

예 연소실을 갖는 점화플러그의 연소 특성에 관한 연구
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A Study on the combustion characteristics of Spark Plug with pre-ignition Chamber

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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 NO_x 저감에 대한 재연소 과정의
실험적 연구

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

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Key Words: Reburn(재연소), Three staged air(3단 공기), NO_x(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 NO_x reduction in a 15kW large-scale laboratory furnace with a multi-air staged burner. The paper reports the influence on NO_x 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, NO_x reduction was improved by 45 percent when the reburn fuel fraction was 25 percent. NO_x reduction significantly relied on the flow characteristics due to the injection of the reburn fuel and burnout air in furnace.