

SSV Description

Our finalized SSV is built out of steel, more specifically steel pipes with an outer diameter of 1.2 cm and an inner diameter of 0.9 cm. The entire chassis of the SSV is welded, the base of the chassis is a triangle. By using steel pipes we don't have much surface area, and thus not a lot of air resistance. The front of our SSV is higher than the back because our front wheels have a larger diameter than our single back wheel. Our SSV uses front-wheel drive so the motor drives the front wheels. We chose this option because we were not going to implement a steering mechanism and we wanted as much weight as possible in the front of the car. This option also has some disadvantages, one of these disadvantages is the loss of torque at high acceleration but since our SSV doesn't really have a very high acceleration this isn't too much of a problem. To reduce rolling resistance caused by friction of the wheels we only work with 3 wheels. Two big wheels at the front of the SSV and 1 smaller wheel at the back. We created a system so the front of the SSV is at the correct height, so the thrust piece will hit the ball at the required height. On this thrust piece we attached a piece of thick rubber to protect our SSV from the hard impact as we think it will help to get the ball higher on the ramp.

We used the laser cutter from Fablab to cut our gears and the Plexiglas piece that holds the motor. The gear ratio we wanted to use, namely 6.5 wasn't available in online shops, that's why we made them out of Plexiglas. In order to achieve this gear ratio we drew one gear with 12 teeth and one with 78, we used a gear generator to make sure everything matched perfectly. The solar panel is attached with a GPS holding device we attached to the SSV. This gives us the advantage of changing the direction the solar panel faces during the race event to get the most sunlight possible on our solar panel. We also attached a start button so we can just push the start button and let our SSV drive off.

Underneath you can find some dimensions to give you an idea of the size of the SSV.

- Length (from the tip to the thrust piece): about 41 cm.
- Width (between the side wheels): about 28 cm.
- Height (at the front): about 11 cm.
- Thrust piece centered at 6.8 cm.
- Front wheels have a diameter of 6 cm.
- Back wheel has a diameter of 1.5 cm.

You can find some photos of the SSV and a solid works model of our SSV on the next page.

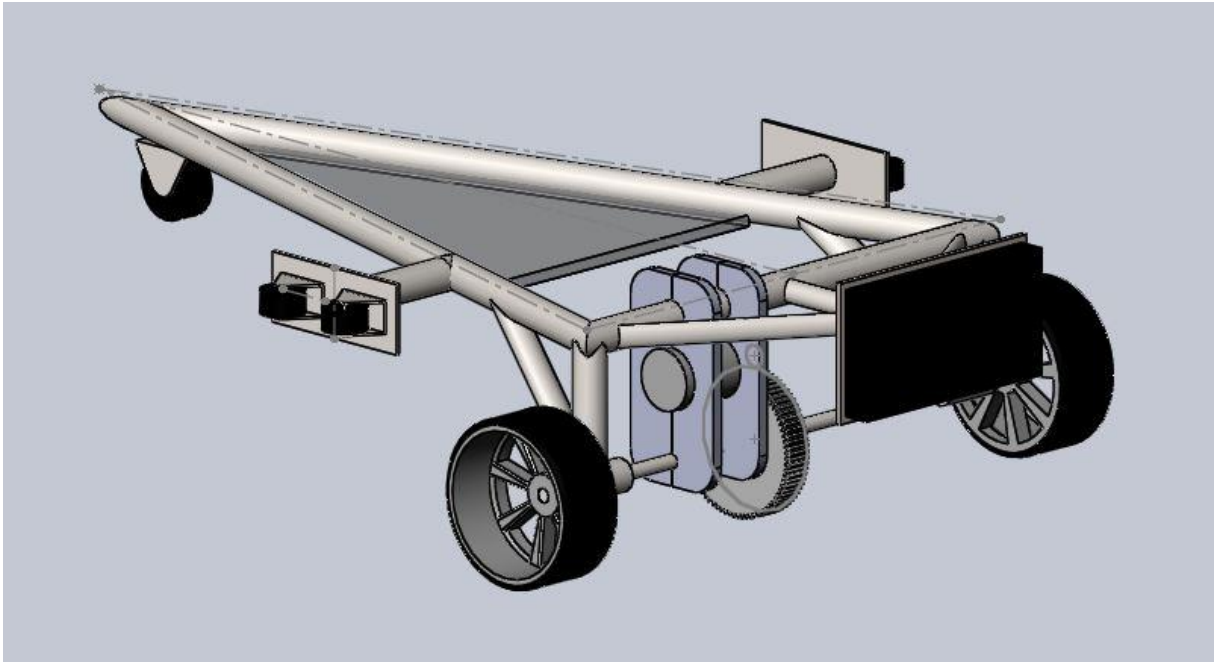


Figure 1: SSV model in solid works



Foto 1: SSV