



DEVELOPMENT OF TRIBOMETER AND MEASUREMENT RESULTS OF STATIC COEFFICIENT OF FRICTION SLIDING AND COEFFICIENT OF ROLLING FRICTION BY PRINCIPLE STEEP PLANE

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Abstract: *The paper presents a solution of new developed tribometer intended measuring that static coefficient of friction sliding and static coefficient of rolling friction materials of various types. Principles of measurement are theoretically analyzed, presented the basic of structural solutions and some results of measurements. Tribometer is based on the principle of the steep plane and provides a rotation angle of the steep plane with an accuracy of one minute, which provides high precision of measurements. From the point of the possible values of the load contact pairs developed tribometer belongs to a class of micro and nano tribometers.*

1. INTRODUCTION

Tribology as a science and technology largely allows the solution of many global problems related to consumption of materials, energy, reduces costs and increases reliability of complex technical systems [8]. Tribology in the field of tribo-diagnostics and development of modern measuring systems at the present time is experiencing a full expansion. The reasons are primarily in the fact that the analysis and quantification of complex tribological processes are necessarily reliable on measuring devices and machines. Due to the complexity of processes occurring in the zones of contacts tribology is largely based on experimental research methods. Modern methods of experimental research, in addition to required reliability of measurement system, are placing a number of other complex requirements and restrictions. All this imposes a constant need for developing new and improving existing measurement devices and machines, not only in the specific field measuring system and accompanying software, but also in the field of measurement and the very principles of physics processes. Tribological studies of experimental type at the present time are not only the needs of research institutions but also production of many companies who recognize that

due to their survival in the market that this is necessary.

Research in the field of modern equipment tribo-diagnostics deals with many global and specialized institutes. In short, research has been pointed to the improvement and standardization of existing solutions and development of new solutions of tribometers. A large number of existing global solutions of tribometers is standardized (ASTM and ISO standards) under the terms of making contact. Today, these structures of tribometers are improved the most in terms of software solutions and improve the technical characteristics (increased levels of stress, increase speed skating, rolling, an increase of temperature, vacuum chambers, etc.). In many cases the already standardized solutions of tribometers arise tribometer in a highly improved performance that is designed research to a much wider range of load, speed skating, rolling, operating temperature, lubrication conditions, the presence of abrasives etc. There is also a number of solutions of tribometers covering several types of contacts. These solutions are more universal in character and are often designed in a modular system design. There are also a number of special solutions (structures) tribometers intended tribological tests of gear pairs, hard coatings, plastics and other materials. The world has

