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A NEW CONCEPT OF THE UNIVERSAL TRIBOMETER

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Abstract: The development of new materials, coatings and lubricants is accompanied by all kinds of tribology tests. As it is known, tribology research is realized on tribometers Pin on Disk, Block on Disk (Ring), Disk on Disk and Linear reciprocating motion.

There are no many laboratories (University or Institute) equipped by all kinds of tribometers. In the last few years the universal tribometer is developed in collaboration of Serbian Tribology Society and company PRIZMA Kragujevac. In this paper are presented the basic information about the universal tribometer UT-07 together with a few experimental results.

Key words: Tribometer, Tribology, Lubricant

1. INTRODUCTION

In the process of development of the new materials, coatings and lubricants, as well as in control of this type of products, it is necessary to conduct the tribological tests, from the aspects of friction and wear. For performing the tribological tests in laboratories are used tribometers of different kinds. There are several kinds of contemporary tribometers, but in laboratories in institutes, development sectors of larger factories and universities' laboratories, the most frequently present are tribometers Pin-on-Disc, Block-on-Disc, Disc-on-Disc and tribometer in which is realized linear reciprocating motion.

In tribological tests, which are conducted on tribometers of the Pin-on-Disc type the contact is, most frequently, realized at a point, though it is possible to realize contacts over the area or along the line.

On tribometers Block-on-Disc (Ring) the contact is usually realized along the line, but the other contact geometry is also possible (over the area or at a point).

The contact on tribometers for linear reciprocating motion is being realized by application of all the three types of contact geometries (point, line, area).

In tribometers of those three types, the sliding friction is realized in the contact zones during tests, with or without lubrication. As it is known, the lubricant is, as a rule, the third element of the tribomechanical systems of all kinds.

For tribological investigations in conditions where simultaneously in the contact zone appear both sliding and rolling friction, one applies the tribometers Disc-on-disc. The sliding and rolling frictions occur when the contact is realized between the two discs that have different diameters and rotate with the same number of rpm or they have the same diameters but they rotate with different numbers of rpm.

The tribological investigations in conditions in which in the contact zone appear both sliding and rolling friction are very important for development of materials and lubricants that are used for manufacturing the gears and lubricating the gear pairs.

Within collaboration of the Serbian Tribological Society and the PRIZMA company from Kragujevac in the last few years was designed a kind of a universal tribometer on which it is possible to perform the tribological investigations that are usually performed on all the four kinds of tribometers and that are most frequently used in practice.

