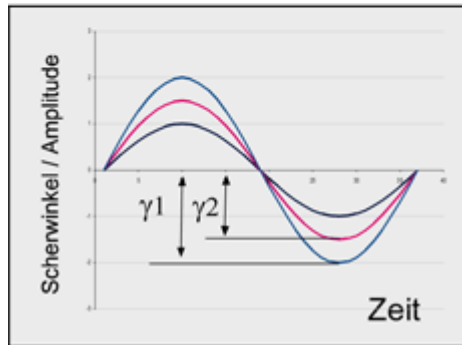
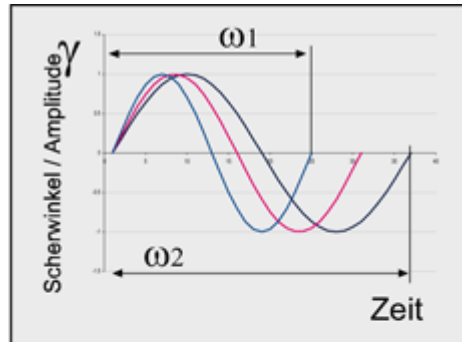


# SIS SCARABAEUS INSTRUMENTS SYSTEMS

## SIS SCARABAEUS INSTRUMENT SYSTEMS

### SIS-V50

The test methods are based on variable frequency, amplitude, temperature, torque and pressure and they are executed as static and dynamic measurements.



#### SIS-specification

- Amplitude sweep 0.01° to 180°
- Frequency sweep 0.001 Hz to 50Hz
- Temperature 40°C to 220°C

#### SIS test methods

- Amplitude sweep
- Frequency sweep
- Pulse/recovery
- Isothermal and anisothermal

#### Measuring ranges

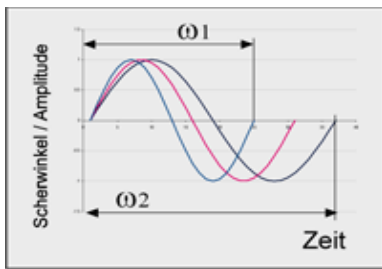
- Torque 0.001 to 20dNm (oversampling)
- Option normal force 0.01- 10 kN

#### SIS closing pressure

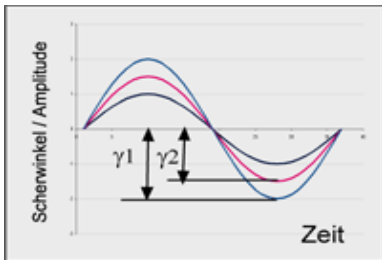
- Variable adjustable between 0.1 to 8 bar for each test method

#### SIS Frequency/amplitude

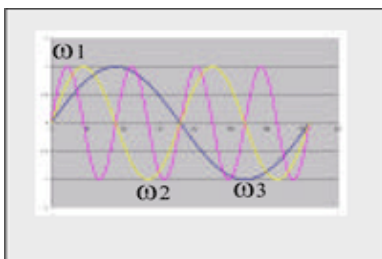
- Limitation to a maximum shear rate of 80/s



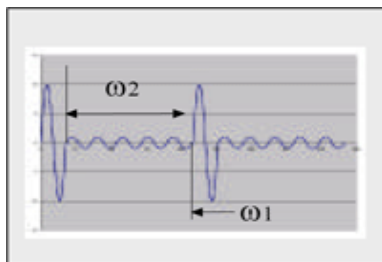
The measurement of the frequency-dependence dynamic module is called frequency sweep. That means the iteration of the range of the measurement parameter. This measurement method allows the determination of rheological parameters for the viscous and elastic behavior



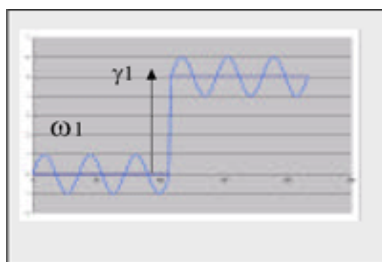
At the amplitude sweep, a constant frequency (constant amplitude duration) determines the range in which the material is linearly viscoelastic. The amplitude-dependence of storage modulus decrease with increasing amplitude is then used as an experimental window for the frequency sweep



