This was a personal project which initially started out from an idea of building a personal electric scooter, I took it a step further to build the design for a production ready scooter built with a lightweight aluminum chassis and a 550W hub motor in the front wheel. A driving cycle was designed around the idea of driving around a standard city block and then on a highway stretch at mixed speed conditions. I built a Simulink model to perform component sizing to achieve the target range of nearly 35 miles. The design is competitive with the other scooters available in the market and is structurally, electrically and thermally sound. Optimization is needed to further reduce weight of the scooter and add some additional convenience features (Foldable seat to reduce drag by nearly 40%, airless tires, composite chassis for small volume builds).

Additional Details: <https://seelio.com/w/3sfg/design-of-an-electric-scooter>