

DESIGN CREDIT PRESENTATION

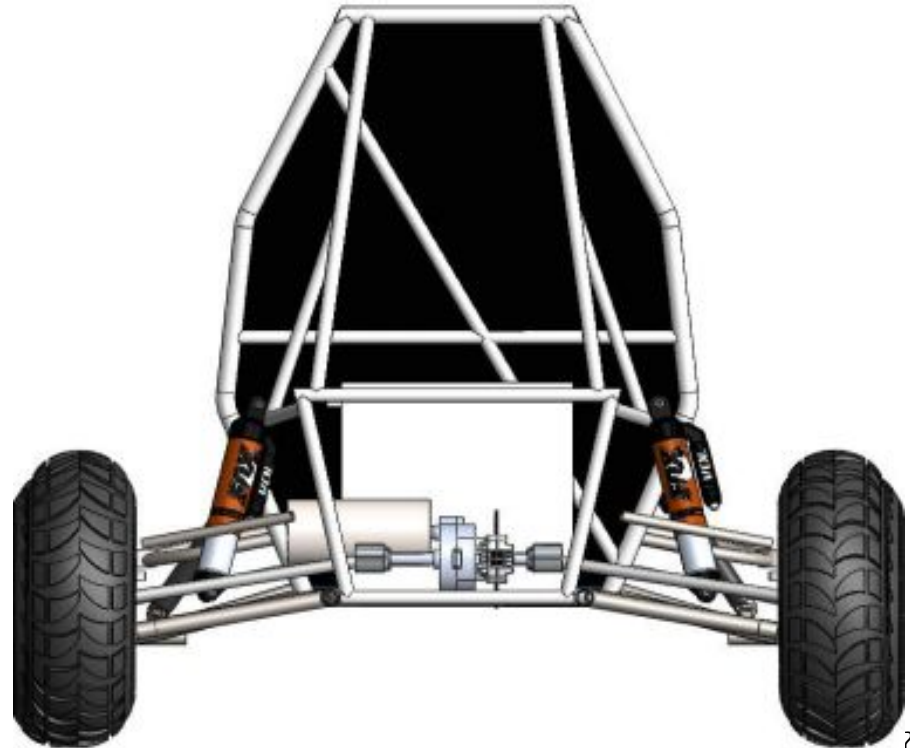
Indian Institute of Technology, Jodhpur
Project - BAJA SAE INDIA
eBAJA Edition

ABHISHEK KUMAR (B20ME003)

