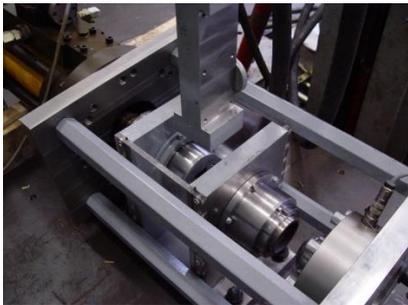


Large-scale tests on friction and wear of engineering polymers and friction materials provide a useful tool to estimate their real lifetimes, working under heavy loads and low sliding velocities. The influence of elastic deformations, creep or overload situations can be taken into account more precisely compared to conventional small-scale tribo-testing, while also edge effects and stress concentrations are reduced. Moreover, the move-ability of the generated wear debris or the influence of third bodies into the contact zone is simulated more effectively. These test rigs have proven their applicability. E.g. to study the feasibility of a surge barrier (Maeslantkering in The Netherlands) and are nowadays used for material selection in (under-water, lubricated or dry conditions) of running bearings, train bogies, ... Since self-lubricating bearing materials are often used in offshore technique, the sliding contact zone can be immersed in a water reservoir wherein additions of sand particles or sludge are simulated to provide third body abrasive wear.



MSF 200kN



LSF 6500kN



MTS 6000kN

A reciprocating motion of a central sliding block is provided by servo-hydraulic controlled actuator(s) running within a rigid and closed structure. The servo-hydraulic control allows for a load controlled or displacement controlled operation to ensure an accurate execution of the test. Two testing pairs, each consisting of a wear sample and a counterface plate, are mounted in the machine and are tested simultaneously. The counterfaces are fixed onto a central sliding block and are vertically loaded against the test specimens, which are fixed in their stationary holders. The test rigs are equipped with data acquisition devices to continuously measure normal and friction force, wear and contact temperature.

TEST RIG CHARACTERISTICS

Test rig	Medium scale (MSF)		Large scale (LSF)		Multipurpose (MTS)
	Low load	Medium Load	Short stroke	Long stroke	
Max. Normal load	50 kN	200 kN	Min. 200kN – Max. 6500 kN		6000 kN
Max. Friction load	50 kN	200 kN	300 kN	1000 kN	2500 kN
Max. sliding stroke	100 mm	100 mm	80 mm	350 mm	150 mm
Max. sliding speed	100 mm/s	50 mm/s	40 mm/s	7 mm/s	5 mm/s
Orientation	Vertical		Horizontal		Vertical
Specimen dimensions: Rectangular shapes Circular shapes Special designs	30 x 30 x 10 mm ³ Ø50 mm Max: 60 x 60 x 30 mm ³		150 x 150 mm ² Ø175 mm Max. 300 x 220 x 40 mm ³		300 x 80 x 15 mm ³
Counterface: dimension Standardized Special designs	200 x 80 x 20 mm ³		410 x 200 x 20 mm ³ Max. 520 x 350 x 70 mm ³		500 x 105 x 90 mm ³
Environmental conditioning	ambient temperature and humidity counterface cooling (-40°C) or heating (+100°C)		counterface cooling (20°C)		Only dry conditions

Test rigs are designed in such a way that they can be customized upon request

RELATED TOPICS

- Tribological design of a ball joint of a large lock-gate (services)