

Auto disengagement clutch design (BE Project)

Problem:

- When a vehicle is not accelerating and the engine clutch is disengaged from transmission Because the wheel is still connected to the gearbox there is an energy loss due to the rotation of the gearbox and belt drive.
- The aim was to design an auto disengagement clutch to address this issue and install it in Team Eta 2015 Prototype car to enhance efficiency.

Approach:

- I wanted to design a clutch that can disengage the wheel and transmission when the engine is disconnected from the transmission and does not require any external power source.
- Also it should be as small to fit on the wheel hub.

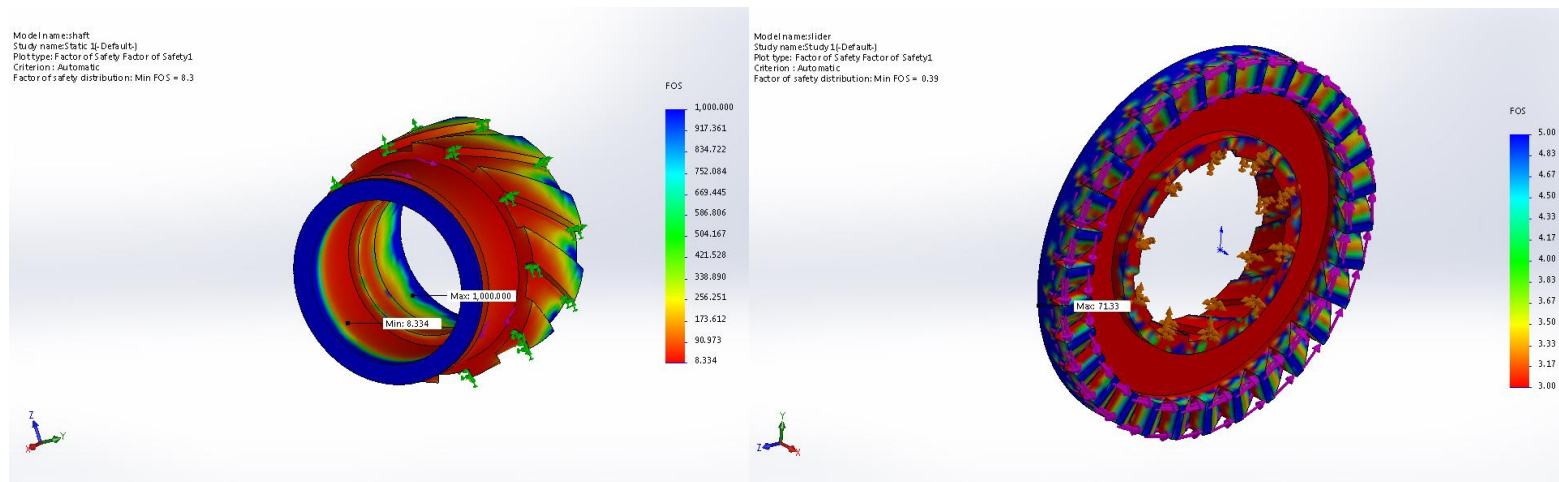
Solution:

- Designed a clutch system that works on the principle of inertia, friction angle of threads and using clutch teeth similar to dog clutch.
- Reduced the system losses by adopting a unique/customized mechanism for the rear wheel, further improving coasting and efficiency by nearly 48%.

My Role:

- Conceptualization
- CAD & Production drawing GD&T
- Design for Manufacturing & Assembly
- Manufacturing from vendors
- Assembly, Testing

Static analysis of clutch components Shell Eco-Marathon 2015:



CAD design of clutch Shell Eco-Marathon 2015:

