier soldering... depends on the wiring though.

Step 6



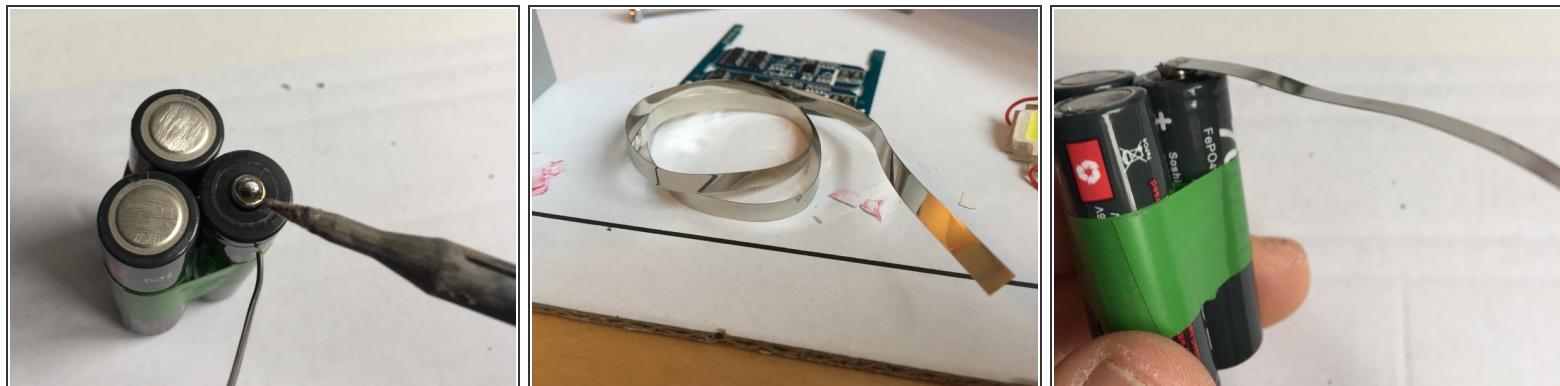
- The PCB/BMS Board plus wiring diagram
- The wiring diagram may be different depending on the PCB used. But the principle is the same for all types.

Step 7 — Testing the size.



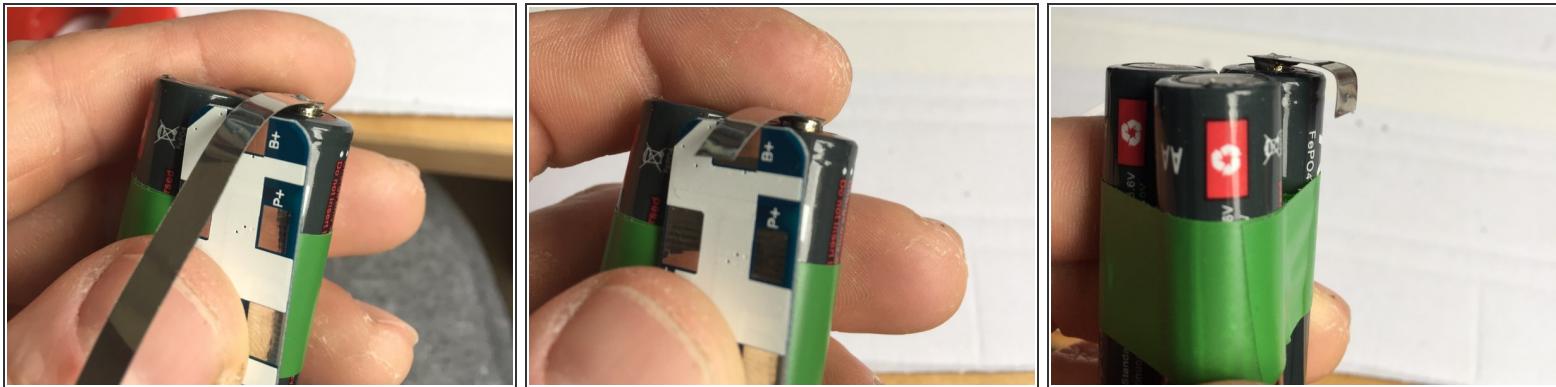
- Check the size of the battery pack together with the BMS Board. It should easily fit with a bit of space inside the housing. Otherwise you may get problems down the road of this guide.

Step 8 — Soldering



- You can also use normal thin wire, but be aware that the space within the housing is limited.

