



BASALT[®]-N2 Tribology Intelligence

Flexibility · Efficiency · Effectiveness

Tribology Intelligence

The new BASALT[®]-N2 from German manufacturer TETRA is the answer to the emerging requirements of today's tribology research and development. It is developed as a platform with modular functionality, based on TETRA's high precision automation solutions, proprietary sensors and flexible control software. It is the first instrument that offers true modularity and experiment automation. The possibility to execute parallel experiments or combine experiments with automatic characterization, coupled with the high precision, makes BASALT[®]-N2 your 24/7 assistant in solving your tribological challenges.

Today's **rapidly changing global markets are forcing companies and researchers to shorter their development intervals**, so the success of a company will depend critically on their ability to act and react faster than their competition. High performance products with new properties for special needs must be released in shorter intervals. Economic risks due to limited availability and fluctuating prices of resources are strong motivators to find new materials and production methods. All these global trends require to test materials more efficiently, more reliably and with more precision.

Tribological projects need to be undertaken with higher efficiency than is conventionally done. Furthermore, the availability of newly developed materials, coatings and alloys leads to a larger variability of experiments and the need to work more application-oriented during the development phase. This manifests itself in the requirements to test contacts with flexible geometry, multi-scale force ranges and contact pressures and environmental parameters, with a trend to lower contact pressure testing.

The need to evaluate wear resistance and long term behavior of new materials, leads to a conflict with the pressure to shorten development times. Realistic wear testing often leads to low wear rate which are hard to measure. Conventionally this requires long lab tests. One solution to this conflict is to multiply the time efficiency of test equipment by creating parallel testing (multi-stations) or automate the sequence of testing and wear characterization so the instrument can work independently 24 hours per day.

The BASALT[®]-N2 functionality has been designed in close cooperation with researchers as an answer to these needs. It is modularly configurable (variability of experiments), allowing in-line high resolution wear characterization or doubling testing capacity by parallel test stations. The sequence of testing and characterization can be 100% automated, removing the need for operator interventions. This can easily double or triple the through-put.

Time for test series in the laboratory and for reporting, is limited. Furthermore, often the developers are well-qualified in their field but not tribological experts. Today's researcher or developer must manage and handle a large variety of complex measurement and laboratory equipment. So it is essential that the tribology equipment is easy to setup, program and use. Furthermore, standard test results should be produced automatically and - ultimately - be mailed to your mailbox when the experiment is finished.

The BASALT[®]-N2 generates high precision data at 1.000 Hz, thus for a long term experiment, easily some gigabytes of data are created. The advantage is, that the researcher can zoom in to any area of interest and maintain high resolution data, however he needs tools to handle such large data sets conveniently. The BASALT[®]-N2 is prepared to be expanded with basic and advanced analysis tools for its high volume of test data, allowing the researcher to create overviews or detailed data without effort.

Automatic reports can even be set up to be sent to your mailbox after test completion automatically. There is no more need to go to the lab, to get your data.

Over **20 years competence** in sensors and measurement equipment combined with first class workmanship "Made in Germany" guarantees reliable and reproducible results.

The new BASALT[®]-N2 completes the BASALT[®]-N2 family portfolio with a high precision modular tester that is easily configurable, compact and highly comfortable in use and increases your test result output 3 or 4 fold. Let's say, it's the first intelligent tribometer of the world.

Benefits

Versatile

- Interface design for on-site modularity
- Wide range of experimental drives and instrumentation modules as well as environmental control for a wide variety of experiment
- single experiments get combined by a programmable experiment sequencer

Future Proof

- Downward compatibility of next modules
- Workmanship 'made in Germany'
- long life cycle and 24/7 operation
- 15 years availability of spare parts guaranteed

Precision

- High-grade repeatability of measurement and control of experiment conditions
- Highest resolution AND precision of commercially available sensors: 1/10000 typically

Reliable Values

- Hardware design is optimized for the best static and dynamic stability, minimizing external and internal influences and the system noise
- no a-priori filtering or averaging) without time lag

Cost Efficiency

- Low base investment costs, open for later extensions
- Easy to operate reduces training costs
- Low maintenance and low operational costs

User Friendly

- intuitive and efficient configuration
- Easy sequencer programming
- Remote configuration in LAN network

Service

- Service Excellence from manufacturer and distribution partners

Time Saver -Time Multiplier

All the above features of a future proof High precision machine with automation capabilities and of-line analysis tools ensure that you have the availability of a full time lab assistant, able to perform a complex set of experiments and offer the data and analysis autonomously, working 24 hours per day,

7 days per week. Compared to standard lab practices, this approach generates 3 to 4 times the amount of reliable test results per day, making the machine an effective TIME MULTIPLIER. You don't just 'save time', you 'add time'.

Technical Parameters

Property	BASALT®-N2
Experiment Motion	Rotation Uni- and Bidirectional, Spiral Track, Linear reciprocation, Single pass sliding, accelerating/decelerating
Normal Force	250N maximum, Constant – Load ramps
Measurement	Precision 1/10.000 FS precision Sampling 1.000 samples per second
Environment	Integrated Sensors for Temperature and Humidity Integrated Gas Inlets Integrated Temperature Controller ($\pm 1K$) Environmental modules for heating and cooling

Company

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