

DS4 Press release flash :

Falex Tribology and Compass Instruments distributors for

Tetra DS4 platform

What's new about a tribometer ? Tetra's DS4 platform !

- Tetra GmbH, based in Thuringia, Germany, is combining its expertise in drive systems, sensors and electronics technology to create the next generation of tribometer.
- Tetra has combined its 20 years of experience in sensor and drive technology with the EtherCat® open real-time technology, and created the **DS4** test platform. DS4 stands for major improvements of test instruments in 5 areas : Drive technology, Sensor precision, Stations (multi-), Specimen (standard and custom fast exchange holders) and Software (open NI-LabView platform allows customer defined experiments).
- The first DS4 tribometer, the DS4-Pin on Disk was presented to the public at the 2010 STLE Annual Meeting and Exhibition in Las Vegas, NV by **Compass Instruments** for the USA and is available in Europe through **Falex Tribology NV**.

More about the DS4

DS4 is a new line of test equipment that answers the modern demands of industry for more reliable, precise and efficient tribometer equipment. The instrument line has been designed to improve significantly on Drive technology, Sensor precision, Specimen installation, Software flexibility and multiple Stations for parallel or combinatorial testing



Each improvement is the result of a critical review of existing test solutions and a creative effort for real innovation.

D as in 'Drive'. The heart of any tribological test instrument is the drive system. This is what moves two parts relative to each other and it must be of the highest precision and control. Tetra uses a 3 Nm strong, direct drive motor with integrated circumferential bearing. Contrary to old fashioned pin-on-disk design - with its inexpensive motors and central shaft disk- Tetra design leads to a mechanically stiff driven disk without wobble or backlash. This allows the motor to exhibit exceptional performance both in unidirectional and reciprocating (angular oscillating) motion. Proprietary electronics with EtherCat® compatibility control this motor from very low speeds (0.05 rpm) to its maximum speed. The motor has a hollow core, allowing feed-through for additional systems, such as lubrication, heater power or (electro)chemical sensor wiring.

The motor is also used as a high precision positioning drive when used in combination with characterization tools or the reciprocating or fretting drives.

S as in 'Sensor'. If the drive is the heart, the sensors are the nerve system. Two main requirements of a tribometer are to apply a precise normal load and to measure resulting friction. Conventional strain sensors are not precise enough. The Tetra two-dimensional sensor systems reach a resolution of 1/10.000 FS, whereas conventional strain gage sensors barely reach 1/1000. The Tetra sensor range can be changed by a simple interchange of the sensor head : low stiffness for 10 N and high stiffness for 100 N range.

Software is the brain. But other than the human brain, the intelligence in the DS4 system is distributed over its various components. Motor drive, sensor conditioners, loading system, data acquisition modules, they all have their own processor and hard coded programming on board. All components are interconnected by an EtherCat® bus and an integrated master PC controls the flow of commands and data. An external PC, connected by Ethernet cable, runs the Graphical User Interface, where the test program is defined and acquired data are stored and visualized. Standard modules are delivered with test control software performing the basic experiments. Optionally, the software can be opened so the user can design his own experiments with LabView.

Specimen holders like hands. At the end of the arm, and on the drive system, we need to hold our various specimens. And with efficiency as one of the key factors for any test lab, it is important to make the exchange of various sizes and shapes of test pieces easy and fast. Special holders for balls or pins, that fit quickly in the loading system, are already standard. Holders for special shapes can be custom made. The disk drive comes with a universal holder, or optionally with a universal clamp for irregular or rectangular plates.

Stations : yes, more than one at the time !. Multitasking or combinatorial testing, wouldn't it be great ? Imagine you have one station that performs a wear test and another station that can make a microscopy picture of the wear track from time to time during the experiment. Or a profilometric trace, so you can automatically record a real wear depth evolution. The DS4 system allows up to 4 individual stations to be mounted and working together. Duplicate friction tests in parallel on the same disk, automatic characterization, additional sensors and surface analysis : your tester can become a real centipede (or quadruped to be more precise).

For technical specifications on the DS4 platform and modules, please contact :

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