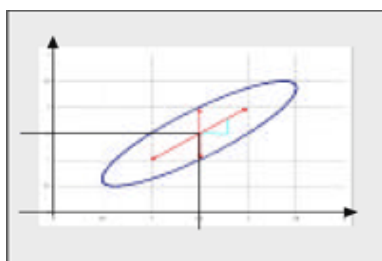
Multi-frequency isotherm is the superposition of n individual oscillations at different frequencies. The result permits the evaluation of three isotherms at the same time - frequency spectrum



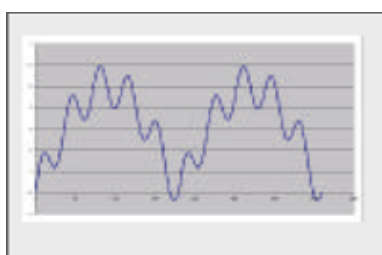
In pulse / recovery isotherm, a basic isotherm with  $0.1^\circ$  deflection is conduct in the recovery phase at optional frequency. The pulse phase is variable in relation to the angle and identical to the single cycle of the recovery phase in relation to the frequency.



The relaxation is superimposed with an isotherm of  $0.1^\circ$  deflection at variable frequency. After the pulse-like deflection, the elastic and viscous component within the relaxation are calculated

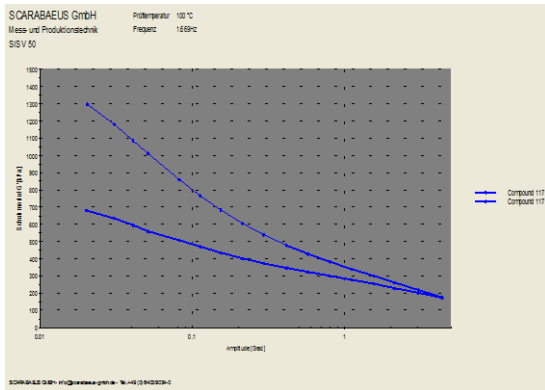


Each oscillation can be added through a pre-deformation / Preload, i.e. a deflection to a certain value from zero point. This deformation is more practical, because many products are dynamically stressed under preload

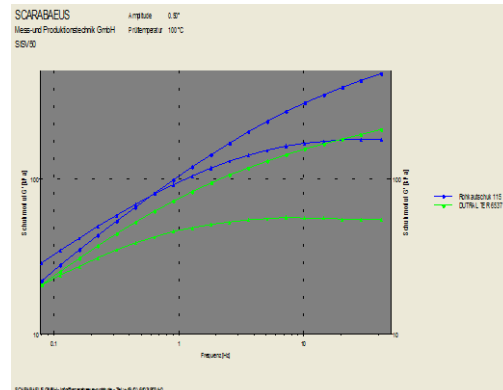


The additive amplitude isotherm is generated by adding a sinusoid with small amplitude and high frequency on the baseline, which can be linear, sinusoidal or considered as shear rate rap

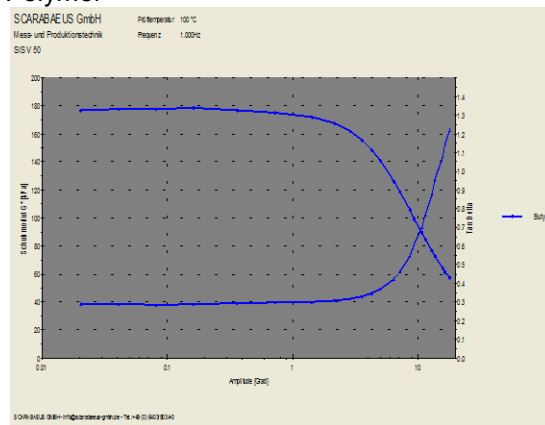
# Typical test methods



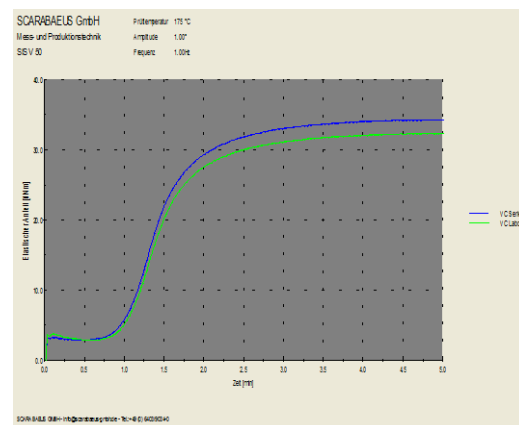
Typical test for Payne Effect, Filler – Filler, Filler – Polymer



