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Laser Ignition System by Using Composite Ceramics for Combustion Engine

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ABSTRACT

Different lasers have a wide range of expanding scientific, engineering, and medical applications. The basic principles, operation, and applications of lasers for fuel ignition are succinctly reviewed in this article. The goal is to outline the current significance of lasers for fuel ignition and to talk about how they operate in combustion engines as well as their uses, benefits, and drawbacks. In essence, there are four ways that laser light might start an ignition event. They are also known as photochemical ignition, resonant breakdown, thermal initiation, and non-resonant breakdown. The non-resonant initiation of combustion technique is currently the most widely used method because of its ease of usage and freedom in choosing the laser wavelength. In many ignition systems, lasers can be used in place of conventional spark plugs. We are confident that internal combustion engines will keep powering our cars. Improvements in combustion and treatment are required to reduce pollution and the environmental impact of the continuous use of IC engine vehicles as the worldwide mobility of products and people continues. The concept of the ignition process can be altered by the laser ignition system. When compared to a normal ignition system, it has many benefits.

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Study on surface roughness & material removal rate in vertical milling of EN8 and EN31 steels by Taguchi's and GRA techniques

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ABSTRACT

The optimum machining parameters of milling operations are of great concern with manufacturing environment. The aim of the work is to relate the comparison of the surface roughness & material removal rate for EN8 and EN31steel alloys. In these, EN8 are used for moderately stressed parts of motor vehicles while EN31 are used for components that are subjected to severe abrasion, wear or high surface loading due to its high resisting nature against wear. The experiments have conducted on vertical milling machine using carbide tool. This investigation deals with the optimization of the milling parameters by using Taguchi's optimization and GRA techniques to select the best combination of input parameters towards