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Dr. Chandan Pandey**

Overview

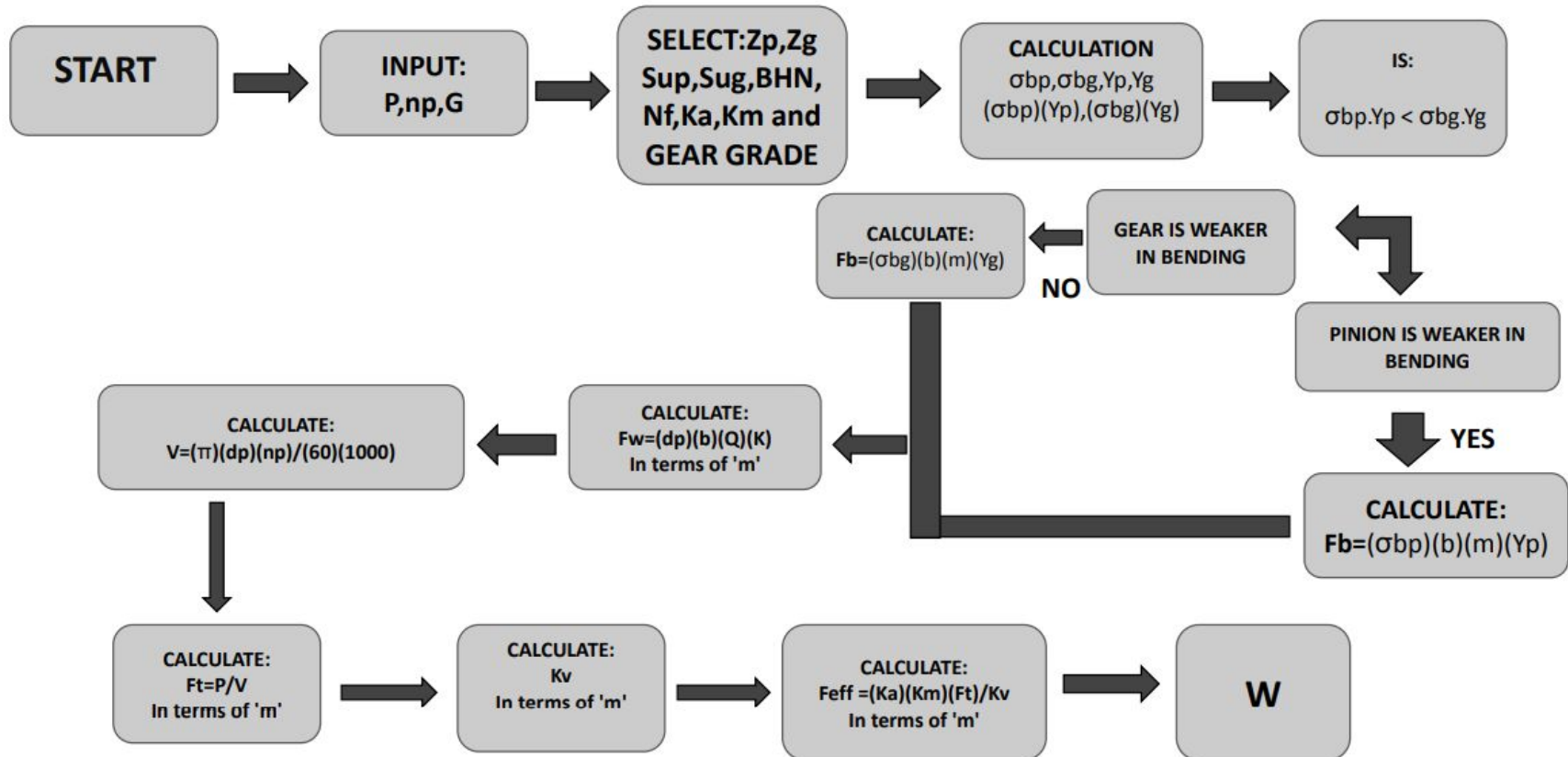
- ❑ Literature Review of Powertrain System
- ❑ Design of Spur Gear
- ❑ Static Analysis
- ❑ IPG Carmaker
- ❑ Manufacturing

