TA Instruments New Features in Rheology Advantage

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New Features in Rheology Advantage v5.8.2

Bug Fixes

- Changed the gap zero mode for DHR instruments to Standard, Normal Force and deceleration.
- Fixed the SetInstrumentOption assist for DHR (the list was empty)
- Fixed the maximum head speed for the DHR (now 10000)
- Zero gap form now says geometry positioning is not required for ARG2 and DHR1.cpp
- Changed the instrument status on the instrument screen during a run.Bug Fixes

New Features in Rheology Advantage v5.8.1

Bug Fixes

- Fixed torque rounding in repeated creep
- Added Navigator support for DHR

New Features in Rheology Advantage v5.8

Bug Fixes

- Fixed torque rounding in repeated creep
- Added Navigator support for DHR
- Changes to Navigator script files to support AASTHO TP70-13 and MS Word 2013

New Features in Rheology Advantage v5.7.2

New Features

Added new scripts for asphalt users who want to try these proposed new methods: “high stress repeated creep test” and “mixing and compaction test.”

Bug Fixes

Fixed bug in stepped flow test that incorrectly recorded point velocity below 0.001 rad/s as the last velocity measured in the sample period rather than the slope of the displacement vs. time over the whole sample period.

New Features in Rheology Advantage v5.7.1

New Features

- Repeated creep:
  - Creep and recovery times can now be set independently in the range 0.1 to 1000 seconds.
  - Modified Navigator analysis script to calculate Jnr diff to latest AASHTO definition.
- AR-G2 utility programs modified to run on Japanese operating systems.
- New instrument firmware 8.29.
- AR Series Operator Manual modified to include information on Interfacial Double-Wall Ring (DWR).

Bug Fixes

- Fixed bug where user-defined models could not be selected for analysis.
- Fixed bug in Rheology Advantage related to registry entries for Navigator.

New Features in Rheology Advantage v5.7

New Products Supported

In this version, several new TA Instruments products are supported by Rheology Advantage:

- Small Angle Light Scattering (SALS) Accessory: For information on the SALS accessories refer to the
- AR-G2/AR 200ex/AR 1500ex instrument manual.
- Automatic Asphalt Temperature Calibration Kit: For information on the Automatic Asphalt Temperature Calibration kit, refer to the Asphalt Submersion Cell manual.
- SER2 Extensional Fixture: For information on the SER2 extensional fixture refer to the AR-G2/
- AR 2000ex/AR 1500ex instrument manual.

New Features

- Torsion rectangular sample maximum sample width increase to 15 mm
- Updated localization

Bug Fixes

The majority of these bugs have already been fixed by TAUpdates issued since the release of Rheology Advantage 5.6. The following is a list of those bugs:

- Cross over calculation
- Williamson model
- Default radius for pressure cell rotor
- AR500/550/1000 communication errors
- Multilingual tagenserver.dll crash
- Wrong number of points in log continuous flow ramp

