예 연소실을 갖는 점화플러그의 연소 특성에 관한 연구

지명석†(아주자동차대) · 유성연*(충남대) · 박준택**(한국에너지기술연구원)

A Study on the combustion characteristics of Spark Plug with pre-ignition Chamber

Myoung-Seok Jie, Seong-Yeon Yoo and Jun-Tack Park

Key Words: Spark plug(점화플러그), Combustion characteristics(연소 특성), Pre-ignition chamber (예 연소실)

Abstract : New concept spark plug was developed to study its influence on the combustion characteristics of SI engine. It has pre-ignition chamber in the lower end of spark plug and flame hole. Fresh mixture gas can be got in pre-ignition chamber of spark plug without any fuel supply system. This spark plug was tested to a commercial engine. Fuel consumption rate, emission gas and MBT timing were measured in the engine dynamometer varying the flame hole number, hole position, hole size of the pre-ignition chamber of the spark plug. New concept spark plug induces fast burn in combustion than comparing with the conventional spark plug. MBT timing was retarded about 3~5° crank angle. The flame hole number, hole direction and volume of pre-ignition chamber were found to influence emission gases.

공기 다단 연소기에서 NOx 저감에 대한 재연소 과정의 실험적 연구

김혁수† · 백승욱* · 이창엽**(한국과학기술원)

Experimental Study of Reburning on No_x Reduction in a Three Staged Air/Lpg Flame

Hyuk Su Kim, Chang Yeop Lee and Seung Wook Baek

Key Words: Reburn(재연소), Three staged air(3단 공기), NOx(질소산화물), LPG(액화석유가스)

Abstract : Reburning is a useful technology in reducing nitric oxide through the injection of a secondary hydrocarbon fuel. An experimental study has been conducted to investigate the effects on reburning process of LPG as secondary fuel on NOx reduction in a 15kW large-scale laboratory furnace with a multi-air staged burner. The paper reports the influence on NOx reduction of the reburn fuel fraction in the reburn zone. For comparison, the reburning effects were examined for a combustor with two types of burner; a regular single staged burner and a multi-air staged burner. As a result, NOx reduction was improved by 45 percent when the reburn fuel fraction was 25 percent. NOx reduction significantly relied on the flow characteristics due to the injection of the reburn fuel and burnout air in furnace.