NEW PRODUCT PATENT APPLICATION
PRODUCT DESCRIPTION
HIGH ENERGY INTERNAL COMBUSTION ENGINE
SPARK BASED IGNITING SYSTEM

This new igniting system for internal combustion type engines utilizes entirely new combinations of technologies as compared to traditional spark plug systems. Conventional systems utilize a sparking plug that is inserted into the combustion chamber. The sparking portion of this inserted plug is exposed to the forces of the combustion process. This sparking plug is caused to spark via some form of electrical storage device utilizing a high voltage current of some type.

This new product does not utilize a sparking plug as an insert in to the combustion chamber, nor does it utilize a discharge of a high voltage current via a wired delivery system in the conventional mode. The introduction of new ceramic technologies will come in to play in the construction of the engine components as the piston units and the cylinder wall jackets may be constructed out of porcelain or ceramic composites.

This new igniting system shall be referred to as The Pulse Mode Igniting System. (PMIS) This Pulse Mode Igniting System utilizes fixed and replaceable set of "electrodes " positioned inside the combustion chamber. These electrodes are embedded in to the top combustion surface face of the piston, and in to the upper internal surface of the cylinder head. This twin approach to providing sparking electrodes will result in a more uniform distribution of the sparking ignition force which will result in a greater utilization of the fuel provided for combustion. Positioning sparking electrodes in the piston face surface and the internal chamber surface of the head assembly sets up a shock wave that is ignited on both ends of the cylinder and burned toward the middle of the chamber. This shock wave continues to burn and be ignited as the power stroke is expelled and continues until all fuel is burned. This compete combustion of the utilized fuels will result in significant increases in efficiency and developed horsepower.

These electrodes are powered or fed the sparking energy via a radio frequency energy transparent portal positioned in the cylinder head. Radio frequency energy is coupled through this electromagnetic energy transparent portal in the form of an electromagnetic wave, in to the cylinder and is absorbed and acted upon by the sparking electrodes.

Energy for the system is supplied by a Radio Frequency Generating Module. There is one module for each cylinder. This module is positioned on top of or in proximity to the cylinder head which will allow the efficient coupling of the energy in to the cylinder. This Radio Frequency Generating Module is capable of supplying the energy required to initiate the igniting force required by the sparking electrodes.

Control systems for this igniting system consists of a computer system that is carried in proximity to the igniting system. This computer system utilizes sensorial systems and devices that continuously monitor the combustion conditions of the subject engine and of the combustion products. These sensorial data systems are a part of a control package that makes continuous determinations as to the condition of the combustion products. Based on established tables of datum, the Control Module instructs the Radio Frequency Generating Module in the mode of operation required to create a complete combustion of the indicated fuels utilized in the engine. During combustion the sensorial packages determine whether the combustion meets the required criteria for maximum horsepower. Numerous peramiters are sampled and corrected. These will include but not be limited to, igniting start time, igniting stop time, duration of igniting pulse, continuous igniting action, pulsed igniting action. Unlike conventional systems, this igniting system is capable of supplying igniting arc in a sustained mode for a period of time greater than the power stroke of the cylinder. A continuous igniting arc can be started and sustained until the exhaust valve opens which would encompass a rotation value of greater than 180 degrees thus utilizing all of the fuel in the cylinder and guaranteeing a complete burn. Without continuous ignition, the detonation within the cylinder, once ignited, can and often does burn or snuff itself out which wastes fuel and sacrifices horsepower.

Numerous patents will be produced by the manufacture and design of the components related to this device. Among them will be,

4 pointed igniting insert
Radio Frequency Igniting Module
R.F. transparent energy ported heads
Software for the operational computer
Ceramic pistons
Ceramic cylinder liners

Commercial off the shelf products will include

Sensorial package components
Operation computer system

The anticipated horsepower increase is expected to be about 15%