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 17 – 9th February 2021**	Location	**MS TEAM [ONLINE]**

Review of actions from previous meeting

- 3D undertray design with variable diffuser (reduced fence length on inner side and higher angle on outer side) has been computed using k-e scalable wall function.

Discussion, decisions, assignments

- From the 3D bluff body design with four fences, variable diffuser angle, and gurney flap:
  - 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.
  - There is significant changes in downforce compared to the previous design, however reduction in drag seems to be visible.
  - Design trade of the final undertray will be based on its efficiency which determined by the L/D ratio.
- Supervisor suggested to investigate the Boundary layer underneath the undertray. Calculating the shape factor of the BL is recommended to check where and when adverse pressure gradient occurred.

Agreed actions and completion dates

- Visualisation of streamflow around the 3D Undertray with bluff body, to help investigate the flow effect on the overall undertray's performance.
- Finalising the final undertray design in regards of current design. For final design:
  - Do a mesh convergence study.
  - Simulate with another turbulence modelling and various speed.
- The first draft of the report is targeted to be given by early March to be reviewed.

Date and time of next meeting	Friday 26th February 2021	Location of next meeting	**MS TEAM [ONLINE]**
Supervisor signature		Student signature	**Dennise Tohpati**