PULSE JET ENGINE

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ABSTRACT

This project, a design of pulsejet engine has been carried out under Encik Nazri supervision. The important of this project is to design our own pulsejet based on empirical correlation. The data was obtained and then gathered to find the average dimension fro our pulsejet.

During testing, there are so many discoveries has been made such as the best material that can be used, the best fuel for different ignition system and small error in designing critical part would cause a poor result. The causes also have been discussed to help people understand what is the factor that should be considered in pulsejet design.

Lastly, some recommendations are been made to improve our future design. We hope from this project we could understand the basic knowledge about the pulsejet and we are happy if other students to build a better pulsejet can use this project as a guide.

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CHAPTER 1

INTRODUCTION

1.1 Introduction of pulsejet engine

A pulse jet engine is a very simple form of aircraft engine, falling somewhere in between true jets on the one hand and rockets on the other. The operating principle is simple: air is allowed to flow into the front end of a tube and mixed with fuel. Typically, valve then close at the front of the tube, the fuel is ignited, and the expanding gases exit from the rear end of the tube, producing thrust; the valve then open again, allowing fresh air into the tube, and the cycle starts again. The cycle frequency is dependent on the length of the engine itself and, for a small model-type engine may be typically around 250 pulses per second whereas for a larger engine such as the one used on the German V1 flying bomb, the frequency was closer to 45 pulses per second.

A Pulse jet is a fuel-air reaction engine used to power aircraft. It is comprised of a one-way air inlet valve, a combustion chamber, and a resonant exhaust tube (tailpipe). It also has a means of admitting and mixing fuel with the intake air (or injecting fuel into the combustion chamber), and a means of ignition when the engine is started. Once the engine is running there is no need to provide further ignition. There is also some means of providing combustion air to start the engine from a compressed air supply.

The combustion cycle is comprised of several phases: Ignition, Combustion, Exhaust, Induction, Compression, and (in some engines) Fuel Injection.

Starting at ignition within the combustion chamber, a high pressure is raised by the combustion of the fuel/air mixture. The pressurised gas from combustion cannot exit