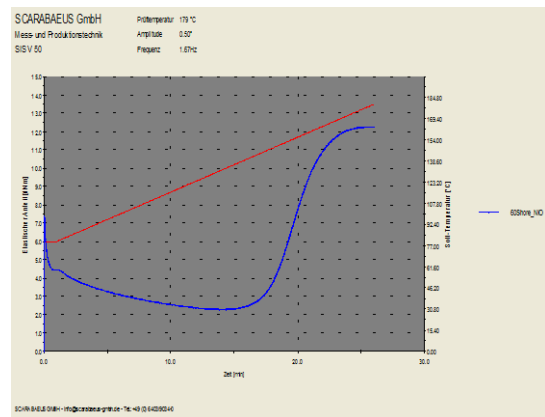
Typical test for Molecular weight and distribution



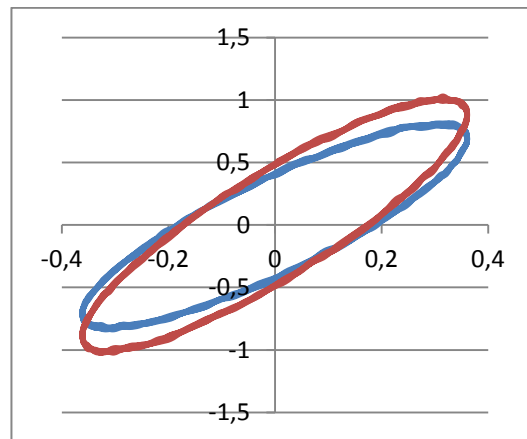
Typical test for linear behavior - LAOS



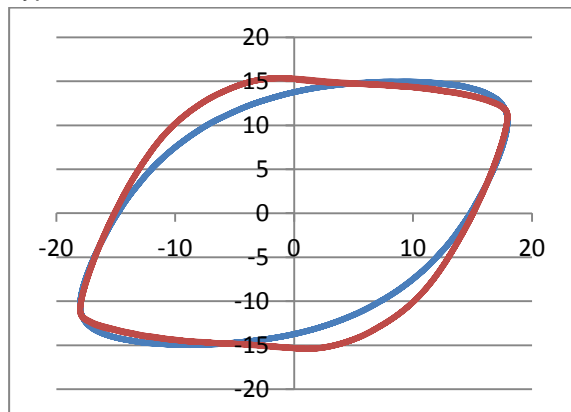
Typical test for kinetics



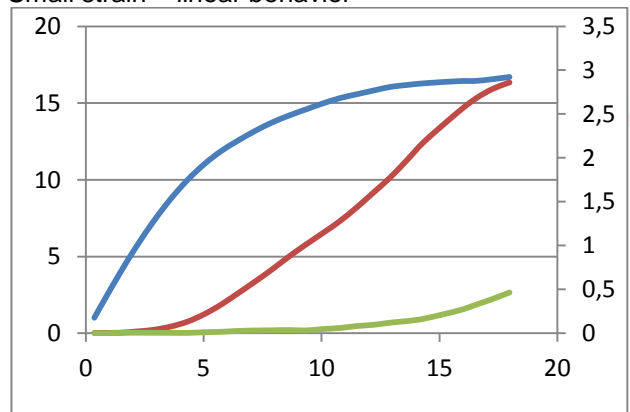
Typical test for anisothermal



Small strain – linear behavior



Large strain –nonlinear behavior



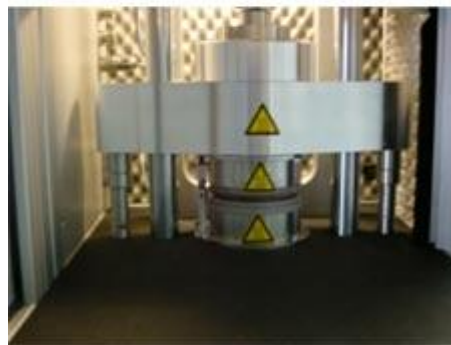
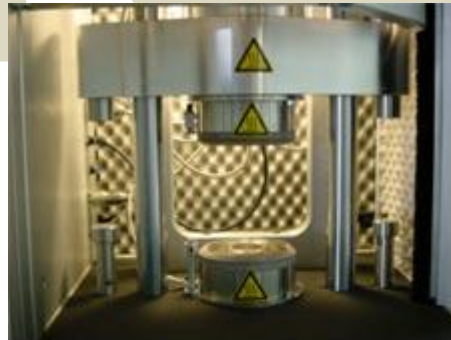
1<sup>st</sup>, 3<sup>rd</sup>, 5<sup>th</sup> Harmonic from FFT – Polymer

# SIS SCARABAEUS INSTRUMENTS SYSTEMS

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## SIS-V50 Extension of the gag control

The SIS V50 can be extended by a gap control and the will be complemented by a gap measurement.



## SIS specification

### The option Diegap control

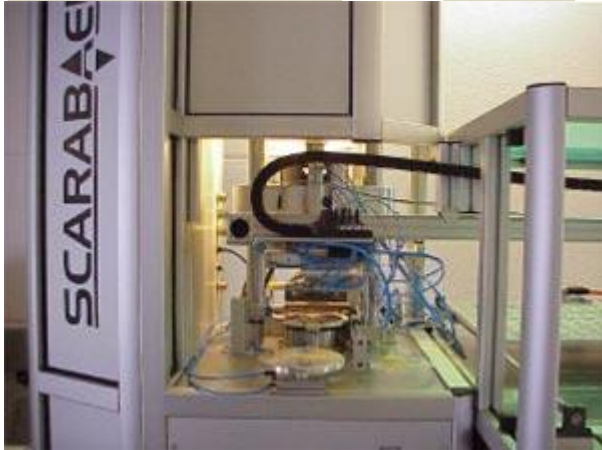
The option die gap control is an automatic die gap control and die gap measurement. Due to the temperature change in non-isothermal conditions, the gap chamber changes due to thermal expansion. The thermal expansion can be regulated using an electric cylinder with a resolution of 0001-0002 mm and a overloading of closing / clamp force up to 26,000 Newton. In addition to the temperature-dependent gap control chamber, the gap created by volume shrinkage can be balanced.

