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STUDENT

SOUTH METROPOLITAN TAFE – MUNSTER CAMPUS



Mecanum AGV Project

Workshop Tasks

Version 1.0

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# Mecanum AGV Project

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### Fabricate Roller Shafts

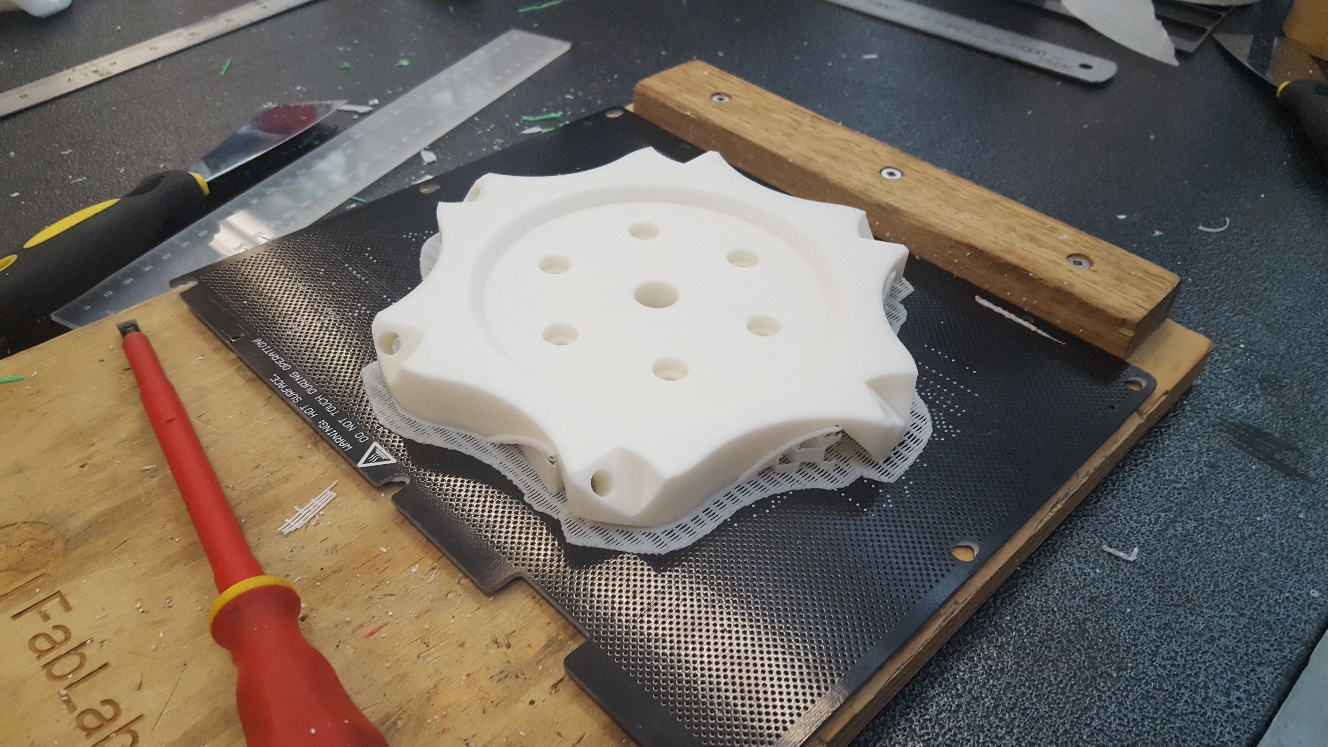
Early in the project we fabricated a prototype wheel. Each student had fabricate a shaft. This involved:

1. Use hacksaw to cut to length
2. Use scouring pad / emery paper to clean shaft
3. Use linisher to flatten ends and apply chamfer
4. Use vice / tap and die kit to cut thread
5. Use linisher to re-apply chamfer



### Strip 3D Printed Parts

After printing the original prototype cheek plates we had to strip them from the printing board. Safety glasses and gloves were worn for this task. We used the wooden brace board in conjunction with a variety of hand tools to strip and clean up the 3D printed parts.

