Four Valve Single Cylinder Diesel Engine

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Abstract—everyone dreams of future generation vehicle how new technologies will impact on development aesthetic and ergonomics design of our future diesel bullet. In this present world investigation on four stroke diesel engine and also single cylinder has been carried out in modification of turbocharger, supercharger and combination of both. Now if we used four valves in single cylinder diesel engine (two inlet and two exhaust) overall efficiency and performance of engine increases, this will result give us maximum rpm of engine. These will definitely resulting future research work which can be helpful in revolution in automobile sector

Keywords—Aesthetic and ergonomics, Conventional engine, Developed bike, Two inlet two exhaust valves, Performance evolution

I. INTRODUCTION

India is one of the fastest developing countries with stable ergonomic growth which results in more demand for transportation. Better torque, consumption of fuel and capacity is directly proportionate to demand. India trims 2015-16 fuel demand forecast on slow growth.

Present scenario the fossil fuel for petroleum fuel is decanting day by day with tremendous increasing fuel prizes also result in large pollution and hazardous to engine exhaust.

By using the two inlets and two exhausts valve in single cylinder diesel engine we achieve some of the benefits of turbocharger.

Due to this design there will be reduction in carbon percentage in exhaust gas so as a result of this design single cylinder diesel engine is converting to BS3(Bharat Stage). This design is also helpful for the future generation of bike.

II. SIMULATION WORK

Old and new design of cylinder head

- \textit{Old cylinder head}

- \textit{New cylinder head}

By using solid work CAD software we made the 3D model of the four valve single cylinder diesel engine by means of it we manufacture the cylinder head. We get idea about the quantity of material required, overall dimensions of the cylinder head, by using CAD software. The following pictures show the 3D model of the cylinder head having four valve.
The 3D view of the four valve cylinder head assembly. Which having four ports, i.e. two inlet and two outlet ports. Generally single cylinder diesel engine has two valves. But by increasing the number of valves fuel inlet get increases. It will help engine to increase efficiency. Fig: contains the rocker arm, valve springs, valves & injector. It shows assembly view of the cylinder head. Fig shows detail drawing of the cylinder head.

III. CONCLUSION

By implementing four valves to the single cylinder diesel engine it helps to increase efficiency of the single cylinder engine. Four valve engine has better breathing and may be able to operate at higher revolutions per minute (RPM) than a two-valve engine, delivering more power.

To overcome vibrations and exhaust gas problems we used four valves instead of two valves. The drawback is that it is complicated in construction and manufacturing cost is high. And also there is need to design the yoke for valve operating at a time.

Table: ENGINE SPECIFICATION

<table>
<thead>
<tr>
<th>Make and model</th>
<th>Greaves 5520</th>
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<tbody>
<tr>
<td>Engine type</td>
<td>Single cylinder, four stroke</td>
</tr>
<tr>
<td>Cylinder capacity(cc)</td>
<td>325</td>
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<tr>
<td>Bore(mm)</td>
<td>78</td>
</tr>
<tr>
<td>Stroke(mm)</td>
<td>68</td>
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<tr>
<td>Speed(rpm)</td>
<td>3000-3600rpm</td>
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<tr>
<td>Rated power</td>
<td>3.17kw@300rpm</td>
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REFERENCES