New Features in Rheology Advantage v5.6

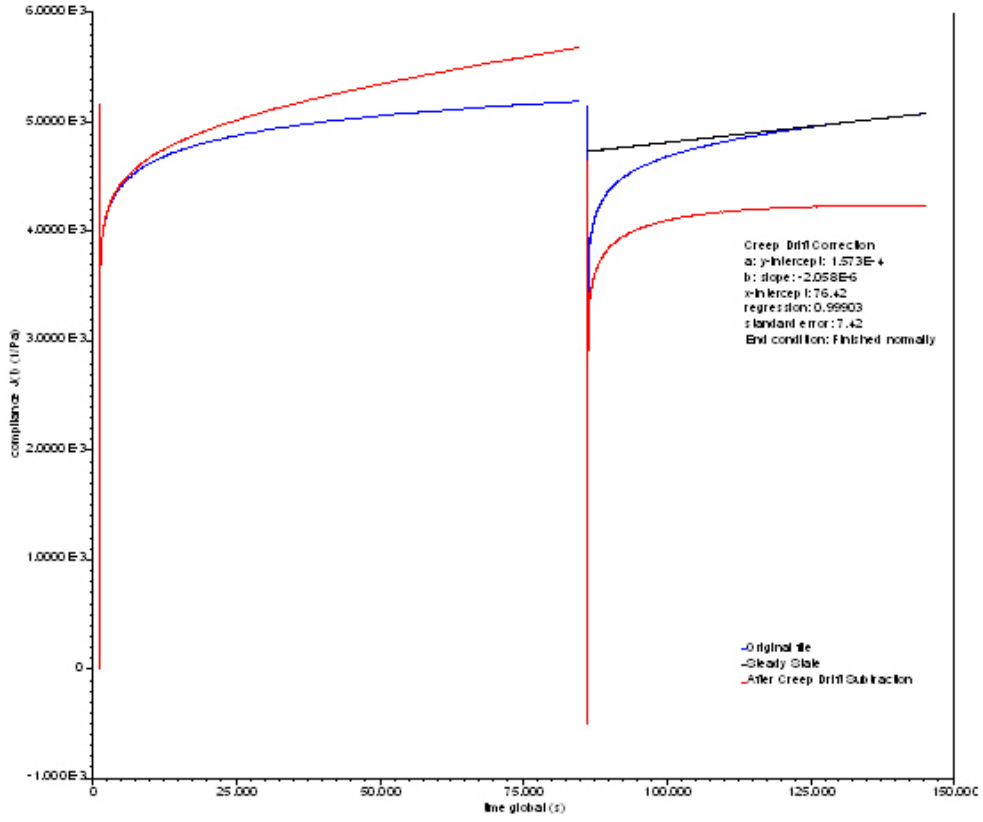
New Products

For information on the UV Light Guide and UV LED accessories, please refer to the main instrument manual.

New Features

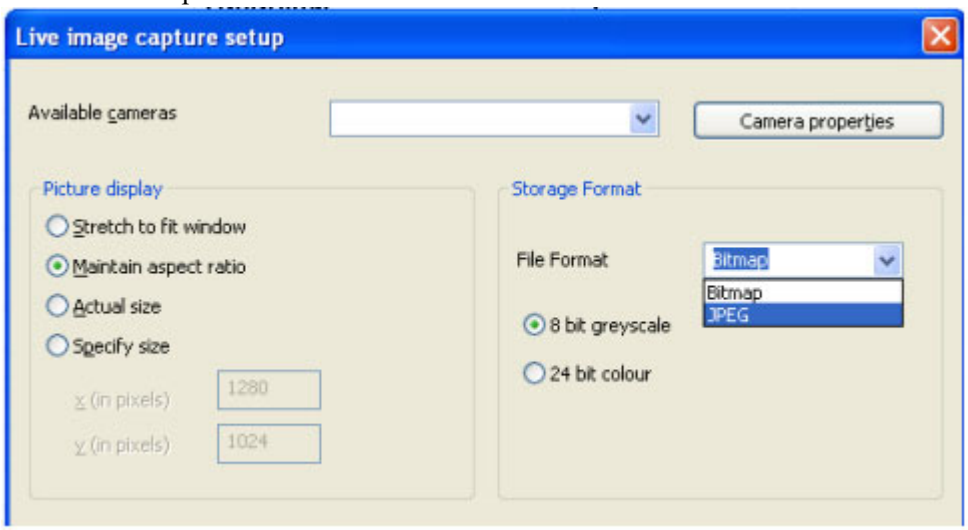
Creep Drift Subtraction

This is a new analysis option that allows any steady state drift in a recovery step to be subtracted from both creep (retardation) and recovery steps in a two step file. The steady state can be selected manually using the analysis cursors or calculated automatically. The new file that is created as a result of the analysis can be treated like any creep file for analysis and graphing.