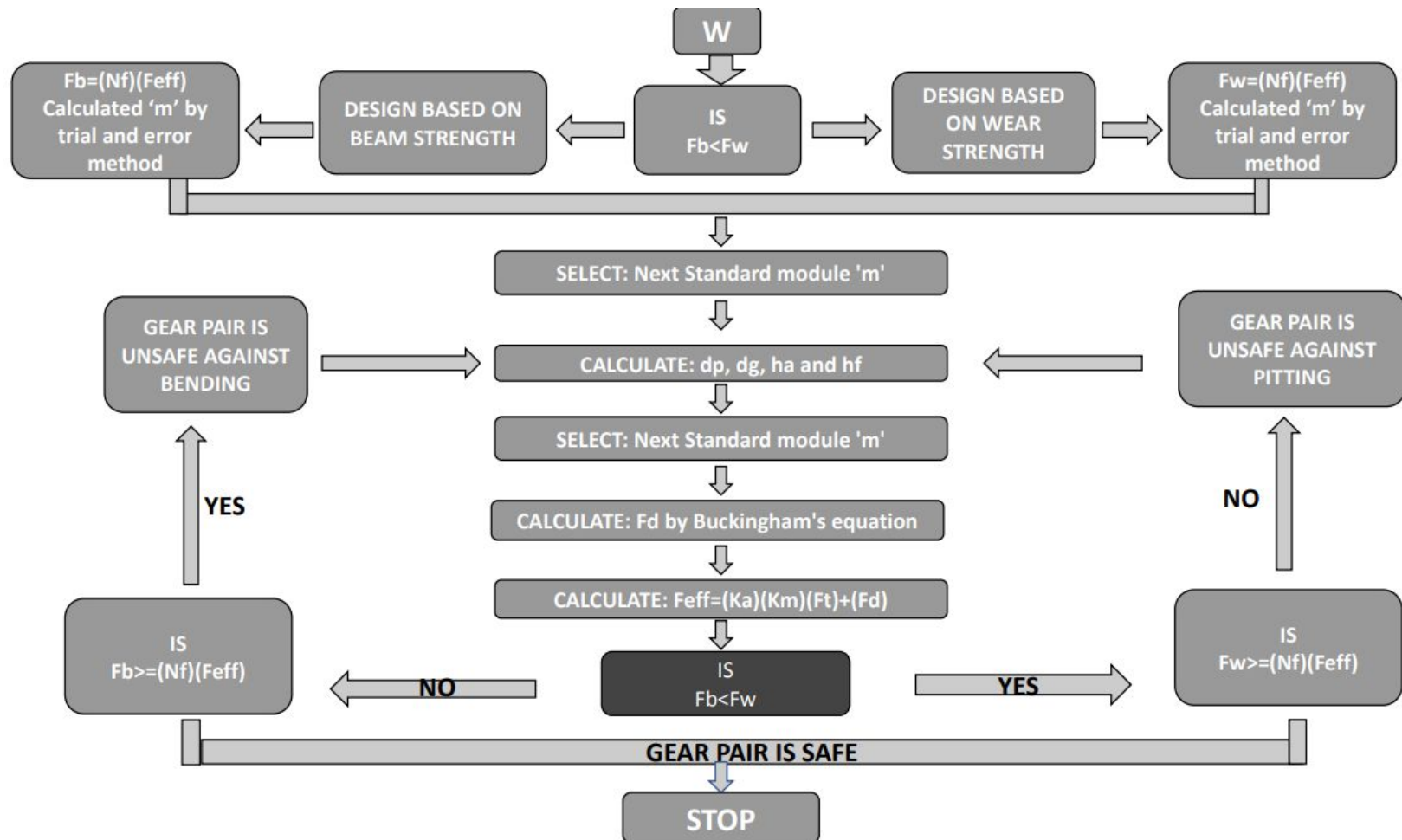


CRITERIA FOR DESIGN

Criteria	Description
<input type="checkbox"/> Acceleration	Achieve a speed of 35 km/h over a distance of 100 m
<input type="checkbox"/> Maximum Speed	Maximum Speed above 40 kmph
<input type="checkbox"/> Gradeability	Gradeability of at least 30 Degrees at cruising speed of 30kmph
<input type="checkbox"/> Durability	Ensuring no failure modes of transmission components
<input type="checkbox"/> Weight Reduction	Achieving As low weight as possible
<input type="checkbox"/> Cost Reduction	Reducing Cost as much as possible

