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Diesel Engine Performance Optimization to Reduce Fuel Consumption and Emissions Issues

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Abstract : In this article, 16 cylinder motor combustion CFD modeling with a diameter of 165 mm and 195 mm along the way to help the FIRE software to optimize its function to work. A three-dimensional model of the processes that formed inside the cylinder made that involves mixing the fuel and air, ignition and spraying. In this three-dimensional model, all chemical species, density of air fuel spraying and spray with full profile intended to detailed results from mixing the fuel and air, igniting the ignition advance, spray, and mixed media in different times and get fit by moving the piston. Optimal selection of the model for the shape of the piston and spraying fuel specifications (including the management of spraying, the number of azhneh hole, start time of spraying and spraying angle) to achieve the best fuel consumption and minimal pollution. The spray hole 6 and 7 in three different configurations with five spraying and gives the best geometry and various performances in the simulation. 6 hole spray angle, finally spraying 72.5 degrees and two forms of spraying a better performance in comparison with other items of their own.

Keywords : spray, FIRE, CFD, optimize, diesel engine
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