Step 9 — cutting the connector



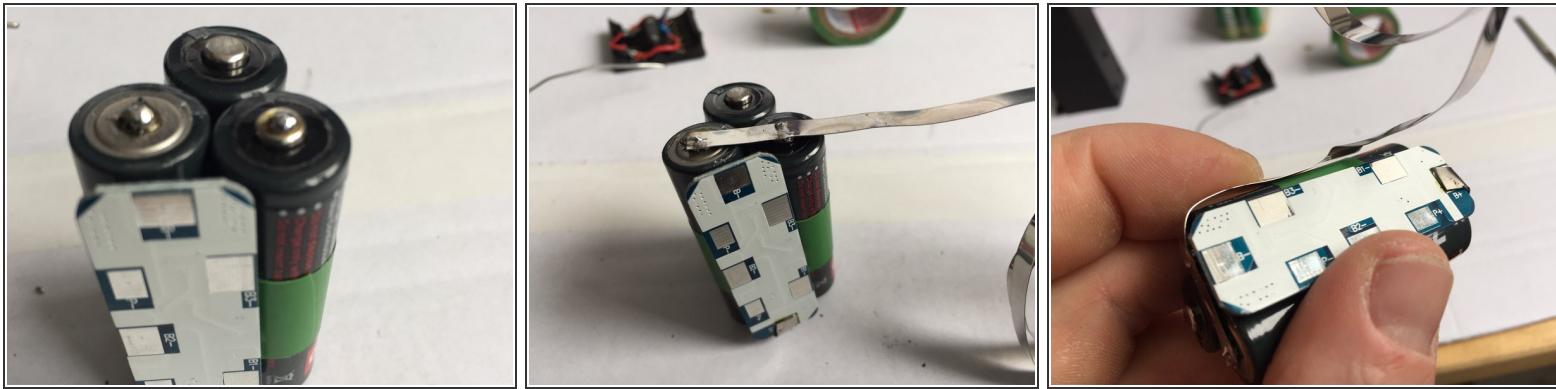
- This is based on the specific PCB used and may be different for others

Step 10 — Solder B+ on PCB



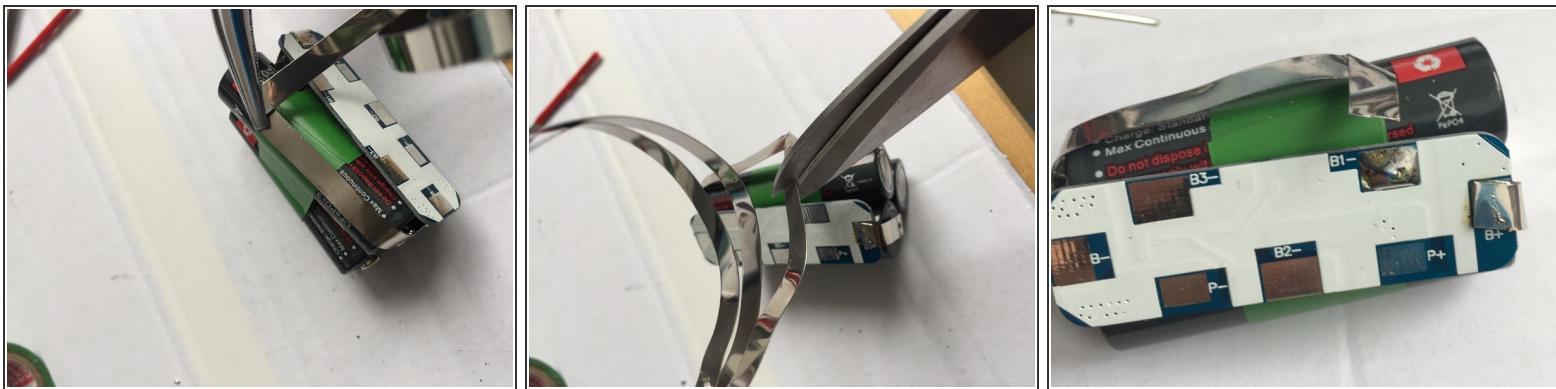
- Add a bit of solder on the connector you want to use next. I started with B+ and connected it to the + pole of the first battery.
- Test again if everything fits in the housing.
- **Warning! The housing is metal. Make sure not to short-cut something!**