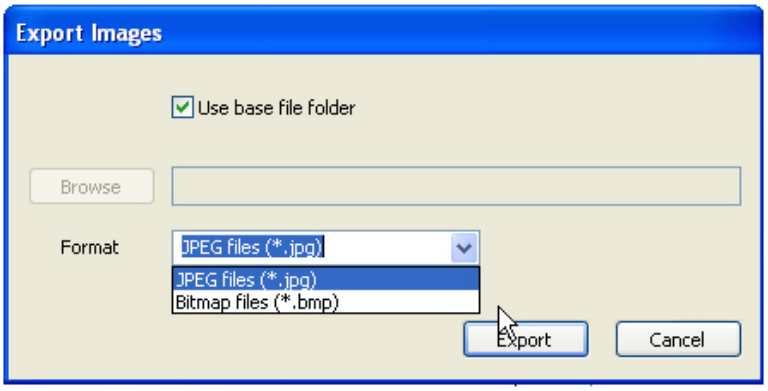
Saving Images as JPEG or BMP

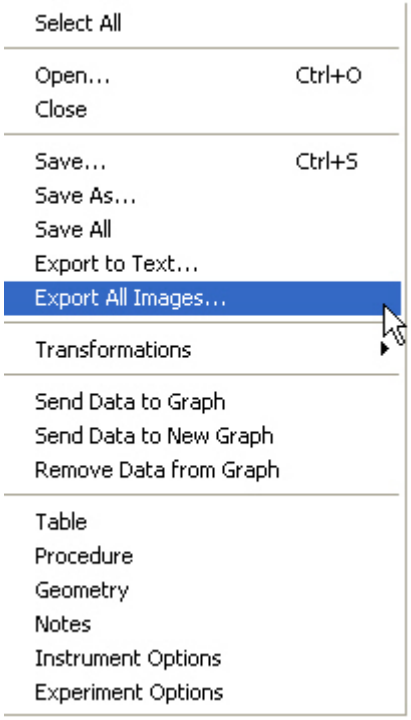
To avoid compression issues images can now be additionally saved as bitmaps. This increases the file size therefore, it should only be used if a lossless format is required for post analysis. The selection is made on the camera setup screen.



Batch Export of All Images in a File

To avoid cutting and pasting individual images, it is now possible to export all images from a file as either JPEG or BMP. If the images were originally saved as JPEG, exporting to BMP will not recover any information lost during the compression process. Select Export All Images from the File menu, or from the right-click pop-up on the selected file/s in the Results List.





New Features in Rheology Advantage v5.5

New Products Supported

AR 1500ex Smart Swap™ Asphalt Submersion Cell

New Features

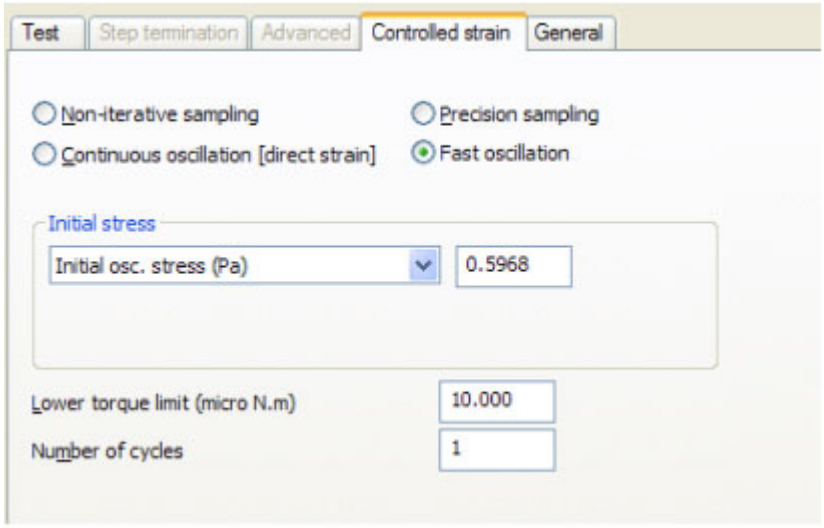
- Fast sampling in oscillation
- Runs under Microsoft VISTA

