Internal combustion engine tribology: future challenges and trends

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ABSTRACT

The tribology of internal combustion engine is an extensive field of investigation. Various tribology systems (piston – rings – cylinder liner, crankshaft and conrod bearings piston axis, turbocharger bearings, camshaft …) have to operate under varying conditions regarding oil feeding, load, speed and temperature. A major challenge for car industry is to reduce engine consumption while guarantying engine reliability and respecting environmental regulations. This can be achieved by different ways.

Four of them, which are engine friction reduction, hybridization, engine downsizing and new combustion concepts, directly concerns tribology. The aim of this conference is to present these four developments and to establish their impacts on the engine tribology system. Then, the future needs for engine lubrication engineers will be identified and traduced in terms of research opportunities in the field of experimentation and simulation.