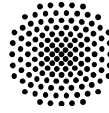


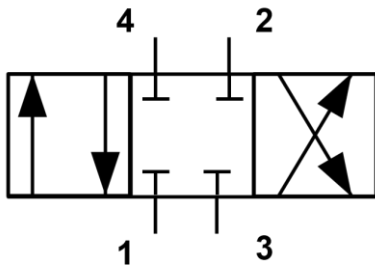
Research Project: Pneumatic grease

Development of testing devices and investigation of high-performance lubricants for the optimisation of pneumatic applications

Contact: Susanne Hahn, M.Sc.



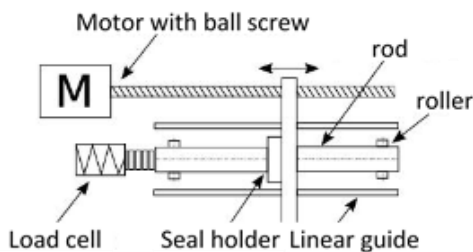
University of Stuttgart
Institute of Machine Components



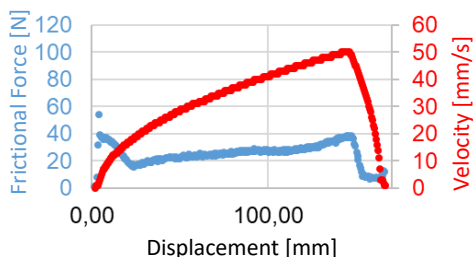
Valve, schematic illustration



Lubricating greases



Test rig, concept



Frictional force - displacement measurement

Motivation

Pneumatic valves are used in a wide variety of industrial sectors. With very short switching times in the millisecond range, they are used in processes with high cycle frequencies. For trouble-free operation, the valve must be switched with a force as constant as possible, without high breakaway forces occurring. This also includes restarts after idle times, e.g. after the weekend ("Monday morning effect"). In addition, the demands on all components of the pneumatic valve and thus also on the seals and their associated lubricants are increasing. The components must be more and more compatible with the environment and food-safe. They must not contain any substances that might impair surface wetting in the coating process. At the same time, they must meet the high cost pressure.

Expected results

In the project, new greases are to be developed together with the industrial partner that have a low breakaway force when lubricating pneumatic seals, regardless of eventual downtimes. The greases should also be universally useable due to H1 approval (use in the food industry is possible) and the absence of paint-wetting impairment substances ("PWIS-free").

Approach

- Development and construction of a test rig for testing the breakaway force of pneumatic seals
- Development of a method for evaluating the breakaway tendency of grease-seal combinations
- Evaluation of the breakaway tendency of the developed greases

Supported by:



on the basis of a decision
by the German Bundestag



The ZIM project KK 5126701TS0 is carried out in cooperation with the company Chemie-Technik GmbH, Vöhringen, and is supported by the Federal Ministry for Economic Affairs and Energy on the basis of a decision by German Bundestag.