5. Conclusions:

1. The wear rate of the coatings can be found with the help of pin on disc test under dry sliding conditions.

2. The design of experiment showed that the variable chosen that was load (40, 50 and 60 N) with the different coatings (air plasma arc spray coatings, hard chrome plating and gas nitrinding) and sliding speed (500 RPM) and their interaction was significant.

3. The wear rate was depended on the load at constant sliding speed. With increase in load the wear rate was found to be increased. The wear rate was also found depend on the pin material, the wear rate in case of Tungsten carbide pin was higher than that of high carbon steel pin & nickel pin. The wear rate of coating with tungsten carbide pin was found higher than high carbon steel pin & nickel pin.

4. The coefficient of friction was found low at high load and high sliding speed condition. The coefficient of friction of air plasma spray coating with En-31 pin at 40 N loads was found to be 0. 0.4080. It was found decreased to 0.3883 at a load of 60 N and the sliding speed was kept similar. The coefficient of friction of the hard chrome plating at the 40 N loads was found to be 0.3283. It was found increased to 0. 0.3541 at a load of 60 N and the sliding speed was kept similar. The coefficient of friction of gas nitriding was found 0.0042. When the load was increased to 60 N at the same sliding speed the co-efficient of friction was decreased to 0.1081.

5. The SEM micrographs showed that the wear mechanism of the coating was accompained by abrasion, micro cutting and adhesion.

6. The rise of temperature during the wear test was very low due to high heat conduction capacity of capacity of coatings.

7. The coatings can be used for piston rings, and can be used for cylinder liner or for light weight and high strength application such as bonnet and bumper of cars.