




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 16 – 12th February 2021	Location	MS TEAM [ONLINE]
<p><u>Review of actions from previous meeting</u></p> <ul style="list-style-type: none">• The second 3D undertray design with flat side diffuser and lower diffuser angle with bluff body has been successfully analysed using k-e scalable wall function.• 3D open-flow analyses have been done, although a lack of confidence in drag occurred at 15 degrees diffuser angle. <p><u>Discussion, decisions, assignments</u></p> <ul style="list-style-type: none">• There was a failure on Dell Horizon at this stage; however, the 3D open flow bluff body analyses could be recovered; hence the available updated results were presented.• From the 3D bluff body design with four fences:<ul style="list-style-type: none">○ It can be justified that the inlet angle does not significantly contribute to the drag generation of the undertray nor the whole body.○ The downforce generation caused by additional four fences is also believed to attached longer due to delay in flow separation at the diffuser caused by the vortex generated.○ The increase in downforce due to the presence of the strakes could go up to 30%.• On the 3D undertray design prototype one with high diffuser angle and side diffuser:<ul style="list-style-type: none">○ the lower pressure area occurred by the bluff body is reduced; however, this lower pressure area also occurred in the back area of the diffuser.○ It was believed that the flow is sculpted to go around the bluff body, but further investigation is required at this stage. <p><u>Agreed actions and completion dates</u></p> <ul style="list-style-type: none">• Begin a more in-depth investigation of the 3D undertray design to analyse the fluid flow around the body, which is plausibly sculpted and generate a higher total drag.• Continue the 3D undertray analysis with several geometry modifications<ol style="list-style-type: none">1. Reducing the fence's length on the inner side of the diffuser to see how the vortices2. Create variations in diffuser angle where the outside section of the undertray has higher angle degree than the diffuser towards the middle section.• Report and results:<ul style="list-style-type: none">○ Plotting and gathering data from all analyses required up to date to be put into the report.○ Start to write the results section for the report and revise several sections of the report based on the progress report feedback.			
Date and time of next meeting	Friday 19 th February 2021 (reading week)	Location of next meeting	MS TEAM [ONLINE]
Supervisor signature		Student signature	Dennise Tohpati