

*(2009 NOVEMBER WEB PAGE ANNOUNCEMENT)*

# Bruce Crower and Will Matthews receive long-awaited patent:

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On September 15, 2009, the United States Patent and Trademark Office issued Patent No.: 7,588,000 for the Free Piston Pressure Spike Modulator For Any Internal Combustion Engine. (See diagram of this on Google.)

## *Necessity is the Mother of Invention*

Engineers have long attempted to overcome the damage at high peak detonation using heavier metals and massive engine components. Diesel engines especially, require rigid, heavy parts to contain the high pressure that occurs before and after top dead center of the piston. Efforts to preclude damage occurring under such pressures require heavy engines, and result in all-around greater engine cost and less payload.

## *How It Works*

The concept is based on a free piston which communicates with the combustion chamber and is air-pressure backed. When the high pressure spike of combustion occurs, the chamber volume increases before the work piston descends. The Free Piston Spike Modulator then returns to maximum position for supplementing the cylinder pressure and driving the piston downward at more favorable crankshaft angles producing higher torque.

Standard engines have peak combustion chamber pressures at near top dead center and slightly thereafter. However, the leverage factor on the crankshaft is at zero angle to produce power. Utilizing the Free Piston Pressure Spike Modulator; as the piston descends and the crankshaft leverage increases, the Spike Modulator system provides the pressure to rotate the crankshafts, thereby providing much increased torque, resulting in a more efficient engine.

## *Free Piston Pressure Spike Modulator Offers Many Possibilities*

Peak pressures are destructive to engine structures. Engines using the Free Piston Pressure Spike Modulator may be as much as 40% lighter in weight. Any internal combustion engine, especially diesels, could benefit using the system and it may be highly suited for aircraft use, possibly offering as much as 50% greater efficiency than standard turbine engines. Because the piston can bounce away without a decrease in power, the Free Piston Pressure Spike Modulator

provides better fuel efficiency, lower operating cost, and more choice and versatility of fuels, making gas, alcohol, diesel, jet, kerosene, coal oil, corn oil, and others all possibilities.

### *The Future*

I believe the Free Piston Pressure Spike Modulator has the potential to revolutionize internal combustion engines of all kinds transforming them into highly efficient, lighter in weight machines, especially diesels, resulting in better fuel economy, lower emissions, and giving the consumer more choice in fuel type.