




Individual Project Meeting Record

Project Title	Design and manufacture of an aerodynamic undertray for Formula Student		
Supervisor	Dr. Rob Watson	Student	Dennise Zefanya Tohpati
Date and time	MEETING 13 – 15th January 2021	Location	MS TEAM [ONLINE]
<p><u>Review of actions from previous meeting</u></p> <ul style="list-style-type: none">• The failure of convergence on 3D analyses has been solved by using k-w SST with low Reynold number and using a $y^+ = 1$.• 3D Flow analysis with various inlet and outlet angle has been conducted and analysed.• 3D Bluff body for undertray analyses has been made and will be used for the final design analysis. <p><u>Discussion, decisions, assignments</u></p> <ul style="list-style-type: none">• Discussed the 3D analysis convergence: the usage of $y^+ = 1$ cause a cell jump near the wall which is not ideal but due to the time constraint and convergence, it was decided to be proceeded for the trend analysis of the undertray.• The 3D analyses show the maximum downforce at 5 degrees both on inlet and outlet angle. This result shows a significant difference with the 2D analysis. It was agreed that the 2D analysis couldn't be used for undertray variable generalisation on fluid analysis since there are number of flow behaviour that can't be captured on 2D• It was found that fences could significantly improve the downforce since it breakdown the corner vortices which let the flow to stay attached more on the diffuser.• Discussed the problem regarding the non-manifold geometry on the 3D undertray mesh, and how it should be solved. <p><u>Agreed actions and completion dates</u></p> <ul style="list-style-type: none">• Conduct the analysis on the 3D open flow with fences on the diffuser to see if the fences will let the flow stay attached on the diffuser and increase the downforce• Fix the problem on the non-manifold geometry for the mesh.			
Date and time of next meeting	Friday 29 th January 2021	Location of next meeting	MS TEAM [ONLINE]
Supervisor signature		Student signature	Dennise Tohpati