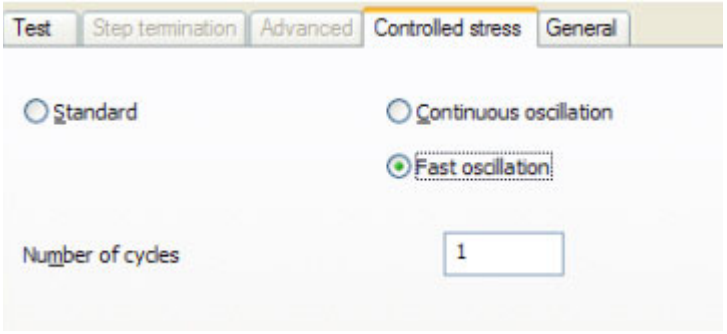
Fast Sampling in Oscillation

The Fast Sampling option is now available in this release with the following characteristics:

- Available for time and temperature sweeps on AR-G2, and AR 2000ex.
- Sampling rate is up to twice fundamental frequency. It depends on number of cycles specified and can be utilized at up to 25 Hz. For example, one cycle at a frequency of 25 Hz will result in 50 data points per second.
- Available in controlled strain and controlled stress modes.
- To be able process this data stream, the following standard features are disabled when running in the fast sampling mode:
    - mini status window
    - waveform display and storage
    - multiwave
    - harmonic analysis
    - step termination

This new feature is activated on the Controlled strain/Controlled stress tab. The number of cycles to be averaged per data point is also set on this tab. Once this mode has been enabled, the procedure test types become limited and other tabs are greyed out. See the figures below.





New Features in Rheology Advantage v5.4

New Features

Instrument Control

The following items are included in this release of the Rheology Advantage instrument control program:

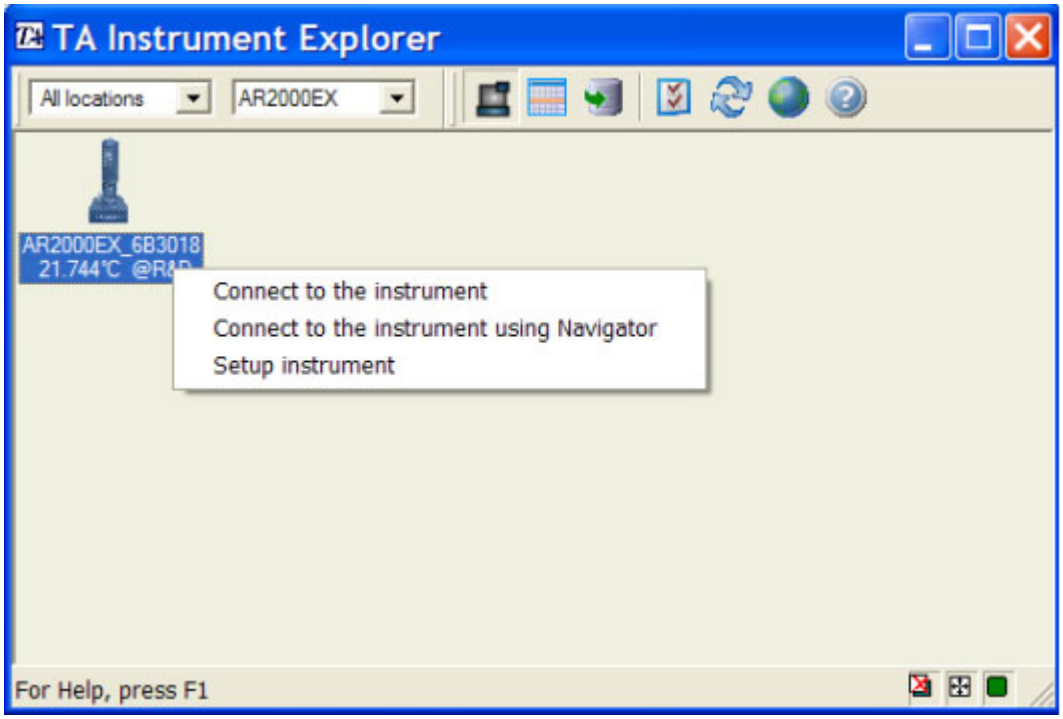
- Support for the AR2000ex rheometer had been added.
- Support for Electrically Heated plates (EHP) has been added (AR-G2 and AR2000ex only).
- Support for Upper Temperature Sensor (UTS) has been added (AR-G2 only).
- Minimum limit for the temperature ramp rate has been changed to 0.01ºC/min.
- You now have the ability to save the results of a service bearing test to a file that can be loaded into Data Analysis.
- ETC camera viewer driver has been updated for USB2 video adapter.
- Fill and drain icons are reactivated on status page when asphalt is selected under instrument settings for AR1000.
- Data Analysis
- The following items are included in this release of the Rheology Advantage data analysis program:
- The number of digits has been extended for torque and oscillatory (5 significant figures).
- File date/time has been added as an optional key for graph view.
- Fixed incorrect reporting of the step termination value.
- Fixed missing axis after a straight line fit on certain data files.
- Smoothing of graph while using logarithmic scales on x and/or y-axis no longer causes shifts of graph data.
- The default path for file printing of results is now set to My Documents folder.
- The results file time in Custom Reports, previously reported in GMT, is now reported in local time.

