

Poster Session

Poster Sessions for Academia

1st November

1. Vehicle Engine Laboratory, Meijo University

Prof. Kohei Nakashima

Observation of Axial Behavior of Piston Rings in a Two-Stroke Engine with Back Light of LEDs Mounted Inside Piston

We developed an experimental two-stroke engine with a transparent cylinder and a piston with LEDs mounted on its inside, so that we can observe the axial ring behavior with the light leaked through the side clearance between the ring side face and the ring groove side face. Using this engine, we investigated the influences of the cylinder ports and the piston behavior on axial behavior of the top and second rings.

2. Machine Elements Lab., Kyoto University

Prof. Tomoko Hirayama

Micro-Dimple Effect and Its Mechanism for Friction Reduction of Plain Contact under Mixed Lubrication

In this study, friction tests were conducted to determine the optimum depth of micro dimples effective in reducing friction of plain contact under mixed lubrication. In addition, the lubricant flow in the gap around micro dimples was visualized by fluorescence microscopy to elucidate the friction reduction mechanism.

3. Iijima Lab., Nihon University

Ryo Igarashi

2st Opposed Piston Engine Research and Development for Series Hybrid System

This engine is assumption that will use for power generation. Characteristics are high power, low vibration or noise, and high efficiency. We succeed engine test run through designing component. Currently, we are trying the Performance measurement for this engine and compared Single-Cylinder.

2nd November

4. Advanced Research Lab., Tokyo City University

Tatsuro Kichima

Numerical Study on the Effect of Injection Timing on Mixture Formation in Jet-Plume-Controlled Direct-Injection Near-zero Emission Hydrogen Engines

In direct injection hydrogen engines, the Plume Ignition and Combustion Concept (PCC) developed by the authors has been applied to improve thermal efficiency and reduce NOx emissions. In this study, the characteristics of the PCC combustion mixture formation were verified by numerical analysis based on experimental data of different injection timing.

5. Engine Research Lab., Tokyo City University

Yohsuke Inoue

Effect of Piston Skirt Diameter and Profile on Piston-to-Cylinder Friction Force

In this study, friction force was measured on single-cylinder floating liner engines with different diameters and profiles of the piston skirt. The friction reduction effect was evaluated by FMEP, 10% to 30% reduction was achieved with smaller piston skirt diameters. In addition, friction reduction of up to 25% was achieved with the profile modification, especially on the low revolution side.

6. Engine Research Lab., Tokyo City University

Riki Chida

Study on Oil Film Behavior and Vibration Transmission Characteristics between Crank Journals and Plain Bearings

To understand the vibration transmission characteristics through the oil film between the crank journal and the plain bearing, vibration was measured using an engine bearing tester. Frequency analysis of the measured vibrations indicated no peak in the natural frequency, suggesting the vibration transfer characteristics were due to the oil film.

7. Engine Research Lab., Tokyo City University

Masashi Shirai

Experimental Validation to Improve the Accuracy of Calculations to Predict Lubricating Oil Consumption

To improve the accuracy of the lubricant oil consumption (LOC) prediction method, the amount of LOC was measured by the S-trace method. By measuring the oil film thickness and pressure at the piston land, we compared our experimental and calculated results. In this session we introduce the flow near the oil ring.

3rd November

8. Motorsports Engineering, University of North Carolina – Charlotte

Prof. Norman Garrett

Development of a Rotary Valve Engine for Handheld Equipment

A multi-position 4-Stroke piston engine utilizing a novel rotary valve system was developed for handheld outdoor power equipment. The intent of the project was to create a low-emission 4-Stroke engine with 2-Stroke performance levels including high RPM limits and power output. This was accomplished using a rotary valve system in lieu of the typical poppet valves of traditional 4-Stroke engines.

Short presentation schedule (5 minutes presentation for each poster.)

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12:30-13:00	1, 2, 3	12:20-13:00	4, 5, 6, 7	11:00-11:15	8