

Test provides the comprehensive solution for screw and bolt testing



The company Test provides complete solutions for the examination of fasteners, made in Germany. On the one hand, it is the market leader in the field of friction coefficient analysis for bolts and nuts up to the M80, on the other hand Test provides vibration testing machines for dynamic lateral load on fasteners and universal testing machines for tensile tests on screws and bolts with forces up to 600 kN and on request also beyond.

The unique feature in the context of friction coefficient analysis are the 4-component sensors, developed and patented by **Test**, that measure, besides the clamping force, the total torque as well as the bearing face friction and the thread friction, instead of calculating one of the variables from the others. Particularly for fastener and coating developers the knowledge of partial friction coefficients is important because changes in these quantities might remain hidden in the total friction value. If only total friction is known as the average of partial friction values, specific alteration of the partial friction values is hardly recognizable within total friction value. In the worst case, an increase in bearing face friction and a simultaneous decrease in thread friction can remain undetected in only regarding the total friction value.

In the past two years, the examination of loosening behaviour at elevated ambient temperature has also come into centre of attention of our customers. The heating sleeves, developed by **Test** and currently patent-pending, allow investigating the loosening behaviour of fasteners under the influence of temperatures up to 150 ° C - without necessity to expose the multi-component sensors to these high temperatures. For this purpose, solely the bolted connection is heated using a heating sleeve, while the sensor system is kept to room temperature by a cooling circuit. Unique on the world market is also that, for the first time, the developing of clamping force during the heat-up phase can be made visible and thus evaluable, due to heating the loaded bolt inside the multi-component sensor. Thereby, not only the developing of total torque, but also the clamping force curve and the loosening bearing face and thread torque can be recorded during the loosening process.

The entire package for the testing of screws, bolts and nuts further includes also vibration testing machines according to "Junker", which are used for dynamic testing of the loosening properties of fasteners under lateral loading. The components to be tested are screwed into the sensor of the machine under a defined clamping force and are then exposed to a dynamic lateral load with constant or variable frequency. The thus determined (clamping) force / time diagram and the determined number of cycles provide information on the loosening behaviour of bolted connections under dynamic lateral load. Combined with the software **TestWinner®** our customers receive optimum efficiency and flexibility, as well as an immediate statement about loosening angle, clamping force, lateral force and lateral path amplitude. Optionally, the tightening torque can also be recorded at the beginning of the test phase.

Since bolted connections are used in the automotive, aerospace and wind power industry as well as in many other areas, where they are exposed to extreme loads on the one hand, and are of great importance for safety on the other hand, tensile testing has always been part of their comprehensive quality inspection. According to ISO 898 Part 1, for example screw sizes of M33, strength class 10.9, can be stressed up to fracture using a force of 600 kN. For that, universal testing machines are used, that are adjusted to the particular application by special clamping tools and various devices for detecting the screw expansion during the experiment. The user certainly benefits from operating the same inhouse developed software **TestWinner®** for the friction coefficient analysis and vibration testing as well as for the latter described tensile testing.

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Universal testing machine for tensile tests on screws and bolts up to 600 kN



Vibration testing machine acc. to "Junker"



Friction testing machine for bolted connections up to M80



Friction testing machine with 4-component sensor and heating sleeve

Test GmbH

Helena-Rubinstein-Str. 4
D - 40699 Erkrath
T: +49 (0) 211-20 99 03-0
F: +49 (0) 211-20 99 03-201
Mail: test@test-gmbh.com
www.test-gmbh.com