Navigator

The following items are included in this release of the Navigator program:

- For Ethernet systems, Navigator is run by right clicking on the instrument icon in TAIE and selecting

- Connect to the instrument using Navigator as seen in the figure below.



- Set File Name has been added to list of functions.
- Asphalt scripts have been modified for multi-stress repeated creep.

New Features in Rheology Advantage v5.3

Version 5.3 of the Rheology Advantage software has been updated with additional support for the AR-G2 instrument and assorted improvements. These changes are not readily visible to the person using the software as they function during the running of the software and are not seen as new features.

Refer to Rheology Advantage 5.2 release notes for the most recent enhancements to the software.

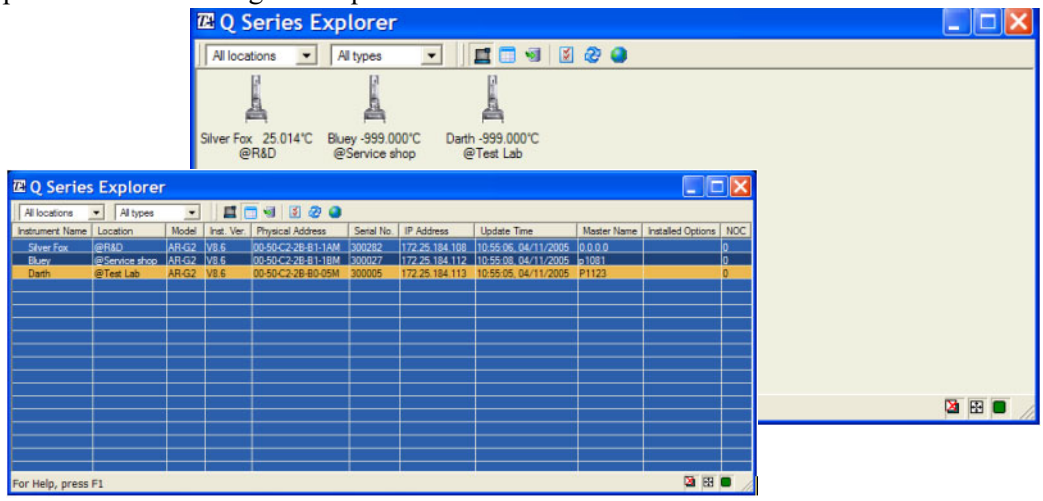
New Features in Rheology Advantage v5.2

New Features

Support for the AR-G2 Rheometer

Communication Using Serial [RS232] or Ethernet [TCP/IP]

