
실험을 통한 가솔린-바이오디젤 혼합 연료의 연료 비율에 따른 연료 분사 특성 분석

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Fuel Injection Characteristics Analysis Based on Fuel Ratio of Gasoline-BioDiesel Blended Fuel by Experiment

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Emission technologies are being developed to reduce emissions of vehicles such as automobiles and ships due to the globally tightened emission regulations. In the case of diesel engines, hydrogen - diesel or natural gas - diesel dual fuel technologies using spontaneous combustion characteristic are studied to reduce emission. However, due to the characteristics of mixed fuels showing nonlinear results, the degree of spray angle and spray penetration distance accorded to the ratio of fuel can not be predicted theoretically. In order to solve the problems that may occur when a large amount of fuel contacts the inner wall of the cylinder (cylinder temperature change in local part of cylinder, reduction of combustion efficiency due to solidification of fuel, spontaneous combustion at unintentional point, etc.) spray angle and spray penetration distance according to the ratio of fuel were investigated experimentally. Experiments were carried out for 25%, 50%, and 75% of gasoline-biodiesel blended fuel and for pure biodiesel, respectively, and the remaining conditions such as temperature were the same. In order to measure the spray angle and spray distance of the injected fuel, the side of the injector was photographed with a high speed camera. After the experiment, the inside of the experimental vessel was stabilized through the waiting state for a while, and then the next experiment was performed. Experimental results show that the spray angle increases and the spray distance decreases with increasing gasoline ratio in gasoline - biodiesel blended fuel. However, the rate of change of the spray angle / spray distance with the change of the ratio of each fuel was not constant.

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