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ABSTRACTS BOOK

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ACSES (AUTOMOBILE COOLANT SENSOR SYSTEM)

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ABSTRACT

ACSES is a system to prevent the occurrence of engine overheating. ACSES warn drivers before the engine overheat, to prevent drivers from going further with a faulty cooling system that disturb the performance of the engine. We install a fluid level detector in the vehicle coolant tank. Coolant leakage is caused by a loose or leaked hose. The fluid level detector consists of two main parts. A reed switch and a magnetic floater. When coolant level is high, the magnetic floater is far from the reed switch, causing it to deactivate the circuit and vice versa. The circuit will be activated when the magnetic floater reaches a certain distance from the reed switch. We built a prototype to stimulate the car's cooling system. Our results showed that the fluid level sensors manage to give out an alarm before the coolant runs out completely, the system succeed to detect the decreasing of coolant. So, we can rely on ACSES as an early detection system to detect a faulty cooling system. ACSES can prevent the overheating of the engine that can cause damage and costly to repair. Installing of ACSES can surely maintain the condition of car engine as the original.

Keywords: cooling system, reed switch, engine overheating

1. INTRODUCTION AND OBJECTIVE

Almost all automobiles employ liquid cooling systems for their engines. Coolant contains corrosion inhibitors designed to make it necessary to drain and refill the cooling system only once a year, but other factors such as radiator cap leaks contribute to the leakage of coolant. So, in this project, we have put the fluid level sensor to detect the deficiency of coolant in cars. What is actually the fluid level sensor? A fluid level sensor is an electronic device that is designed to detect a certain level of liquid. A common design is a reed switch with a magnetic floater that is activated when the two components are in a certain distance. The device then sounds an audible alarm together with providing onward signaling. The objective of ACSES is to assists drivers or users to be aware of the level of coolant left in their car's expansion tank. This lowers the risk of negative incidents involving their car.

2. METHODOLOGY

2.1 Sketching the prototype

First, we sketched our idea. Then, we sketched where we put ACSES in the real automobile engine cooling system. After that, we sketched and labelled how ACSES functions in the automobile engine cooling system.

2.2 Making of the prototype

We use the fluid detector to detect the availability of the coolant in the expansion tank. We also use a sample radiator to simulate the automobile cooling system. We completed the process of making the prototype by installing the electrical components of the prototype. Lastly, we painted the base. This is the final look of our working prototype.



Figure 1. ACSES prototype

3. FINDINGS AND ARGUMENTS

3.1 Findings

We have tested the prototype to see if the fluid level sensor is capable of detecting the level of coolant in the cooling system of engine. We have used the fluid level sensor as a sensor to detect the level of coolant in our project. As a result, the fluid level sensor was able to detect the decreasing of coolant by producing an audible alarm as a warning for us. The fluid level sensor detects the level of liquid with a magnetic field when the magnetic floater gets near the reed switch.

3.2 Arguments

With a little budget ACSES can make the automotive industry safer. It prevents the possibility of engine overheating because it can warn the users before overheating occurs. This helps the drivers to be alert with the level of coolant left. ACSES helps the car engine to last longer and reduce risk of engine damage. In terms of user safety ACSES can prevent damaged engine that may lead to any worse accidents involving disabilities or loss of lives.

4. CONCLUSION AND SUGGESTION

ACSES is a new innovation in automotive technology in vehicle safety. Although it is a simple device it undeniably gives a huge impact to engine safety. This is because ACSES lowers the risk of engine damage and save large amount of money to repair the engine. We plan to make collaboration with car companies so that all vehicles will be using ACSES and create an application that track the sensor progress.

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Kelulusan daripada pihak YBhg. Profesor dalam perkara ini amat dihargai.

Sekian, terima kasih.

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