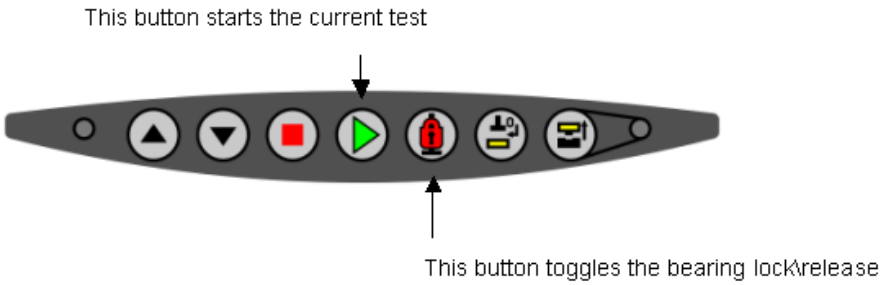
The TA Instruments AR-G2 Rheometer can take advantage of Ethernet communications over your local area network [LAN]. In this scenario the rheometer control electronics and PC are plugged into separate sockets, and TA Instrument Explorer [TAIE] is used to launch the instrument control software. There are two views (shown below) that can be used to open the instrument control program and access an instrument. To stop unauthorized access to your rheometer you can configure your rheometer with a password so that a login is required.



Full details on setting up Ethernet communications and login passwords are given in the Installation Instructions 925911.000.

New Front Panel for AR-G2

The AR-G2 instrument has additional buttons on the front panel of the rheometer, as shown in the figure below.



Fast Sampling Data Streams

When using Ethernet communications, there is now only a 15-second lag to allow the computer to catch up with fast sampling in creep, stress relaxation, and peak hold. This allows for shorter step times.

Fast Zero Gap Routine

When the Geometry Smart Swap is enabled, positioning the head within 5 mm is not required after the first time a zero gap is performed. This applies to each Smart Swap geometry/Smart Swap temperature system combination. The instrument stores up to 100 combinations.

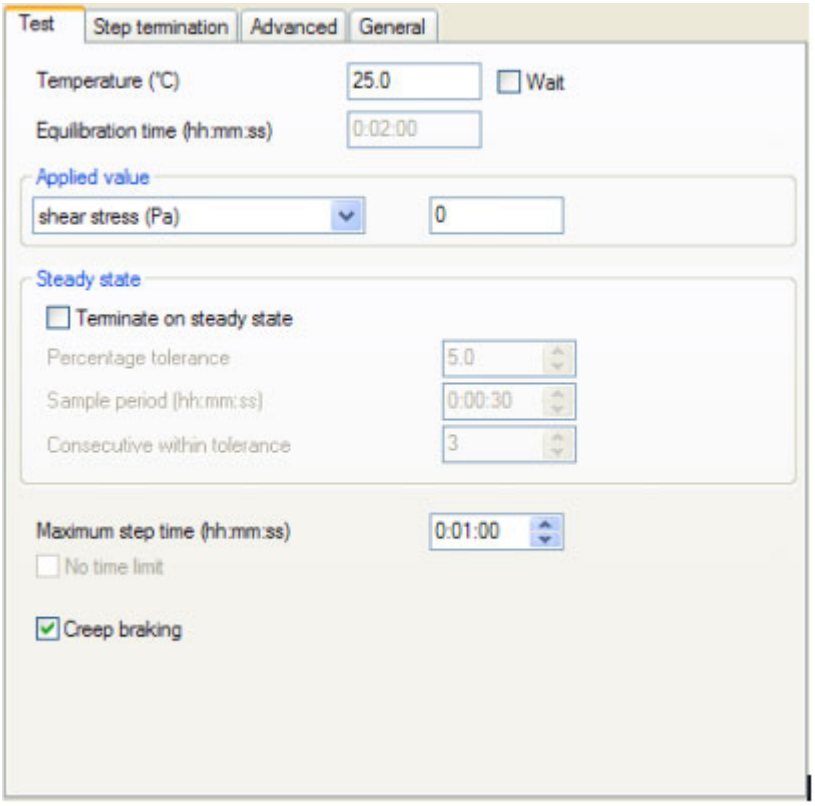
Zero Gap Routine Optimized

The zero gap routine has been optimized for the AR-G2 rheometer. It uses sensors in the magnetic bearing rather than deceleration or normal force modes. Those two modes, which are available on other AR rheometers, are not available on the G2.

