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***NETL* REPORTS:**

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Steven Woodruff, a research chemist at the U.S. Department of Energy's National Energy Technology Laboratory (NETL), is one of the inventors of a laser spark distribution and ignition system developed at NETL which has recently been issued a patent.

Woodruff, a resident of Morgantown, WV, received his BS from the University of Michigan, Dearborn Campus, and MS and PhD in chemistry from the University of Michigan, Ann Arbor.

NETL has previously demonstrated that laser spark ignition can be used to reduce Nitrogen Oxide emissions and improve performance of Natural Gas Fired engines. Laser sparks provide more spark energy than conventional electric spark systems which enables engine operation at leaner conditions resulting in lower emissions. The missing component for taking this technology from the laboratory to commercial implementation has been finding a way to transfer the high power required to produce a spark to multiple engine cylinders. Dr. Woodruff's invention uses fiber optics to transmit lower power laser pulses to the engine cylinder and then amplifies these pulses using a laser amplifier or laser spark plug located at the cylinder. The fiber optics deliver energy in much the same way as conventional spark plug wires. The laser spark plug has a compact profile and has been designed to replace existing spark plugs.

The target market for this ignition system is natural gas fueled reciprocating engines used for pumping and power generation. Potentially, it could also be used for other ignition needs, including gas turbine engines, and can be applied to the Laser Induced Breakdown Spectroscopy sensor devices that Dr. Woodruff is currently developing.

NETL is one of the U.S. Department of Energy's national laboratories. NETL – "the ENERGY lab" – focuses on America's economic prosperity, which requires secure, reliable energy supplies at sustainable prices. Three overarching issues characterize the energy situation in the United States. They are energy affordability, supply security, and environmental quality. The Department of Energy's only government-owned, government-operated national lab, NETL is a research and technology center where these energy challenges converge and energy solutions emerge. NETL implements a broad spectrum of energy and environmental research and development programs through its own research staff and through funded research at other labs, universities, and industry that will return benefits for generations to come.

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