Step 11 — Connect - of B1 and + of B2



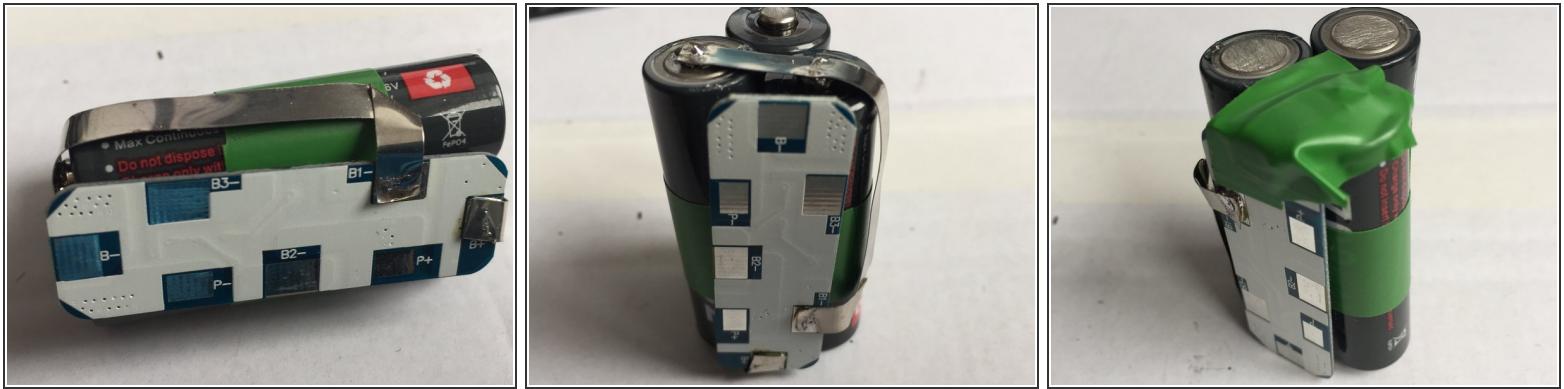
- Again do not short cut anything!
- The hilium connector helps here to save lots of space compared to wires

Step 12



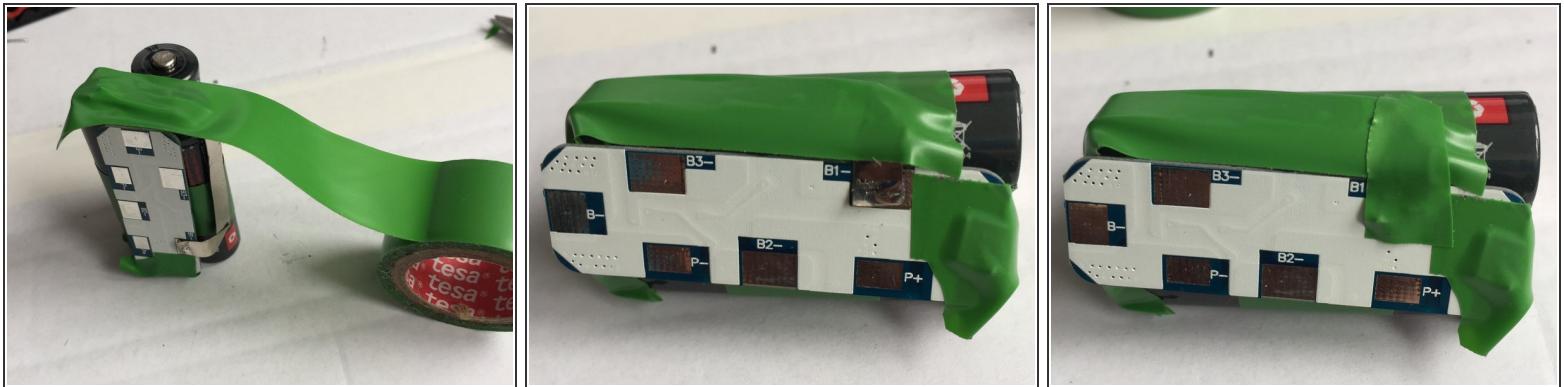
- Fold the hilium and use pliers to flatten it
- Use scissors to cut to the right length
- Again add a bit of solder before soldering the hilium connector