Braking Option Added

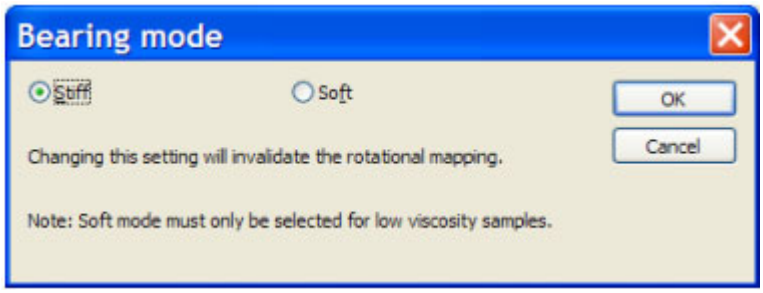
A negative torque pulse, calculated from the moment of inertia and the angular velocity at the end of the previous step, is applied in the first few milliseconds of a creep procedure recovery step [stress or

torque=0]. This removes a significant error from the recovery data for weakly elastic and near Newtonian materials. See the figure below for the associated page in the software.



AR-G2 Bearing Mode

The stiffness of the magnetic thrust bearing in the AR-G2 can be adjusted to better suit an application. This is not the case with the air bearing. In most cases, the default Stiff mode is used with the AR-G2, but it has been shown that measurements on low viscosity materials can be improved by selecting the Soft mode. The current bearing mode is shown on the instrument status page, and is set by selecting Instrument/Set bearing mode from the main menu.



Integer Rotation Averaging

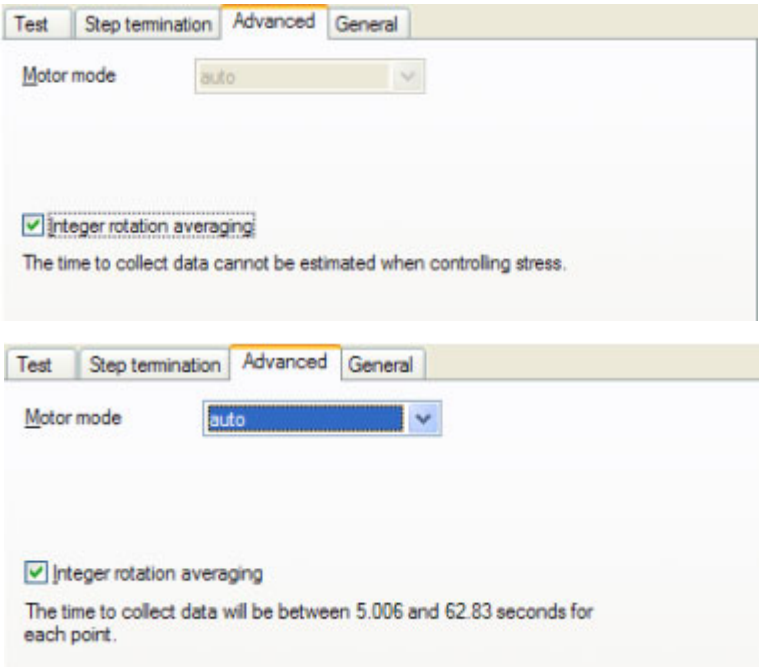
It has been shown that low torque data can be improved by averaging the torque over complete rotations of the motor/bearing. To make it easy to perform this type of averaging an option has been added to the Advanced tab for Stepped Flow tests. This is called Integer rotation averaging.

When selected for each step, the rheometer will average data over as many complete rotations that can be made in the programmed point time.

If the point time does not allow for a complete rotation, the test will continue until the criteria of a complete rotation is met. You need to apply common sense when using this mode, particularly in a stress controlled test as there is no way of knowing how long the test will take as seen in the message displayed in the window shown to the right.

