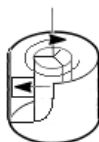


TRIBOLOGY UPDATE: *ISSUE 24 - February 2010*

This is the latest issue of our regular **Tribology Update** newsletter. We can be contacted by e-mail at info@phoenix-tribology.com or by telephone on 44 1635 276064.

WORK IN PROGRESS:

Piston Ring/Cylinder Liner Test Adapter



We are at an advanced stage of development of a novel piston ring on cylinder liner test adapter and we hope to have demonstration units available for STLE 2010 in Las Vegas.



There are limitations with conventional reciprocating ring on liner tests, mostly associated with sample preparation. Idealized geometries, such as ring segment or cylinder on flat, may be a viable, but it is not possible to duplicate honing processes used on real liners on flat surfaces. Using actual ring segments is not convenient for investigating different materials and coatings. Wear rates with new materials are so low that tests have to be run for hours to generate measurable wear, hence single test station test rigs have very low productivity.

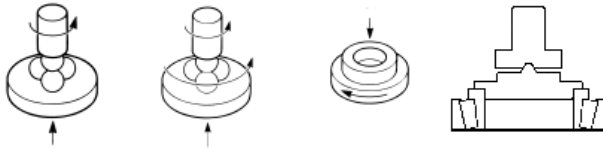
The new adapter provides a multi-station test configuration, using idealized ring samples, which can be manufactured easily, running on standard liners. Instead of running the ring sample axially along the liner, straight (infinite diameter) ring samples are run around the inside circumference of the liner, with continuous rotation or oscillatory motion.

To balance the forces, three ring samples are run on each track level. Load is applied to each sample carrier by a self-aligning cone arrangement so that the same load is applied to each sample. Ring samples are carried in semi-circular seats so that they self-align. The samples typically have a length of 10 mm, a width of 4 mm and are crowned to give a line contact.

Two sets of ring sample carriers typically will fit within a standard medium sized engine liner, so that a total of six equally loaded ring samples can be tested simultaneously, using a machine no more complicated than a standard four ball type test machine; our aim is to make a device that will, if possible, fit to existing TE 92 Rotary Tribometers.

The assembly is torque reaction trunnion mounted allowing the sum of the friction generated by six contacts to be measured. A band heater is fitted to the outside of the liner for heating and lubricant is dripped down the liner walls from a radial gallery in the upper cover and drained from the bottom of the assembly for re-circulation.

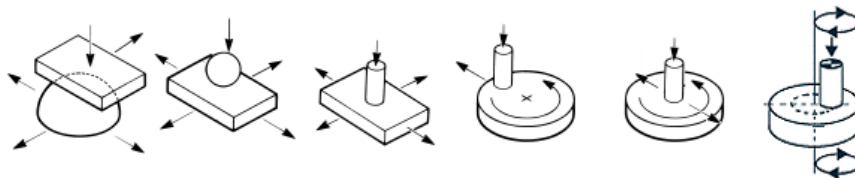
TE 82 – Microprocessor Controlled Four Ball Machine



We have designed a cut-down version of the standard TE 92 Rotary Tribometer in order to produce a lower cost dead-weight loaded four ball machine. The unit can be used to run all types of four ball test, thrust washers tests and the KRL shear stability test.

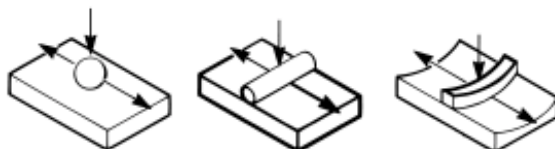
WORK COMPLETED:

TE 79 – Multi-axis Tribometer



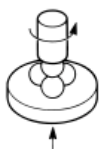
We have upgraded the drive and indexing system on the TE 79, allowing enhanced motion control in both indexing pin on disc and indexing reciprocating mode. In the case of the latter, by simultaneously indexing both the X and Y axes, an orbital circular or elliptical motion can be generated, thus subjecting the pin sample to a rotating friction vector, similar to that occurring in prosthetic hip implants.

TE 90 – Multi-station Reciprocating Tribometer



Development of the multi-station reciprocating rig continues (Tribology Update: Issue 23 - August 2009) with the first two station instrumented unit currently being assembled. This is a 10 mm stroke unit for tests under conditions specified in ASTM G133 and ASTM G181. We are planning to show the unit at STLE 2010.

TE 96 – Inertia Vacuum Micro Tribometer



We have decided to add the inertia vacuum micro tribometer (Tribology Update: Issue 20 - October 2007) to our web site and price list as a standard product. For ease of handling, we are now recommending that tests are run using 3 mm diameter ball specimens as opposed to smaller diameters.

OTHER NEWS:

The Cambridge Tribology Course 2010

The 2010 will take place, from Wednesday 15th to Friday 17th September 2010.

George Plint and David Harris

Phoenix Tribology Ltd