Step 13 — Solderig B1- and isolation



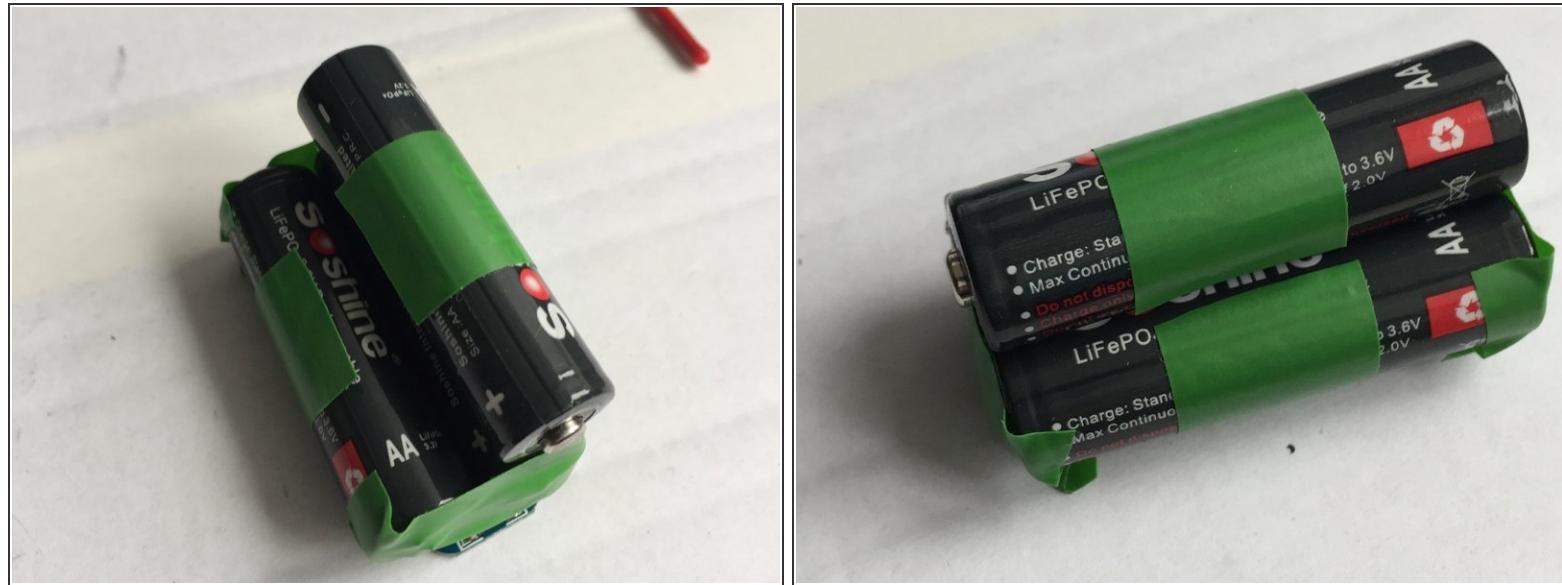
- See the finalised soldering of Step 12
- Use electric tape to isolate the finished work (this prevents shortcuts)

Step 14 — More electrical tape



- Try to isolate but do not cover the writings on the PCB so you can still see, what is already wired.

Step 15 — Turn around B3



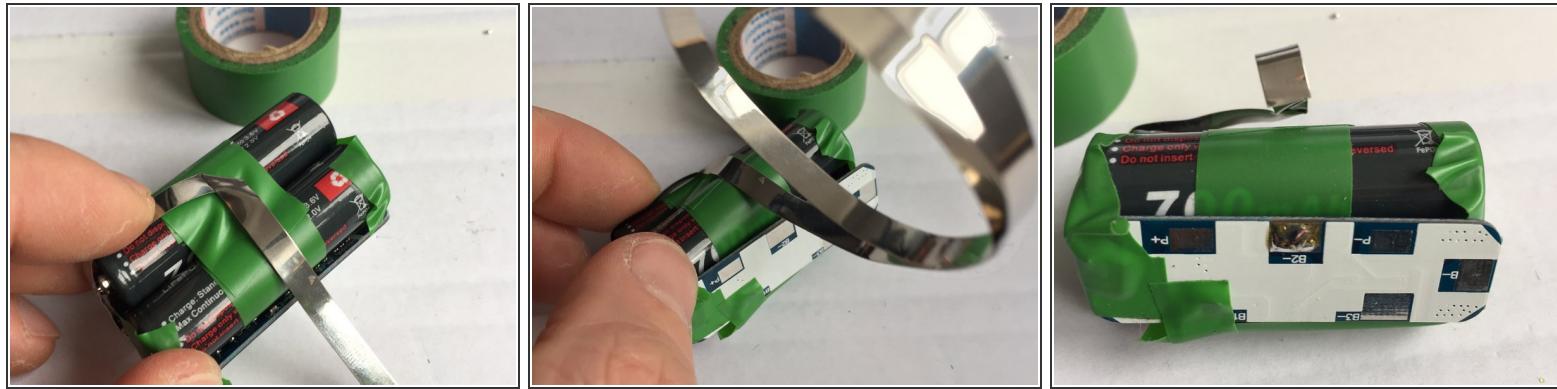
- It is hard to get the orientation if all batteries correct on first try. But the tape allows cutting and reorientation if needed.
- This is only needed to use less of the connector and allow easier wiring without crossings

Step 16 — Wiring B2 & B3



- Again add a bit of solder to the poles.
- And use fold the connector tape.
- Watch out for shortcuts

Step 17 — Fold and cut the connector for B2-



- Now you see why the electrical tape is needed for isolation. If the connector roll is touching the wrong parts you may get a short cut, that may brick your PCB.

Step 18 — Soldering B2- on the PCB



- The pliers help to not burn your fingers.
- See on 2nd picture how much space we save with the hilium connectors.
- On 3rd picture we see how solder punctured the electrical tape. In the next step we add another layer for security.

