QUEEN'S UNIVERSITY BELFAST | SCHOOL OF MECHANICAL AND AEROSPACE ENGINEERING

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 8 – 23rd November 2020**	Location	**MS TEAM [ONLINE]**

Review of actions from previous meeting

- Finished 2D open-flow (phase 1) analyses which based on changes in some undertray's variables: Inlet angle, outlet angle, gap clearance, and slant angle.
- The quantitative results have been documented and plotted to see the behaviour of undertray's variable on open flow condition.

Discussion, decisions, assignments

- Initial results of the open-flow analyses have shown unexpected results. As the diffuser angle increases, the 2D open flow shows increases in drag and reduction in negative lift, which the expected results were the negative lift will increase as the diffuser angle increases. The suspicion was spotted on the flow behaviour on 2D which the vortices doesn't occur.
- Agreed that inlet and outlet angle of the undertray design were too sharp which cause separation immediately at the transition, therefore some fillet will be used for better flow transition, hence the flow will stick longer to the undertray and increase the negative lift.
- The slant angle should be put at the trailing edge of the car to simulate the flow of Queen's Formula Car and see the behaviour of the flow with the undertray.

Agreed actions and completion dates

- Continue on 2D open-flow analyses with some changes as discussed: filleted inlet and outlet angle, additional slant angle at the trailing edge, diffuser length, and using k-epsilon turbulence model to compare the flow and results.
- Start the flexible 3D design to catch the deadline based on the workplan.

Date and time of next meeting	Monday 27th Nov 2020	Location of next meeting	**MS TEAM [ONLINE]**
Supervisor signature		Student signature	**Dennise Tohpati**