OAK RIDGE NATIONAL LABORATORY HIGHLIGHT

October 3, 2006

ORNL Helps Develop and Evaluate New Long Life Spark Plugs

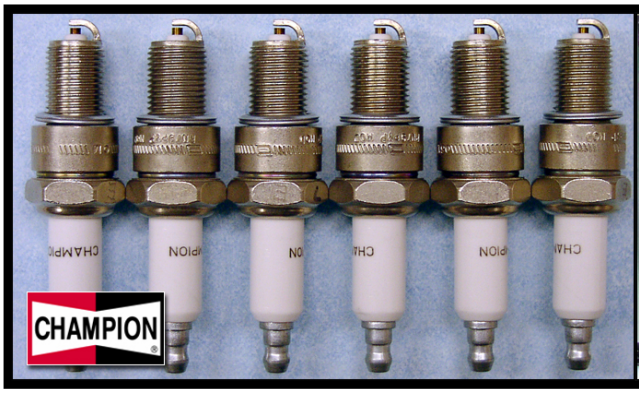
ORNL Investigators: Mike Brady, Mike Kass, HT Lin, Norberto Domingo, Jim Tassitano

Several developmental spark plugs fabricated by Federal Mogul/Champion using alloys selected and modified by ORNL are being evaluated in an industrial natural gas engine (Cat G3406). Multiple developmental alloys (6) were used in these plugs and were selected based on previous research activities at ORNL and Champion.

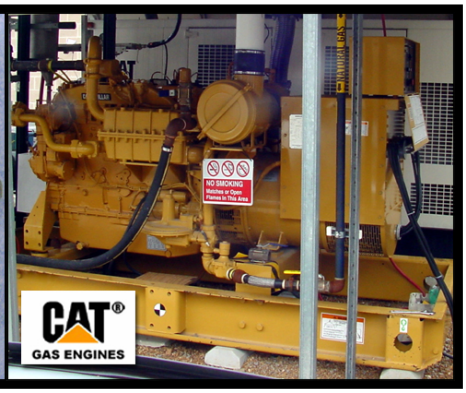
Long life spark plugs are important to reciprocating engines as the plugs represent a major maintenance expense, reliability concern, and are an enabling (or limiting) component allowing for more efficient, less polluting engine operation. The goal is to help develop alloys with twice the life of state-of-the-art plugs resulting in significant cost and operational benefits.

A full interpretation of the data and additional alloy recommendations will be available after the conclusion of the engine evaluation study.

The project has benefited from substantial internal and external collaborations. Internally, materials, optical and engine expertise is used to characterize, design, and assess novel spark plug alloys and was given an "Exceptional Effort" award from internal management. Externally, ORNL has been collaborating extensively with Federal Mogul/Champion on alloy selection, gasoline engine testing, and plug fabrication. Results from this collaboration may be incorporated in Champion's automotive plugs as well. Additionally, Woodward expressed an interest in collaborating with ORNL on complimentary portions of this spark plug effort.



Experimental NG spark plugs manufactured by Federal Mogul using ORNL advanced alloys



CAT G3406 NG engine to be used for spark plug testing