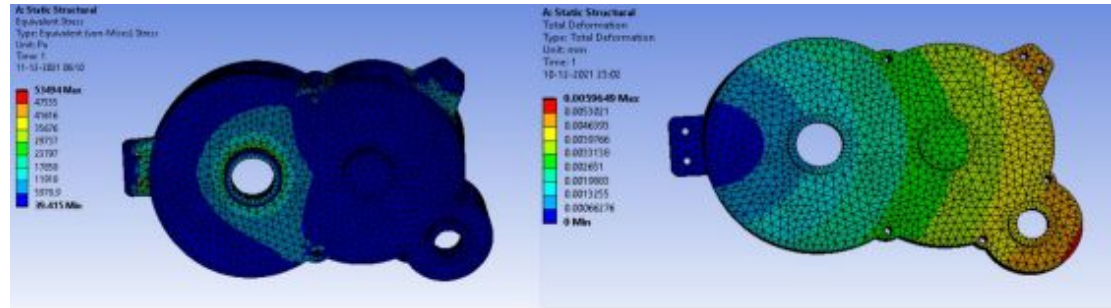
Flow Chart for Design of Spur Gear





Static analysis

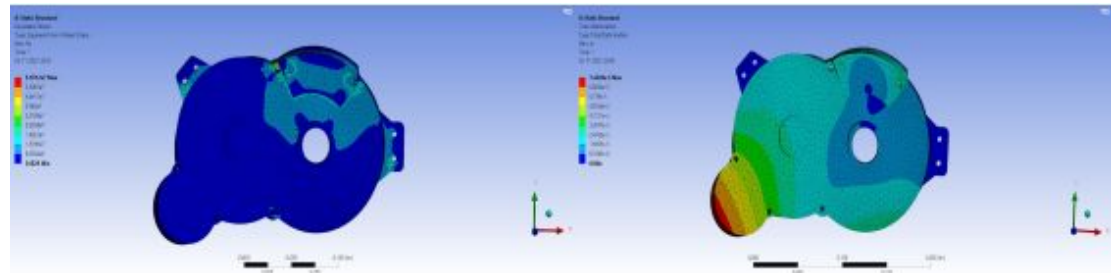
Design and Analysis of **1st part**
of gear box casing



Equivalent Stress (Von Mises)
Max.-53.494 MPa

Total Deformation
Max.- 0.051 mm

Design and analysis of **2nd part**
of gearbox casing

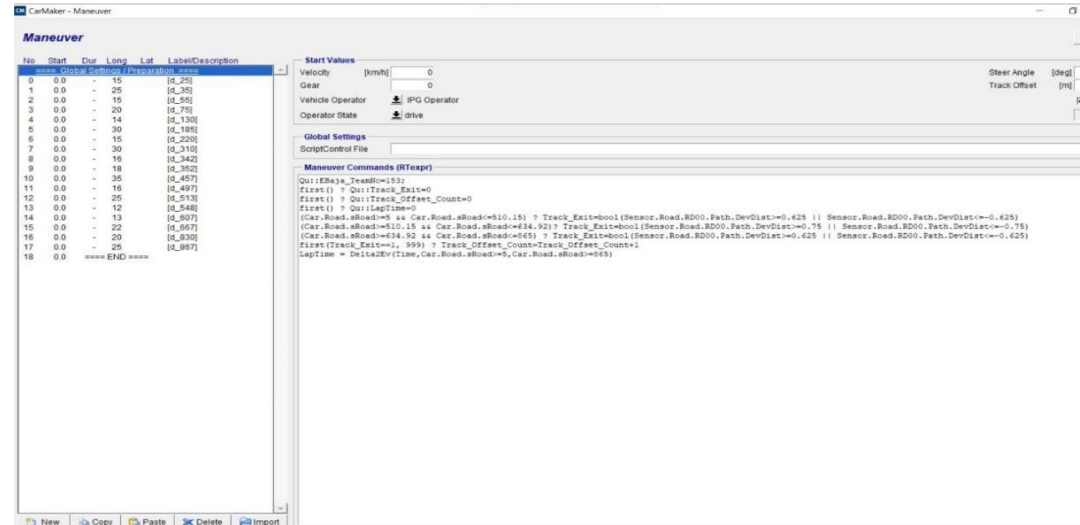


Equivalent Stress (Von Mises)
Max.-59.71 MPa

Total Deformation
Max.- 0.0742 mm

IPG CARMAKER

- ❑ CarMaker uses a freely configurable vehicle model, the so-called virtual prototype, which is built from models of all vehicle subsystems.
- ❑ It simulate real test drive in the virtual world.
- ❑ This enables time and cost savings, safe implementation and exact reproducibility of the driving tests.



Manufacturing

- ❑ Used Lathe Machine for notching rods for proper welding
- ❑ Used drill Machine for making fixtures
- ❑ Used cutting tool to cut rods



Notching



Drill Machine



Cutting
tool



Thank You!