**CHAPTER 3: Design of Proposed Generator**

1. **Introduction**

In previous chapters, background about wind energy conversion systems and general perspectives of most used generator types are given. In chapter 2, direct drive axial flux permanent magnet generator is chosen for design in this thesis study. In this chapter electrical and mechanical design parameters of axial flux permanent magnet generator will be described. Then, a comparison of electromagnetic FEA and analytical calculation for given dimensions of proposed generator will be given to check for the accuracy of the finite element analysis technique.

1. **Mechanical and Electrical Parameters**
2. **Sizing Equations**
3. **Geometrical parameters**
4. **Phase turns, Phase resistance, inductance and air-gap**
5. **Volume and mass equations**
6. **Losses**
7. **Power and Efficiency**
8. **Electromagnetic FEA vs Analytical evaluation for given dimensions**