

THE IMPACT OF BIOFUELS ON THE RUNNING-IN OF A THERMAL SPRAY COATING

D. Linsler^{a*}, H.-J. Winkler^{a,b}, R. Böttcher^a, M. Dienwiebel^{a,b}

*dominic.linsler@iwm.fraunhofer.de

^a Fraunhofer IWM, MikrotribologieCentrum μ TC,
Rintheimer Querallee 2a, 76131 Karlsruhe, Germany

^b Karlsruher Institut für Technologie KIT,
Kaiserstr. 12, 76131 Karlsruhe, Germany

KEYWORDS

Friction; Wear; Mixed lubrication; biofuel

ABSTRACT

One approach to reduce the CO₂-impact of transportation is the fabrication and use of biofuels in internal combustion engines (ICEs). In the case of incomplete combustion, oil in the engine is diluted with the fuel. ICEs are operated in the ultra-low wear regime and running-in behavior is inherently connected with their operation and the desired long operating times. To ensure a reliable operation of the engine for the intended lifetime, the impact of biofuels on the engine's

tribology is relevant.

We investigated the influence of the oil dilution with biofuels on the running-in of a thermally sprayed coating. A pin-on-disk tribometer operated in the ultra-low wear regime in combination with radionuclide technique was used for measurement of the running-in behavior with and without diluted oils. The expected impact of the viscosity reduction due to dilution on the stribeck curve was found. Results of the chemical analysis of the wear tracks after testing with and without diluted oil will be shown.