

How to approach a real-world tribology problem on lab scale

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Abstract :

Tribology is still an applied technology where in-field experience is extremely important. How you approach a friction or wear issue in an industrial setting, is not governed by a fixed set of rules, although there are some basic principles. But beyond the basic principles, there lie a lot of challenges to efficiently and confidently simulate a real-world tribology problem on the lab scale.

In this presentation, we will first show the general principles that we should take into consideration when studying a tribological system. Then we focus on the practical challenges that we encounter in testing real world problems and which are frequently neglected in most lab-scale setups. Among these are selecting relevant contact pressure to simulate similar wear phenomena, obtaining representative wear rates and having results with high confidence levels. All these topics are a challenge because time and money are limited resources and industrial testing must be at the same time efficient, relevant and reliable. To conclude, we will show one way to approach these challenges, by performing parallel tests. With this principle, multiple tests allow for longer tests with realistic contact pressures that match the actual applications. In addition, a statistical analysis will provide the high confidence levels required for wear. To illustrate this, case examples from various industrial sectors will be presented.

Biography:

Dirk graduated as Metallurgical and Materials Engineer at the Catholic University Leuven, Belgium and concluded a PhD research on combined tribocorrosion at his Alma Mater from 1992 to 1997. After that, he worked on industrial valorization of this PhD with companies such as Atlas Copco and Bekaert in Belgium.

In 1999, he helped to set up a joint venture of Falex USA with the Catholic University of Leuven, to form Falex Tribology, the European sales and support center for the Falex group. Since 2002, he is the CEO of Falex Tribology and has grown the lab's testing activities from zero to more than one million Euro's turnover and over 1000 tests per year. By a constant focus on quality of data, and understanding the major issues of the industrial customers, the test lab has developed numerous new and modified testing methods.

Falex Tribology has the experience of running small to large dedicated test programs to solve industrial questions and plays a key role in many European funded cooperation projects between industry and academic partners. All these projects aim at substantial improvements for quality of life, environmental impact and societal benefits, and a lot of these projects depend critically on a correct evaluation of new materials in their applications.