Step 19 — Even more isolation



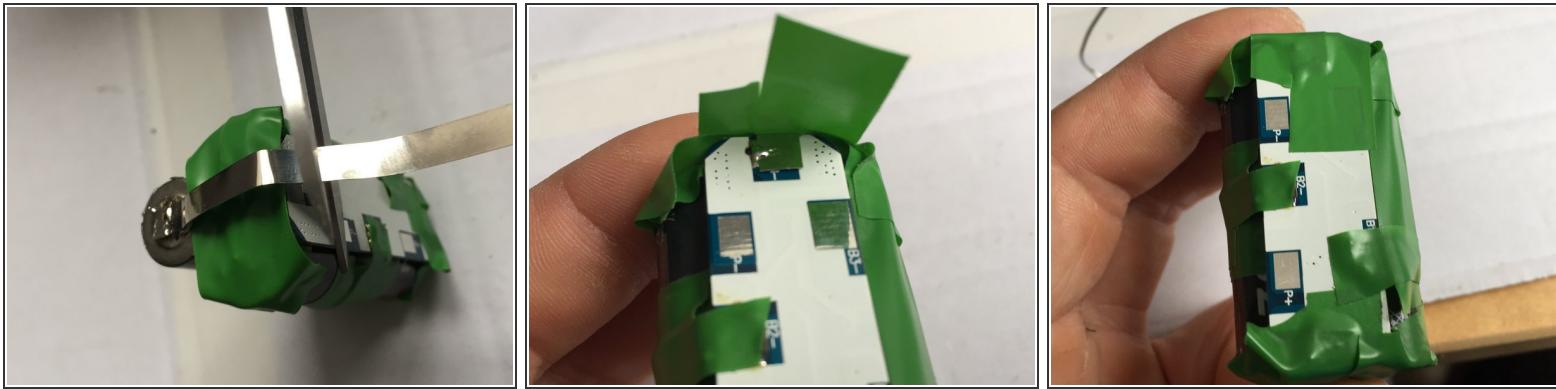
- I cut the electrical tape to not cover the markings on the PCB.

Step 20 — and even more isolation



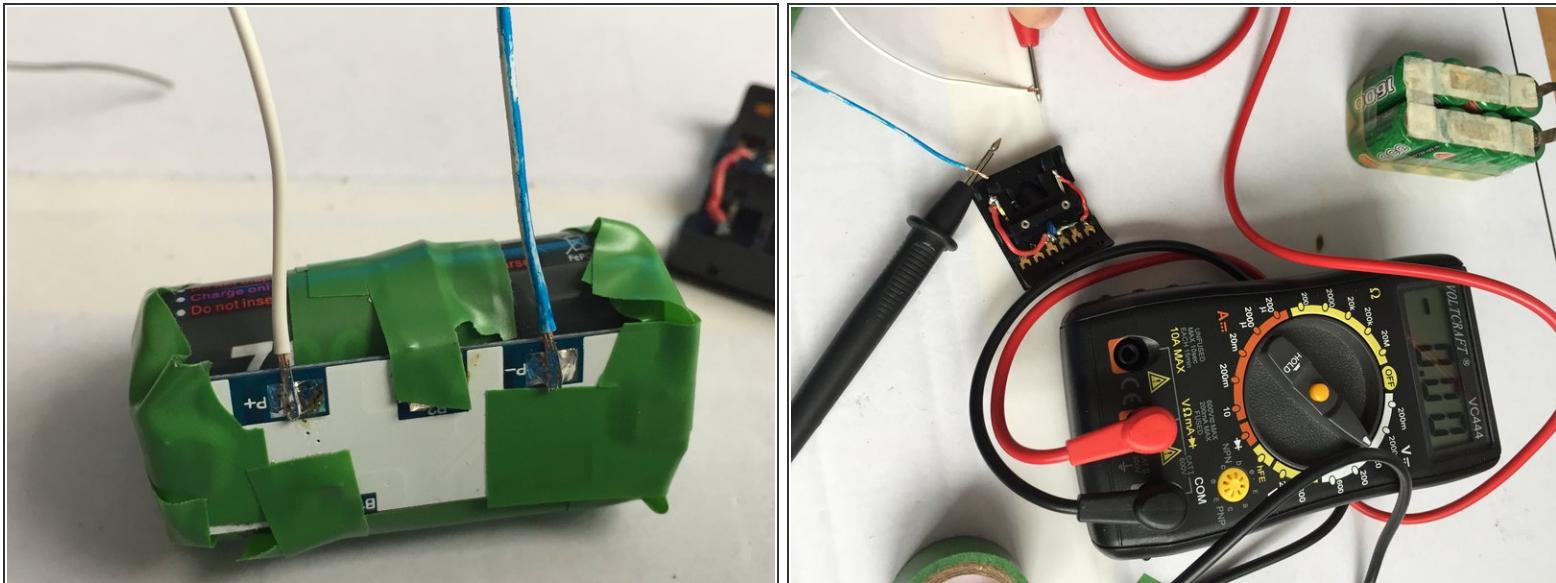
- Adding another layer of isolation as we have crossing hilium connectors here.

