



## **Chapter Five**

### **Conclusion and Recommendations**

#### **5.1 Conclusion**

The design calculations for the 4 cylinder engine was performed with a compression ratio of 16.5 to produce a power of 103 kW, It was found that the required size of the engine is 5.3 liters. However, this size is relatively large for the engine's output power. For that a 1.6 turbocharger compression ratio was added to increase the engine volumetric power from 19.43 to 36.9 kW/liter, the fuel consumption from 33.547 kg/hr to 21.41 kg/hr , and reduce the displacement of the engine from 5.3 to 2.8 liters. But the addition of the turbocharger caused a raise in engine temperature and for that a cooling system was designed for the engine reduce the temperature.

After that a drawing in SOLIDWORKS program was made to display the engine structure, assembly and location of all basic parts.

#### **5.2 Recommendation:-**

The followings are the conclusive remarks and recommendations for further studies in this direction.

1. The engine need the balancing calculations
2. Can take the one of the engine component in more details
3. Get better materials to increase the size of the turbocharger to get more volumetric power