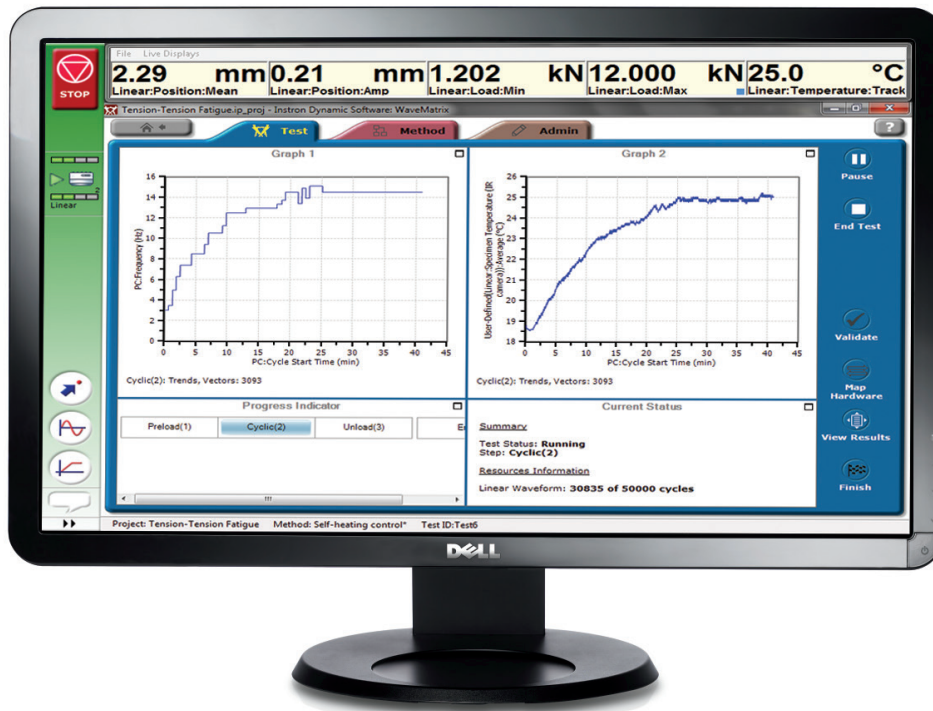## WaveMatrix™ | Specimen Self-Heating Control 2495-915F1

Increase the throughput and consistency of your composites and polymers testing by optimizing the test frequency with the Specimen Self-Heating Control. This powerful add-on is specific for WaveMatrix™ Software.

Composites and various other materials are prone to significant self-heating effects during cyclic loading, but their performance also shows strong temperature dependence. This has traditionally led to fatigue testing at very low frequencies to minimize specimen heating and the resultant degradation in mechanical properties. A test run for a single S/N dataset could mean weeks of machine time.

Specimen Self-Heating Control can significantly reduce this, while providing previously unachievable confidence in test temperature. This patented system achieves and maintains a specified test temperature by varying test frequency in response to a specimen temperature input.

This means that for lower loading, where very large numbers of cycles-to-failure are expected, the system can be allowed to run at significantly higher frequency, which greatly reduces the test duration. Meanwhile at high loading, consistent specimen temperature is maintained even in the latter stages of the test, during which self-heating effects increase dramatically resulting in run-away specimen temperature with fixed frequency tests.

For structural composites, a 5°C shift in temperature will have a greater effect than a two-fold change in test frequency, so the benefit of tightly controlled test temperature greatly outweighs moderate variation in test frequency.

Features and Benefits

- User specified temperature window (control down to ± 0.5°C)
- User specified frequency window
- USB thermocouple integration available
- Any 0 – 10 volt analog input supported, including infrared temperature sensors
- Applicable to any test geometry provided a specimen temperature transducer can be fitted

Features and Benefits

- Compatible with temperature chamber testing
- Compatible with WaveMatrix™ Calculations and Advanced Control modules
- **Optimized performance** - allows your test to run the maximum frequency at all times, while keeping specimen temperature constant
- **Testing Integrity** - control of specimen temperature reduces variances in test result caused by specimen heating effects
- **Energy efficiency** - shorter test duration reduces energy consumption

Specifications

Catalog Number

2495-915	WaveMatrix Software
2495-915F1	WaveMatrix Specimen Self Heating Control
2495-965	Updates for existing WaveMatrix Software installations
2495-965F1 2495-965F2	Update – WaveMatrix Specimen Self Heating Control module. Adds Specimen Self Heating Control functionality to previous version of WaveMatrix
CP112383	National Instruments 9211 USB Thermocouple data acquisition system; suitable for direct data logging in WaveMatrix.
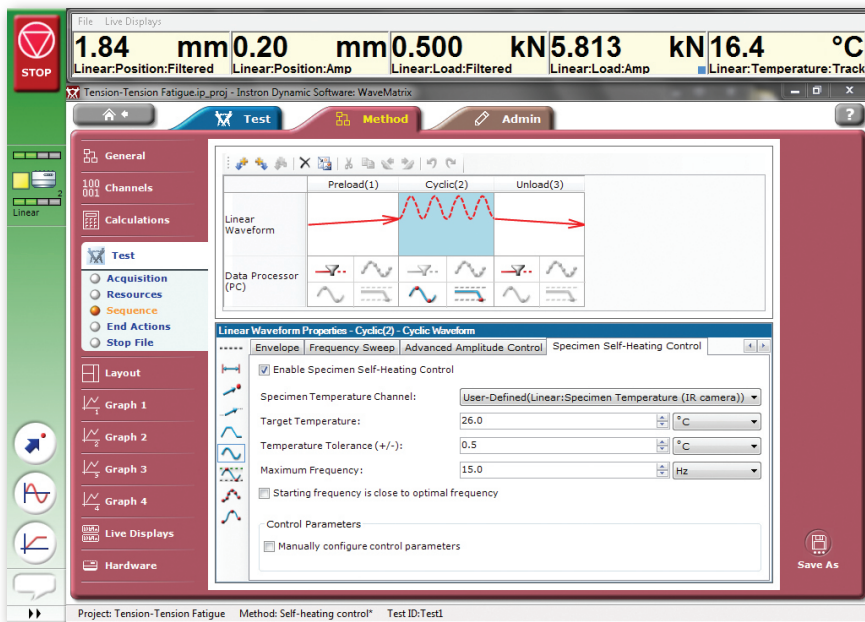
System set-up for Specimen Self-heating Control