

DESIGN OF ENHANCED ENGINE COOLING SYSTEM IN TWO WHEELERS'

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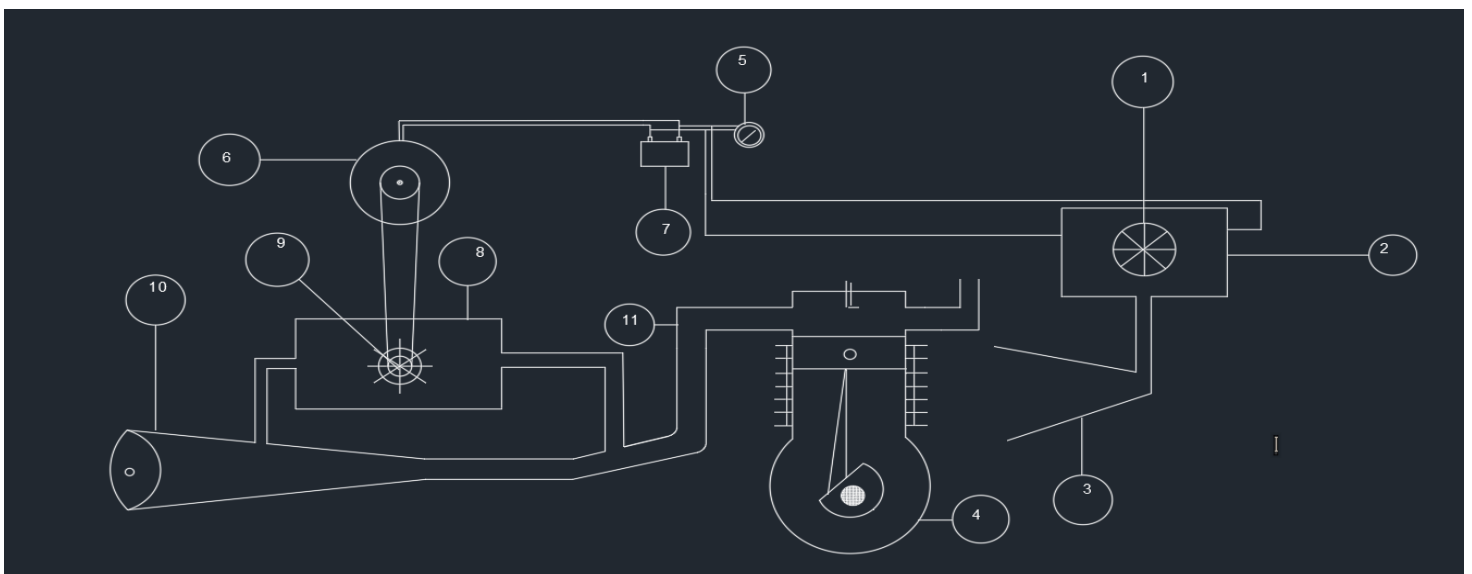
ABSTRACT: The main objective of this work is to enhance the engine cooling system during the ideal condition after a long run and other terms it is called as a secondary advance cooling system that improves bike performance and increases life span and reduces heat losses and heat generation as a result the engine can be run continuously for long time with less ideal time for cooling and this system can be easily installed in two wheelers.

INTRODUCTION

AS day by day population is increasing the dependency on the transportation is increasing rapidly majority of the people choose two wheelers as their mode of transportation to travel one place to another place and most of the people looking for quality engine bikes that runs for long life and we know that engine is the heart of the bike as we protect engine as a results its last for long usage with our cooling system the engine performance and life span is increased and this system has an additional benefit that it runs with the energy which is extracted from exhaust gases

Internal combustion engine cooling uses Air or liquid to remove the extra heat from the engine. We can use this air or liquid cooling system according to surrounding atmosphere, location and purpose of engine. We use air cooling system in low capacity engine or when engine is located in open area like our bikes engines. And when we have a higher capacity engine, we need a liquid cooling system, the liquid put into the surrounding of the engine and its works in closed loop system. Liquid has higher heat capacity than Air, and it will help to remove heat quickly from the engine but in liquid cooling system we needed additional assembly like radiator, pump, piping system increase the weight and cost. Aircraft design required lower weight engine cooling system, that's why we use air-cooled designs in engine cooling system. In Automobiles like cars we generally use liquid cooling system as per requirements and we try to optimize the weight of the engine cooling system

REPRESENTATION OF PROPOSED DESIGN



PARTS

1-BLOWER FAN	6-MINI-GENERATOR	11- EXHAUST MANIFOLD
2-BLOW BOX	7-BATTERY	
3-DRAFT TUBE	8-TURBINE BOX	
4-IC ENGINE	9-TURBINE	
5-IGNITION KEY	10-SILENCER	

1-BLOWER FAN

Blower is used to create an artificial forced air draught and this blower is mounted in blow box

2-BLOW BOX

It is a protective casing for blower fan and it is tightly closed with a single bleed hole through which air is forced out towards a draft tube through a small channel

3-DRAFT TUBE

The main purpose the tube is to direct the air that is coming from the blow box through an intermediate channel to the engine fins

