

***Single Hole Diameter Variation In Water Injector Nozzle Of Performance
Machine 4 Cylinder Single Step***

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ABSTRACT

Engine performance can be decreased because some things such as sub-optimal treatment and excessive compression in the combustion chamber can raise the temperature. Excessive temperature in the combustion chamber can cause knocking. Knocking is the burning of the parts that have not been subjected by a spark at the spark plug in the combustion chamber. Burning of the parts that have not been subjected by a spark at the spark plug happened very quickly and cause an increase in pressure, so the engine heat up quickly and cause rapid wear of the piston and the valve so that the engine performance drops. One of the solutions for excessive heat on the machine and reduce the symptoms of knocking is to implement a water injection system (Water Injection). With the water injectors in this research, to determine the torque and power with nozzle diameter variation and variation of variations in water discharge with the optimum decreasing temperature of intake manifold temperature. In this research optimal results are obtained by using nozzle \varnothing 0.1 mm , with debits 0,13 ml/s torque at 7,86 N.m at 3000 RPM, power of 5,151 HP engine speed at 7000 RPM and the temperature decreased by 42°C and engine speed at 9000 RPM while for torque and the lowest power obtained in nozzle consumption at \varnothing 0.3 mm at water debits of 0,33 ml/s, with the achievement of torque of 3,93 N.m and at engine speed of 6000 RPM, power of 3,389 HP at engine speed of 7000 RPM and the temperature decreased by 39,2 °C di 7000 RPM.

Keyword : *Engine Performance, Water Injector, Nozzle Variation, Water Debits and Intake Manifold Temperature.*