

Tribology of internal combustion engines

Final exam topics

1. Introduce the tribological system and its components! Introduce the basic terms of tribology!
2. Introduce the tribological investigation techniques! Describe the techniques!
3. Introduce the technical surfaces! Which factors can influence the tribological properties of the surfaces? Introduce the basic contacting processes!
4. Introduce the surface roughness and the different roughness values! How can these values be calculated?
5. Define the friction regimes with the help of the Stribeck curve! Give casual examples for each regime!
6. Introduce the tasks of the lubricants! Describe the two main component of the lubricants! How does the Stribeck-curve changes in the presence of lubricants with high additive content?
7. Introduce the viscosity of the lubricants and the values which influences their viscosity! Which institutes do categorise the lubricants? Introduce these categorisation methods and the necessary measurement methods!
8. Introduce the hydrodynamic and elasto-hydrodynamic lubrication theory! Tribologically analyse a plain bearing!
9. Introduce the existing wear mechanisms, with examples!
10. What kind of engineering solutions can increase the wear resistant properties of the components in the mechanical systems? Introduce these engineering solutions and their impact of the wear!
11. What wear measurement methods do you know? Describe these methods?
12. Introduce the most common cylinder liner-piston-piston ring designs from tribology point of view!
13. Introduce the valvetrain systems of the internal combustion engines from tribology point of view!
14. Introduce the tyre-road and the brake disc-brake pad systems from tribology point of view!