19SKSAE_B082

분위기 조건에 따른 가솔린-바이오디젤의 분무특성 연구

강 유 진[1)] · 삭다 통차이[1)] · 김재광[2)] · 전완재[2)] · 이호길[3)] · 임 옥 택[*4)]

울산대학교 기계공학부 대학원[1)] · 모토닉[2)] · 자동차부품연구원[3)] · 세종공업 기술연구소 · 울산대학교 기계공학부[*5)]

Study on effect of ambient conditions to the gasoline-biodiesel spray characteristics

Yujin Kang[1)]·Thongchai Sakda[1)] ·Jaekwang Kim[2)]·Wanjae Jeon[2)]·Hokil Lee[3)]·

Sungwook Jang[4)]·Ocktaeck Lim[*5)]

Graduate school of Mechanical Engineering, University of Ulsan, 44610 , Namgu Daehakro 93, Ulsan[1)]
Motonic Coporation, 530, Dalseo-daero, Dalseo-gu, Daegu, Republic of Korea[2)]
Korea Automotive Technology Institute(KATECH), 303, Pungse-ro, Pungse-myeon, Dongnam-gu, Cheonan-si, Chungcheongnam-do, Republic of Korea[3)]
Sejong Industrial Co.,LTd, 44610, 120 Heungdeokjungang-ro, Gilheung-gu, Yongin-si, Gyeonggi-do[4)])
School of Mechanical Engineering, University of Ulsan, 44610 , Namgu Daehakro 93, Ulsan[5)]

Key words : Schlieren(슐리렌계측), Spray penetration length(분무관통거리), Spray cone angle(분무원추각), Spray visualization(분무가시화), Constant Volume Combustion Chamber(정적연소기)

[*] Corresponding Author, E-mail: otlim@ulsan.ac.kr

Abstract : The object of this study is to observe the spray characteristics of gasoline-biodiesel fuels when ambient temperature and pressure change. In the experiment, a constant volume combustion chamber(CVCC) was used for spray visualization. Homogeneous mixed gas was used as the atmospheric gas. Characteristics of spray at ambient temperature (60 °, 80 ° C) and ambient pressure at 20 bar, 30 bar, and 40 bar were investigated. Injection parameters were investigated such as spray penetration, spray cone angle and injection pressure. For the spray visualization, the Schlieren technique was used and the image was analyzed using image processing. As a result, the spray penetration tended to be short when the injection pressure was low and the ambient pressure was high, at the same time the spray angle was wide. With higher the injection pressure, the longer the spray shape and the shorter the spray angle.

Acknowledgement

This work was supported by the Industrial Strategic technology development program (10053151, Development of the 800 kPa Fuel System of a High Pressure Precision Control for NGV) funded By the Ministry of Trade, industry & Energy (MI, Korea) and This research was supported by The Leading Human Resource Training Program of Regional Neo industry through the National Research Foundation of Korea(NRF) funded by the Ministry of Science, ICT and future Planning(NRF-2016H1D5A1908826)