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Hakan Kaleli

Yıldız Technical University, Turkey

Layer protection of oil additives, lubrication-friction-wear within surface coatings of piston rings against cylinder liner in internal combustion engines

This speech is related to our Joint Research and Development Project (Project No.114M833) signed between 2510-(TÜBİTAK) The Scientific and Technological Research Council of Turkey and (MHESR) The Ministry of Higher Education Scientific Research of Tunisia titled "Investigation of Piston Rings by New Developed Graphene Coating Method for Reducing Wear and Friction in Internal Combustion Engines". I will talk about some chronological order of my big tribological work since 1999 up to nowadays on crankcase oil additives, lubrication-friction-wear with several coatings (such as zinc phosphate, transferring synthesized method of graphene with support of GrafenBiotech Ltd. i.e.) of piston rings against cylinder liner in reciprocating motion within Tribotest Rigs and I.C. Engine Experiments. Colorful protective additive's layers formed on the rubbed surfaces under boundary lubrication conditions during experiments where the formal test conditions were applied using real engine material of piston rings and cylinder liner. Wear tracks, protective layers of additives were examined using digital optical, electron microscopy within X-ray diffraction analysis where additive layers were detected in nanoscale dimension.

Biography

Hakan Kaleli has completed his PhD in 1995 from Yıldız Technical University, Faculty of Mechanical Engineering, Automotive Division in İstanbul, Turkey. He teaches Internal Combustion Engines, Otto Engine Technology, Diesel Engine Technology, Tribology, Wear Lubrication, Oil Analysis and Cooling in Internal Combustion Engines. He has published many papers in reputed journals and is still working on automobile tribology.

kaleli@yildiz.edu.tr

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