

UNIVERSITI TEKNOLOGI MARA

**FABRICATON AND ASSEMBLY ON
INTERIOR PART OF FORMULA
RACING CAR**

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ABSTRACT

Student teams from all over the world are challenged to design and build high performance race cars in the spirit of the Society of Automobile Engineer Formula ONE. The engine, transmission, and related systems make up the powertrain, which is largely responsible for the car's speed, efficiency, and overall performance on the racetrack. There are various obstacles in the way of developing a successful powerplant for an SAE Formula ONE car. These include incorporating energy recovery technologies for increased efficiency, maintaining dependability under harsh racing circumstances, and maximizing power output while abiding by tight weight and size restrictions. The objective of this project is to develop and deploy a custom bracket that maximizes efficiency and performance while adhering to Society of Automobile Engineers Formula ONE rules. Achieving a high power-to-weight ratio, increasing thermal efficiency, making the vehicle more drivable, and guaranteeing durability and dependability throughout competition are important goals. Conceptual design, in-depth engineering analysis, component selection, production, testing, and powertrain system validation are all included in the scope. The use of sophisticated modelling tools for performance prediction, component integration optimization, and comprehensive testing to verify durability and performance are emphasized. The study is important because it pushes the limits of powertrain design in a competitive setting, which advances automotive engineering. In addition to improving team competitiveness, the development of an effective and dependable powertrain offers insightful information for upcoming advancements in the automotive and motorsport industries. A high performances powertrain system with greater output, optimum weight distribution, improved power delivery, and reducing cost are anticipated results. It is expected that these outcomes will confirm the efficiency of the engineering solutions and design strategy used. [1]

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

The Society of Car Engineers (SAE) Formula one competition challenges collegiate groups to plan and construct single-seater race cars that encapsulate cutting edge car innovation and building ability. At the heart of these vehicles lies the powertrain, a complex framework comprising the motor, transmission, and related components. The plan and advancement of a productive and high-performance powertrain are basic to accomplishing victory in this profoundly competitive motorsport field. [2]

There are a number of important difficulties in creating the drivetrain for an SAE Formula one car. These include maintaining dependability under severe racing circumstances, increasing energy efficiency using cutting-edge technologies like energy recovery systems (ERS), and maximizing power output while abiding by tight weight restrictions. The powerplant has to endure the intense demands of acceleration, braking, and cornering that are characteristic of Formula one racing in addition to providing outstanding performance on the track. [3]

Cutting-edge technologies that are taken from their professional equivalents. Examples of these technologies include complex engine management systems and kinetic energy recovery systems, or KERS. These technologies seek to optimize power supply efficiency while adhering to strict competition laws that regulate variables like fuel usage and emission. [4]

Regulatory Framework: Engine displacement, fuel types, and overall vehicle dimensions are limited by SAE Formula one competition standards, which create a framework that teams must work within. Adherence to these restrictions necessitates meticulous engineering and design choices in order to maximize efficiency within the designated boundaries. [5]

Educational and Professional Development: Students gain significant educational experiences by working hands-on to apply theoretical knowledge in real world engineering problems as they design and develop a Formula 1 vehicle powertrain.