



DOWNSIDE SCHOOL

Making my Motorised Longboard

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My Project

I have built a fully functional foldable electric longboard. The aim of the product is to allow the user to have a regular longboard experience but have the option of climbing hills and moving along flat terrain with assistance from the electric motor. Another important factor of the board is that it can fold in half, reducing the amount of storage space it takes up, making it ideal for places like a university campus.

How I made the foldable electric longboard

I started by contacting a relative, the owner of Gilo industries in Shaftesbury, to provide the electronic components. I then started making a prototype board. This first build did not fold in half, but the purpose of building it was to test how well the electric power system worked.

I used a series of aluminium components machined on the lathe and milling machine to allow the electric motor to provide power to a wheel via CAD gears that were 3D printed. At first the belt type I was using proved to be insufficient and snapped regularly. I then changed the belt type and everything worked perfectly. After I was confident with the power system I created the folding mechanism. I used the CNC (Computer Numerical Control) router to create 1:1 models of the hinges I had designed in fusion 360 (a computer-aided design program). I then used the models as a pattern to create an aluminium casting.

I used the prototype board to test the hinges and everything worked very well. I was just using clamps to hold the battery and speed controller onto the board so I created a box to hold all the electronic components. At this point I knew all the parts worked well and integrated well together so I moved on and built the final product.

I am pleased with the overall outcome as it does what I intended it to do. The maximum top speed in the region of 30mph is easily and quickly reached and, with a duration of about eight miles, the board should suit students for use on campuses.

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