GHENT UNIVERSITY

SOETE LABORATORY

Large-Scale Flat Tribotester

Large-scale tests on friction and wear of engineering polymers 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 moveability of the generated wear debris or the influence of third bodies into the contact zone is simulated more effectively.

The testing machine originally has been designed in the Laboratory Soete to study the feasibility of a surge barrier and is nowadays used for material selection in (under-water) dry 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.

A reciprocating motion of the central sliding block is provided by two horizontal jacks on each side of it and is running within a rigid and closed horizontal structure. Two testing pairs, each consisting of a wear sample and a counterface plate, are mounted on top and on bottom of 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. Horizontal friction force, wear and contact temperature are continuously measured.

TEST RIG CHARACTERISTICS

Property	Long stroke tests	Short stroke tests
Sliding stroke	Max. 350 mm	Max. 80 mm
Vertical load	Max. 6500 kN	
Horizontal load (friction)	Max. 2500 kN	300 kN (smallest jacks) 1000 kN (largest jacks)
Sliding speed	Max. 10 mm/s	Max. 40 mm/s
Specimen dimensions:		
Rectangular shapes	150 mm x 150 mm	
Circular shapes	Ø175 mm x 40 mm	
Special designs	Max. 300 mm x 220 mm	
Counterface: dimension		
Standardized	410 mm x 200 mm x 20 mm	
Special designs	Max. 520 mm x 350 mm	

RELATED TOPICS

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

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