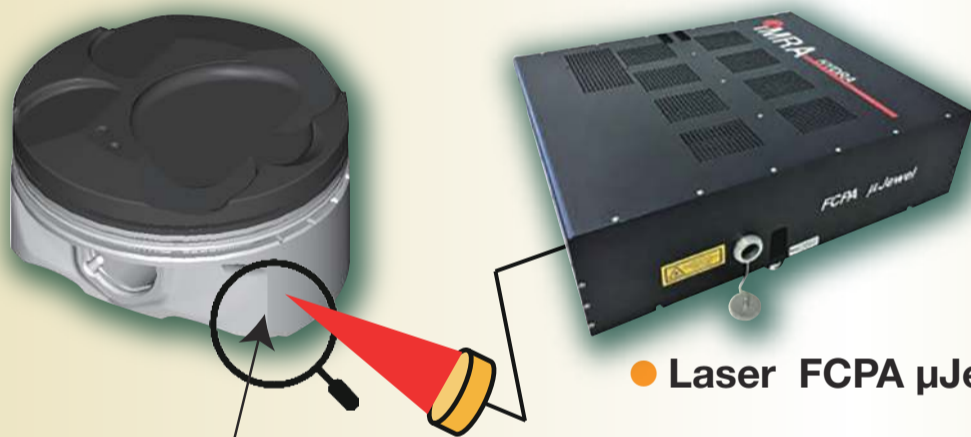




Technology to reduce friction of automobile engine pistons using femtosecond pulse laser processing

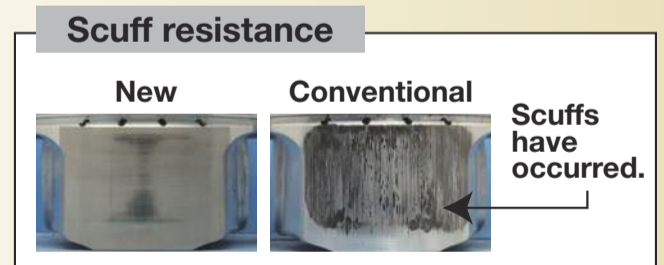
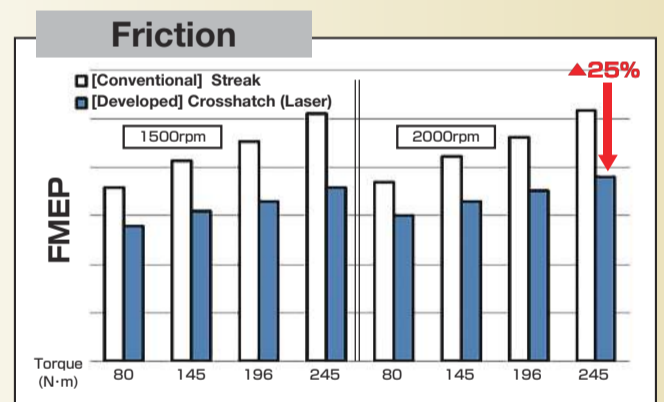
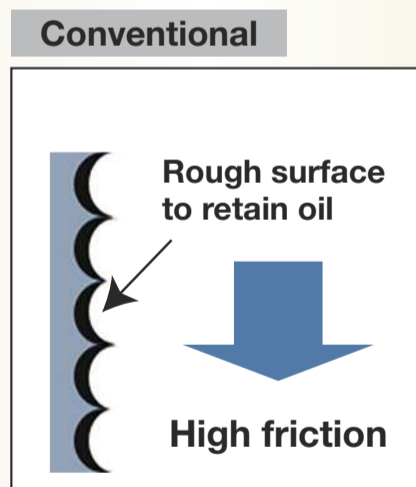
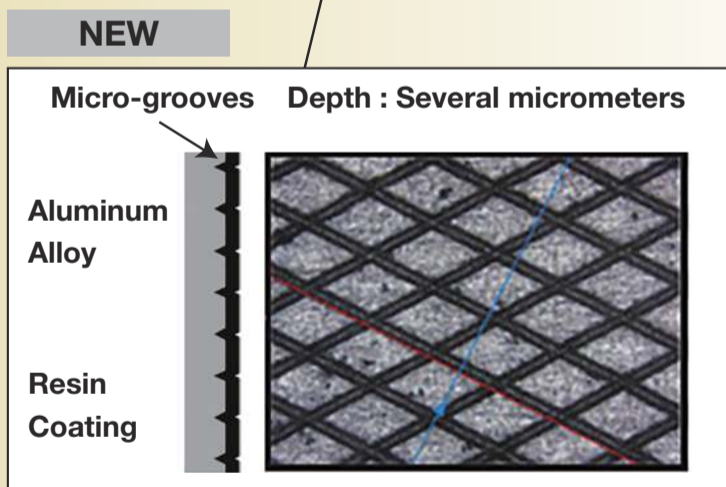


AISIN CORPORATION
ART METAL MFG. CO., LTD.
IMRA AMERICA, INC.



● Laser FCPA μJewel

- Wavelength : 1040nm
- Average Power : > 30W
- Pulse Duration : 700fs
- Repetition Rate : 1~5MHz



Features & Application

An industrial high intensity ultrashort pulse fiber laser that employs CPA technology, which won the 2018 Nobel Prize in Physics, is applied to mirror-finished sliding surface (piston skirt) of automotive engine pistons to create cross-hatched micro grooves. As a result, an oil reservoir can be formed on the mirror-finished part without spoiling the surface roughness, and the friction is reduced by 25% without causing scuffs. This greatly contributes to achieve a maximum thermal efficiency of 40% for the engine. The technology has been adopted in pistons for family cars globally and contributing to the reduction of CO2 emissions from automobiles. This technology can also be applied to many production equipment and jigs which have sliding parts, and is expected to further expand the applications of laser processing.

IMRA AMERICA, INC. is the most experienced femtosecond fiber laser company. The FCPA μJewel series, created with innovative technology and designed with proprietary fiber technology, has high reliability to satisfy requirement from industry for 24 hours a day, 365 days a year operation. We will continue to engage in innovative and creative research to contribute to industry.