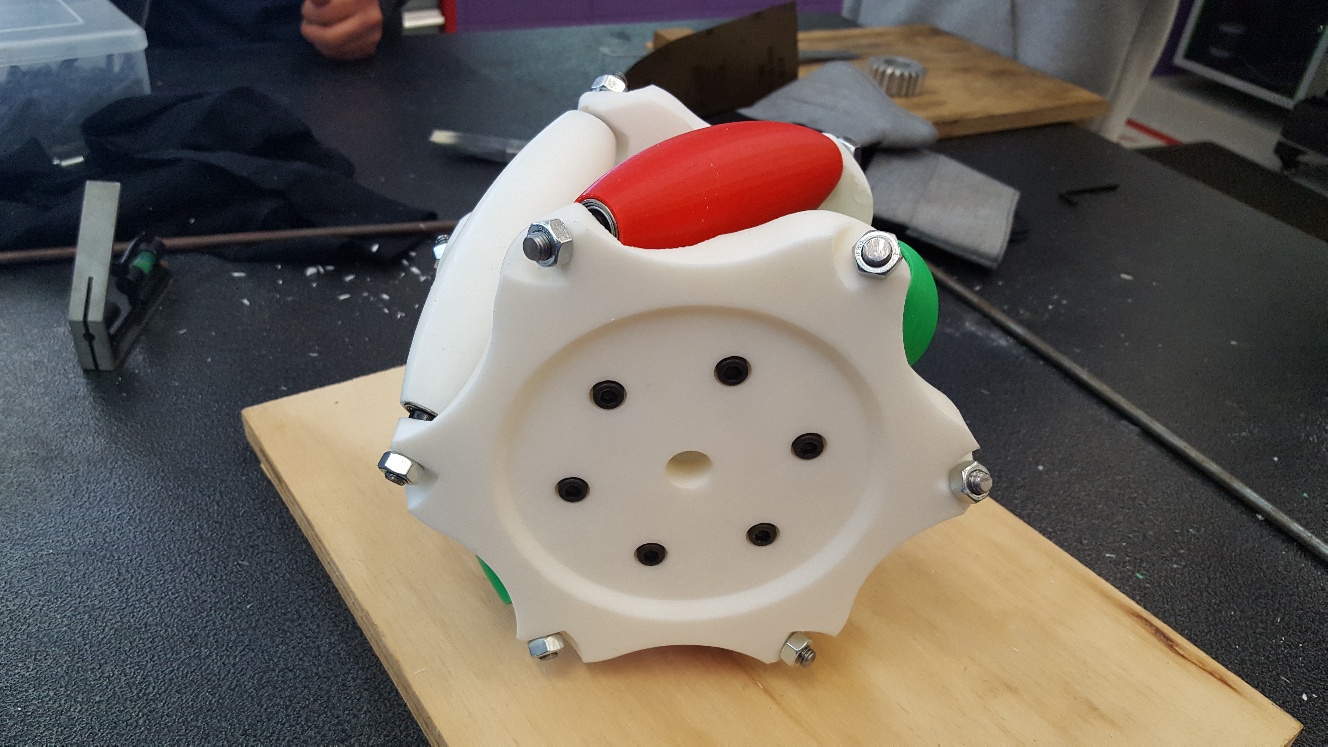


### Assemble Prototype Wheel

Once the parts were printed, stripped and cleaned (or fabricated) we then assembled the prototype roller. This involved the following:

1. Use acetone to assemble hub
2. Bolt hub to cheek plates
3. Insert bearings in to roller
4. Position roller between check plates
5. Position 1mm spacers between roller and check plates
6. Threat shaft through all
7. Apply nuts to threaded ends of shaft
8. Repeat from step 3 until all rollers are in place





### Cut SHS To Required Length / Angle

Now that we have both 3D Inventor files and 2D fabrication drawings for the chassis is was time to start cutting the members. Adam ordered 12m of 35x35x3mm SHS (as specified in the drawing), and two of us (small group due to PPE restrictions) headed to the Henderson campus to cut the material for later welding. This involved using a cold saw and horizontal band-saw to first make the straight cuts, then a second pass through the cold saw at a 45° angle on the external components. This task was completed in full in ~3hrs to a +/-1mm tolerance.

Relevant Files:





### Participated In Grinding / Welding Exercises

I have participated with two welding exercises and one grinding exercise as well as the above cutting of SHS. The Welding involved a tutorial in how to set up a GMAW device, use of appropriate PPE, voltage and wire selection and hands-on welding. The grinding exercise involved similar setup and selection protocols – but also a more in-depth inspection of the electrical componentry for defects. It should be noted that all inspected electrical equipment at the Henderson campus is overdue for test & tag.

Relevant Files:





### Lathe Work

22/05/2018 we spent the day at the Henderson campus workshop. A variety of tasks were performed by the students. I was primarily involved with using the lathe to fabricate axles. These were of varying lengths with a 15mm thread cut on each end.

The process was essentially:

1. Extrude length of brass through chuck
2. Fasten chuck
3. Set lathe up for threading
4. Cut thread to ~15mm length
5. Set lathe up for cutting
6. Cut at desired length (determined by drawing provided by Ross)
7. Loosen chuck
8. Repeat from step 1