Step 21 — Finalising the battery pack



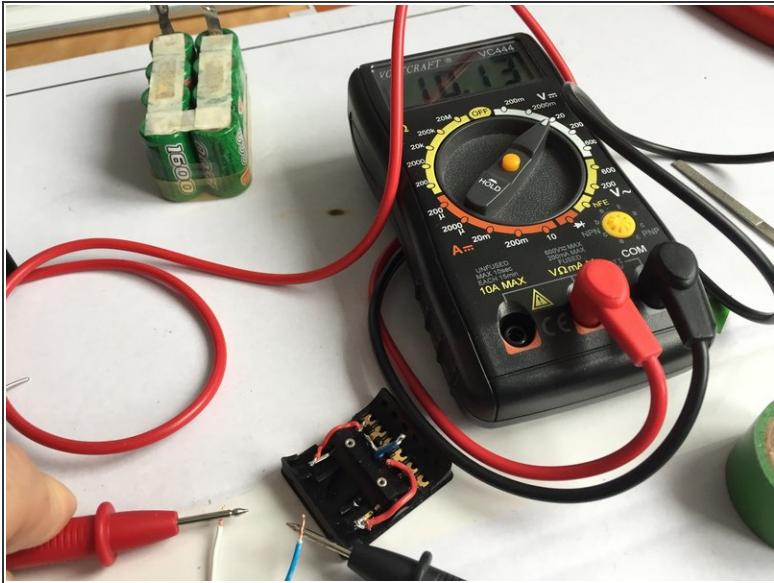
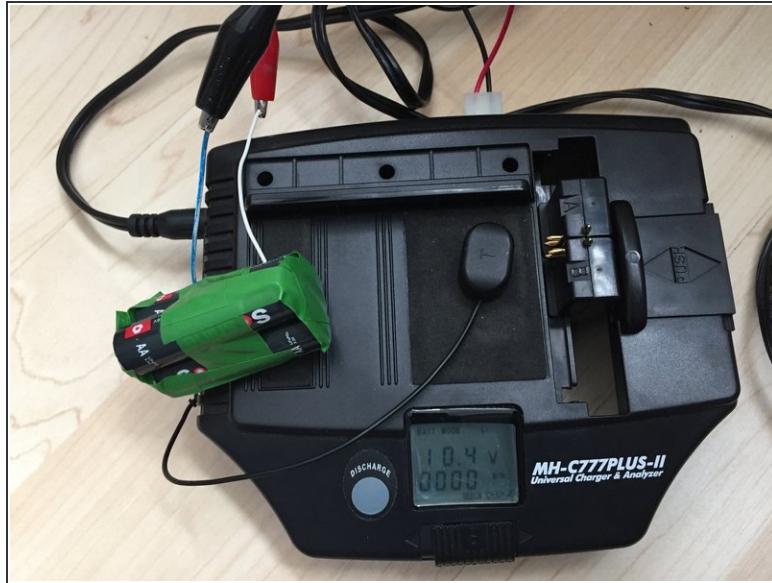
- Note from the wiring diagram the B3-connector of the PCB is unused.
- So we add electrical tape to isolate it.