Within the system, a cross-check of the displacement signal is carried through a chamber gap measure. The principle is based on the eddy current measurement technology and is configured for a maximum distance of 2mm. The resolution is 0.0001 mm. The maximum gap adjusting-speed is 0.020 mm / sec.

# SIS SCARABAEUS INSTRUMENTS SYSTEMS

## SIS-V10/V50 Extensions Automation Online Release

The SIS-V10 and V50 can be extended to an autoloader with 10, 50 or 100 samples, in the sense of the online system. The online system has an alternating plate with 2 positions.



Autoloader-function with alternating plate a films supply. Single specimens are stored on the adapter disk, and then automatically assigned to a free space on the disk. The identification is made through a BARCODE.

Autoloader-function, magazine and films supply. A disk with up to 100 testing samples. Individual testing plan for each single sample.



Autoloader function external films supply and an automatic discharge as single package



# SIS SCARABAEUS INSTRUMENTS SYSTEMS

## SIS-V10/V50 Extensions, Automation, Online Release

The SIS-V10 and V50 can be extended to an autoloader with 10, 50 or 100 samples, in the sense of the online system. The online system has an alternating plate with 2 positions.



Sample cutter

Setting parameters:

Volume

Volume stamping time

Cutting time

Reset time

SIS VS volume cutter B 35 cm x T 40 cm x H 64 cm



Closed, fan-less and without CD / floppy

2xEthernet

2xRS232

Fixed / mounted at the measuring instrument



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