



Laser-induced ignition for combustion engines

Laser-induced ignition systems for more precise and cleaner combustion engines

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Ambition

Stricter emissions and consumption standards require new concepts for internal combustion engines. Downsizing and lean-burn strategies improve efficiency and reduce emission but demand better ignition processes. Laser-induced ignition offers significant advantages over traditional electric spark ignition and is suitable for both classic and new combustion processes, and new "green fuels."

Advantages

- Ignition of lean mixtures and new fuels
- Improved engine efficiency and reduced fuel consumption
- Longer spark plug life (no electrode)
- Static or dynamic laser focusing allows for free positioning of ignition point
- No flame quenching

Our expertise

We develop complex and ultra-stable opto-mechatronic systems for harsh operating conditions like extreme temperatures, vibrations, and high/low pressure. Design, manufacturing, system integration, packaging and testing serves for the complete value chain for prototypes and feasibility experiments.

Applications

- Combustion engines for energy co-creation
- Large marine engines
- Rocket propulsion systems for space
- Energy generation in hydrogen and methane plants

*Cover and Top:
A set of laser spark plugs
during performance tests. The
phenomenon of air breakdown
is shown.*

Contact

Department
**Opto-mechatronic Components
and Systems**

Head of Department

Dr. Erik Beckert
Phone: +49 3641 807-338
erik.beckert@iof.fraunhofer.de

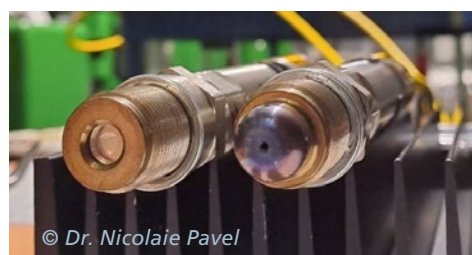
Fraunhofer IOF

Albert-Einstein-Strasse 7
07745 Jena
Germany

www.iof.fraunhofer.de



Four laser spark plugs installed on a gas engine by company 2G Energy AG



A close-up view. On the left: without pre-chamber. On the right: with pre-chamber.



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more info