Step 22 — Adding P+/P- wires



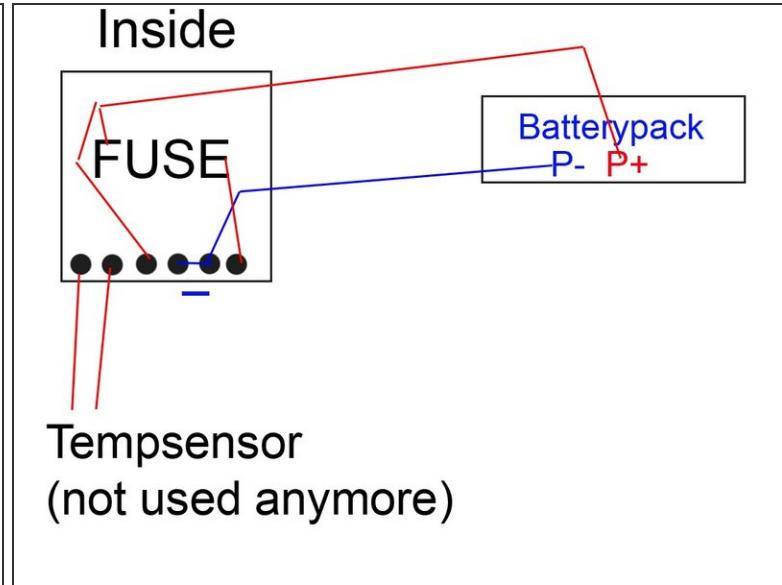
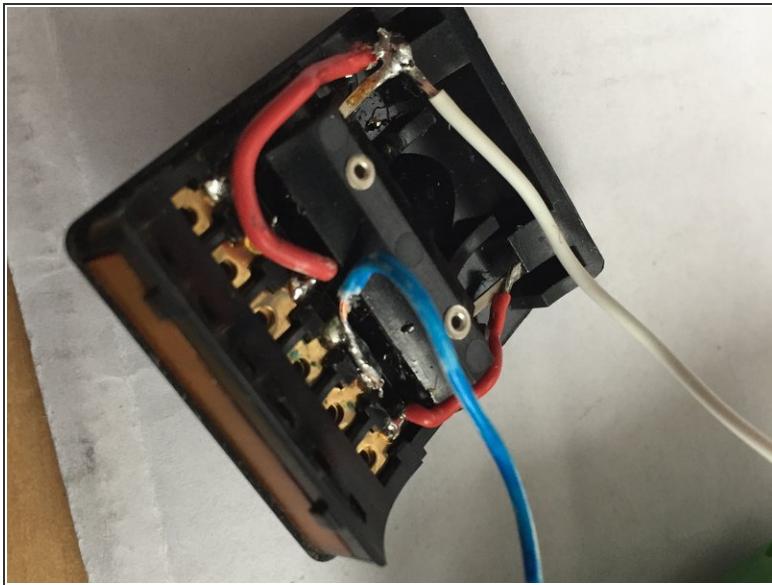
- These are the charge/discharge ports of our battery pack
- Be sure that the length of the wire is long enough to wire it to the Rollei outlet later.
- If you use a multimeter to check the voltage you will see it's 0V
- The PCB needs to be activated, we do this by doing some short charging

Step 23 — Testing the battery pack



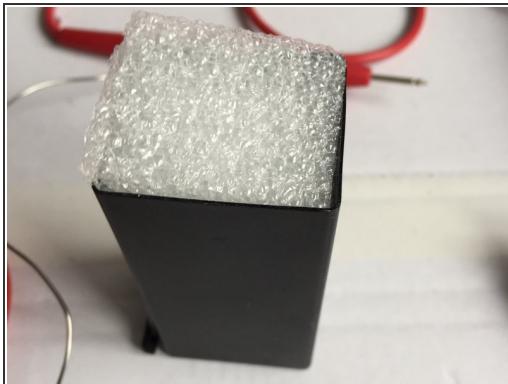
- A bit of charging is sufficient. The MaHa charger shows the voltage of 10,4V
- Now also the multimeter shows the correct voltage.
- The PCB is now activated and the battery pack correctly wired.
- If this step is **not working** as expected, then check all wiring, soldering and diagrams again to validate there are no mistakes.

Step 24 — Wiring to the lid of the Rollei battery



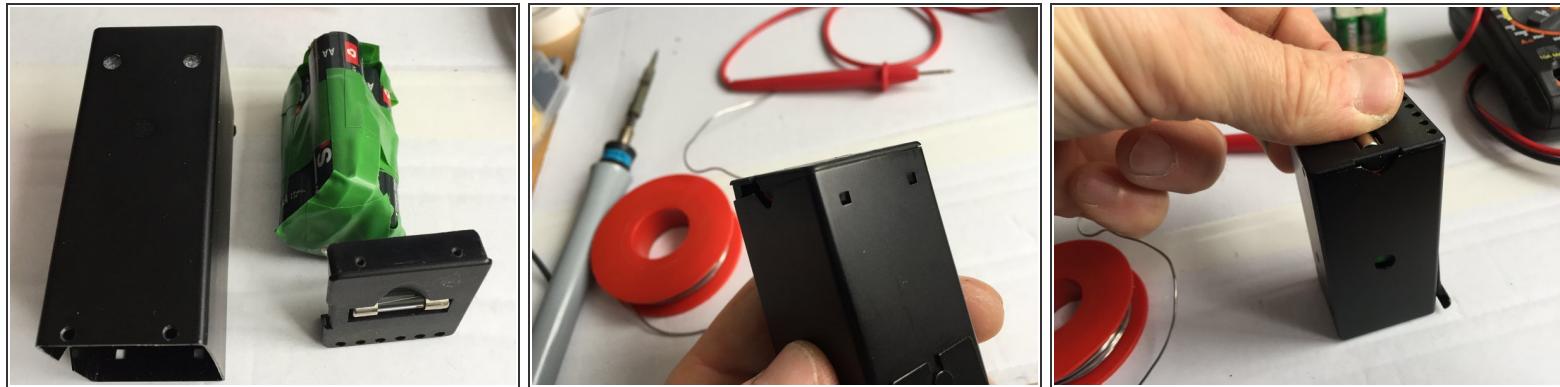
- This is the most tricky soldering part.
- Make sure there is not anything connected that shouldn't.
- The battery has two + and two - poles. Make sure the + (white cable) is connected to the right input. Have a look at the red cables. One is going directly to the camera connector. The other one is protected by a fuse that protects your camera.