If you step from high to low, you can collect data and then abort the test once your patience threshold has been exceeded.

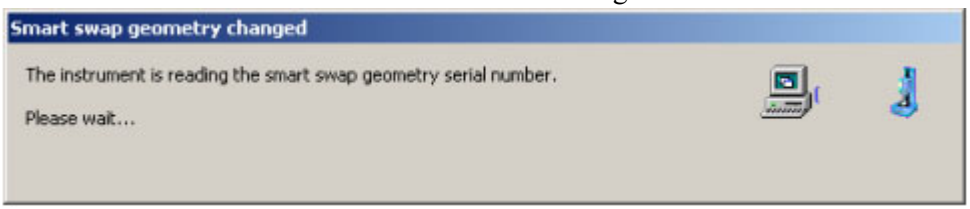
In controlled speed mode, the rheometer is able to calculate the length of the test so you can judge if this is acceptable before starting.



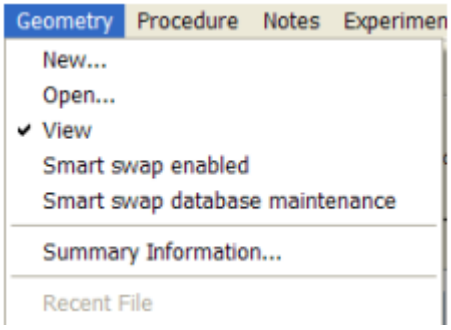
Smart Swap Geometries

Smart Swap™ geometries are an extension of the Smart Swap technology previously used by AR2000 temperature systems. These geometries can be automatically identified when installed on the rheometer. The geometry serial number is encoded in a magnetic strip on the head of each geometry. When the geometry is set up for the first time a link is established between this serial number and a geometry file in the instrument control software. The geometry then becomes “Smart”.

When a Smart Swap Geometry is attached to the rheometer, a sensor registers the attachment and slowly spins the shaft to read the serial number from the magnetic strip. The software then loads the geometry file associated with this serial number as shown in the figures below.



It may become necessary to disable the Smart Swap feature - for example you may want to temporarily use a geometry that, for some reason, cannot be read. Unchecking Smart swap enable on the Geometry menu will accomplish this.



For more information, refer to the chapter on Smart Swap Geometries in the AR-G2 Operator's Manual.

Image Capture

The AR-G2 has the ability to allow you to view steaming video from the ETC Viewer or a compatible web cam within the instrument control software. Once the appropriate driver has been installed, the camera icon in the main tool bar (shown in the figure below) toggles this option.

The following are highlights of the ETC Viewer and image capture software capabilities. For detailed information, please refer to the AR-G2 Operator's Manual.

- An image can be captured (with certain limitations) for every saved data point. This is activated on the Options/Experiment tabs for each procedure type.
- The streaming video (live image) for the ETC viewer has lighting and focus controls.

- Right clicking on the image allows access to the image set-up, where you can select from the available cameras, adjust size preferences, etc
- If images have been stored with the data file, the individual point images can be viewed in the data analysis software by checking the point image under Options/Settings. The image for the current point (marked with '*' on the graph or highlighted in the table view) is shown in a dockable window.
- The stored images can be played back in sequence by selecting Show image sequence from the pop-up menu.

Support for TA Update

TA Update will be available for all software packages supplied by TA Instruments. If your computer is connected to the Internet with a TA Update-ready version of Advantage or Orchestrator, you will be able to configure your system to automatically check for updates to software and firmware. This will allow you to keep up to date with new features and bug fixes. RA5.2 is the first version of Rheology Advantage that supports TA Update. To access this new feature, select Help\Check for updates on the main menu.

For more details on configuring and using TA Update, click the Help button when the program opens to access the online manual.

Previous Versions of New Features in Rheology Advantage

Click here to open the document containing the New Features that were present in Rheology Advantage versions 5.1, 5.0, 4.1, 4.01, and 3.0.

TA Instruments Offices

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