



Abstract

This thesis focuses on a sequential gear box for an electric track day car. Moving away from the norm of one reduction gear box we focus on a sequential shifting gearbox. Through the use of a sequential shifting gearbox there is a considerable advantage obtained over the conventional single speed gear box that are used in electric cars, as it is a multi-speed gear box in nature. This project seeks to go beyond the advantage obtained by the sequential gear box which is given to it by its base technology. The project looks into educated reasons as to why a sequential gear box was chosen for a track day car without sticking to the convention which is a standard manual gear box or a single speed gearbox. Researches had been done in order to study the scope of the project. This thesis includes the solid works drawings and modelling that were done to design the transmission according to the calculations done. ANSYS simulations and other necessary calculations that are required for the transmission system design were done as required. This thesis also includes the explanation of the existing systems of the powertrains and the reason for the selections of this sequential mechanism. Calculations based on the gear ratios were done to design a transmission to obtain the required torque conversions. This project also explains on the reasons for material selection and how these chosen materials are heat treated before using them for the design. The thesis also explains how this sequential gearbox can be further developed in future by introducing light-weight materials to various parts of the gearbox.

Keywords; sequential gearbox, multi-speed gearboxes, gear ratios, torque conversions, light-weight.