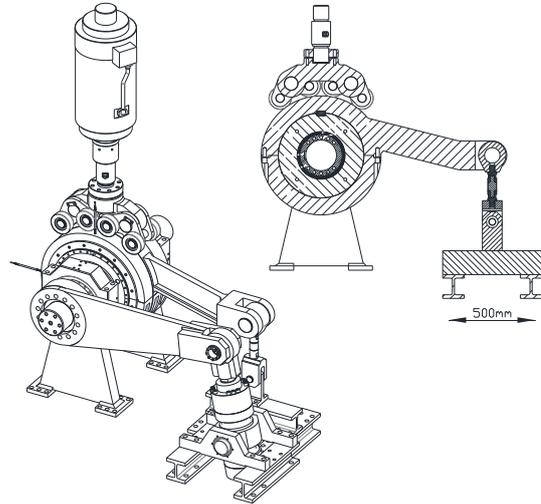


This test-rig is designed by the Laboratory Soete to investigate the friction and wear behavior of large journal bearings operating in boundary lubrication or dry friction regimes. The test-rig can accommodate bearings with diameters up to 400 mm and width up to 300 mm.

Bearings of this size can normally be found in civil engineering works (locks, drawbridges, mooring lines etc.). For some of these applications the bearings should function under water lubrication. The chamber of the test-rig in which the bearing material is placed can be sealed, so the real operating conditions of the bearings (grease, water lubrication, sea water ingress, dirt etc.) can be simulated.

For the time being only oscillating movements can be applied on the bearing. Either the bearing material can be stationary, while the shaft (counter surface) undergoes an oscillating movement, or the shaft can be stationary while the bearing material undergoes an oscillating movement. The test-rig is servo-hydraulically operated which allows for a load controlled or displacement controlled operation to ensure an accurate execution of the test. The controller is equipped with data acquisition devices to measure various additional instrument such as temperatures, displacements, strains, ...



TEST RIG CHARACTERISTICS

Property	High friction	Medium friction	Low friction
Max. Radial bearing load	1350 kN	1350 kN	1350 kN
Max. Bearing Torque	100 kNm	50 kNm	10 kNm
Max. Coefficient of friction (@ full radial load for \varnothing 300 mm)	0.50	0.25	0.05
Max. Amplitude	± 5 degrees, i.e. range of 10 degrees	± 10 degrees, i.e. range of 20 degrees	± 12.5 degrees, i.e. range of 25 degrees
Max. angular velocity	7.5 °/s	15 °/s	40 °/s
Max. tangential velocity (@ \varnothing 300 mm)	20 mm/s	40 mm/s	100 mm/s
Max. Oscillating frequency (@ max. amplitude)	0.35 Hz	0.35 Hz	0.8 Hz
Counter surfaces temperature conditioning	[-40 °C \rightarrow 100°C]		
Bearing material dimension			
Inner diameter	Nom. \varnothing 250 mm, max. \varnothing 400 mm		
Outer diameter	\varnothing 500 mm, with keyway		
Width	Max. 300 mm		
Counter surface dimension			
Inner diameter	Min. \varnothing 180 mm, with keyway		
Outer diameter	Nom. \varnothing 250 mm, max. \varnothing 400 mm		
Width	400 mm		

Test rig is designed in such a way that it can be customized upon request

JOURNAL PUBLICATIONS

- Test setup for friction force measurements of large-scale composite bearings**
 J. Van Wittenberghe, W. Ost, A. Rezaei, P. De Baets, L. Zsidai, G. Kalacska
 Experimental Techniques, vol. 33, issue 1, 2009 <http://dx.doi.org/10.1111/j.1747-1567.2008.00371.x>