Step 25 — Add foam to fill free space



- Find out how much foam you need by putting the battery pack with foam layers outside of the housing.
- Keep space for wires and fuse at the top.

Step 26 — Assembly



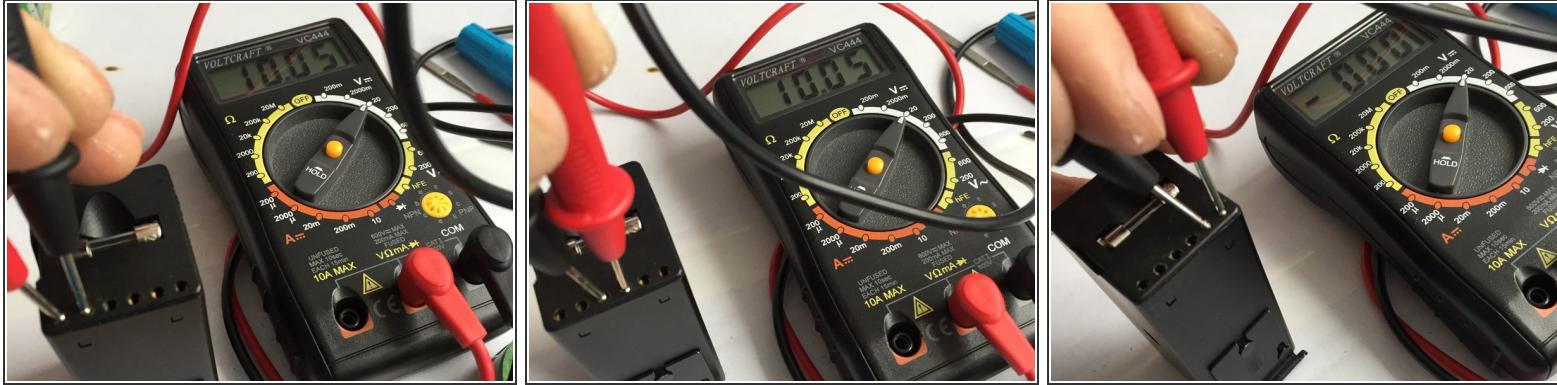
- Align battery pack, lid and housing
- Notice that the screws are on one side only.
- Two tiny squares snap into the other side.
- Check that the lid is closing completely, without much pressure (Pic. 3). Otherwise remove a bit foam

Step 27 — Screwing together



- Final assembly steps

Step 28 — Final testing



- Note: the lid is now turned around (thus mirrored to the wiring diagram)
- It is expected that the two connectors to the right produce 0V
- Make sure you get roughly 10V with the right polarity
- Repeat this step, to double-check. **BEFORE** inserting the battery into your camera.

Step 29 — Protecting misuse



- Fill the two unused connectors (from the temp sensor) with hard glue. **This prevents users from accidentally using a Rollei Charger N or G, which are not suitable for the battery type and might cause fire or explosion.**
- Charge the battery with a Lithium capable LiFePO4 charger only!
- Notice that the battery has now only 81g compared to 210g for the old NiCd.
- Happy using your Rollei again!

Step 30 — Building a Charger Tray



- Attached you can find a STL file (under Media) to 3D-PRINT a charging tray for the new pin layout (remember blocking some pins so the Rollei Charger N cannot fry your new battery). The 3D Model can also be downloaded from here: <https://www.thingiverse.com/thing:215677...>
- Print the 3D Model (or get it printed online).
- Get a connector socket (for the charger I used I got one of these: <https://bit.ly/2NwmhUo>) with 12.6mm diameter (you can use others but the 3D model might not fit then).
- Solder wires to two pins (check the diameter of the pins so they fit the battery!) Make sure they're tick enough to have electrical contact. I used two small nails I shortened. Glue the pins into the two holes so they stick out roughly 5-6mm. Validate that the battery fits and connects (use a meter!).
- Solder the other ends of the cables to the socket and glue the socket into the hole. Fill the bottom side of the tray with hot glue to fix everything.
- A charger can be ordered from eBay: search for 11V Charger 1A Smart to 9.6V LiFe LiFePO4
- <https://www.ebay.com/item/11V-Charger-1A-...>

Have fun with your Rollei again! :)