



MARA UNIVERSITY OF TECHNOLOGY

FINAL PROJECT
DIPLOMA IN MECHANICAL ENGINEERING

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PREFACE

Gas compressors are used for raising the gas pressure and transporting the gas from the location to the factories and residences. Water is very scarce in most of the areas and cannot be used for cooling single stage compressors. Power input for compression can be reduced by circulating air around the compressor.

Electric energy is also consumed for blowing air but the cost can be neglected if the air is coming from fans that are used for supplying air to the technicians working in the production area. Air can be passed through ducts and can be circulated around compressors. After calculating the optimum velocity of air, the system can be adjusted for the automatic control. Our project is limited in finding the optimum velocity. Designing automatic control is beyond our scope because of limited time.

CHAPTER 1

AIR COMPRESSOR

1.1 INTRODUCTION

Compressed gases are widely used for different purposes such as;

1. Storing compressed gas in the cylinders for transporting and other uses like supplying oxygen for patients in hospital and natural gas for domestic purposes.
2. Compressed air used to power tools, move conveyers, transport products and make process applications possible.
3. Automatic control in pneumatic system.
4. Liquidation of gases.

Compressors are used to raise the pressure of gas from a low to high pressure. They take the definite quantity of gas and deliver it at a required pressure . In order to increase the efficiency of the compressors, the input of mechanical work should be minimized.

In this project efficiency will be increased by lowering the temperature of gas during compression process. We will also see what is the effect of air cooling towards the polytropic index n , volumetric efficiency, power input and to find the optimum air velocity needed to increase the efficiency.