4-IC ENGINE

Internal combustion engine which converts chemical energy to the heat energy and further the heat energy is converted to the mechanical energy

5-IGNITION KEY (TWO WAY KEY SYSTEM)

The two-way key system works in two ways. When we turn the key in clockwise direction the ignition system is activated and when we turn this in anti-clock direction the cooling system starts

6-MINI-GENERATOR

The purpose of the generator is to convert mechanical energy into electrical energy and this generator is coupled to the turbine by means of a rigid drive and this generated energy is further stored in the battery

7-BATTERY

Battery is an energy storing device which stores the energy that is generated from the generator and further this energy is used to run the blower

8-TURBINE BOX

It accommodates turbine and acts a casing cover to the turbine this box has one inlet and one outlet connection through inlet connection the exhaust gas enters and hits the turbine and through outlet connection the exhaust gas goes out

9-TURBINE

Turbine converts rotational energy into mechanical energy and further this energy can be used to generate electrical energy when this turbine output is coupled with generator input

10-SILENCER

The important part in the automobiles which reduces noise pollution and as well sound pollution and in other words it is also called as tail pipe where exhaust gases are emitted out to the environment

11-EXHAUST MANIFOLD

It is the manifold Where all the exhaust gases come out from the engine

WORKING

As engine starts the fuel in the combustion chamber starts burning when it burns the waste gases are produced in the engine and those waste gases are sent out through the exhaust manifold and this exhaust manifold output is connected to the silencer and through silencer the exhaust gases are sent out to the environment and near to the silencer an arrangement is made for turbine box a small bleed is created in the silencer and the bleed is connected to the turbine box through a pipe the exhaust gas from the silencer passes through the bleed valve and enters to the turbine box where the gas hits the turbine and makes it to rotate and this turbine is coupled to the mini generator where the power is generated and further stored in the battery and this stored energy is further used to run the air blower

Which is located in front of engine cylinder and this blower creates an artificial cooling when the engine turned off and this blower helps for rapid cooling of engine and it turns of automatically when the engine reaches ambient temperature.

CONCLUSION

With this system the engine which is long driven for hours can be cooled with in less ideal time and this system has an additional benefit of generating power from exhaust gas with out using any electrical system in the bike and when the engine starts cooling evaporation of engine oil decreases and wear is also decreased as a result the heat from the engine is removed in very less ideal time and the life span of the engine is increased and this system is very portable and can be fixed to the any two wheeler.

FUTURE SCOPE

This system further updated technically and can employed be in the four-wheelers and in heavy trucks in the future

REFERENCES

- [1] Cooled by air and water by John H. Lienhard
- [2] Vehicle for hot weather
- [3] High temperature engines by Lloyd Kamo, Ardy Kleyman, Walter Bryzik, Ernest Schwarz-
- [4] [Katrina C. Arabe (April 11, 2003). ""Dummy" Thermostats Cool Down Tempers, Not Temperatures". Retrieved February 13, 2010.
- [5] James E. Brumbaugh, AudelHVAC Fundamentals: Volume 2: Heating System Components, Gas and Oil Burners, and Automatic Controls, John Wiley & Sons, 2004 ISBN 0764542079 pp. 109-119
- [6] "An Early History of Comfort Heating". The NEWS Magazine. Troy, Michigan: BNP Media. November 6, 2001. Retrieved November 2, 2014.
- [7] "Smart PID temperature control". smartpid.com. Retrieved October 10, 2018

[8] Automotive Thermostat Valve Configurations: Enhanced Warm-Up Performance Journal of Dynamic Systems Measurement and Control 131(4) • July 2009

[9] High performance thermostat, Tridon.com

[10] Sawyer, "Doc". "Thermostat Wire Color Codes". dr-fix-it.com. Retrieved March 7, 2015. [11] Transtronics, Inc. "Thermostat signals and wiring". wiki.xtronics.com. Retrieved March 7, 2015. [12] "Honeywell smart response technology". manualslib.com. Retrieved October 10, 2018.

[13] "Temperature Controllers Using Hysteresis". panasonic.com. Retrieved October 10, 2018.

[14] <http://www.siu.edu/~autoclub/frange.html>

[15] <http://www.astro.virginia.edu/~eww6n/physics/OttoCycle.html>

[16] <http://www.uq.edu.au/~e4nsrdja/teaching/e4213/Related/Cycles/Diesel.htm>

[17] <http://www.merlin.net.au/~bhampton/holdfast/howengines.html>

BIOGRAPHIE



VAKA VENKATA SAI HASINI student of SVCE of department of mechanical engineering (2016-2020). My current research is undertaken on enhancement of engine cooling systems. Published one journal on Performance Investigation on DI Diesel Engine by using Different Blends of WPO Blended with MA - Biodiesel along with Nano Additives



Dvs Mahesh student of SVCE of Department of Mechanical Engineering 2016-2020. My current research is undertaken on 3D PRINTER- for methods of transferring an image on to a 3D surface and 3D printed object is achieved using additives. I have done a project on BONE CONDUCTION DEVICE- The abridged version of bone conduction earphones is that they rest directly on the listener's cheekbones.



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