XDR®: Moving Die Rheometer ... MDR

XDR Curemeters
by CCSi

CCSi's development of the uniquely heated rotor with temperature control in the XDR® Oscillating Disk Rheometer (ODR) was followed by a vision of a hybrid ODR with the performance of a conventional Moving Die Rheometer (MDR).

The XDR®, configured as a Moving Die Rheometer (U.S. Patent 5,526,693 ... other patents pending), consists of a heated third member with an elastomeric seal between the bottom of the rotor and the bottom of the lower die cavity.

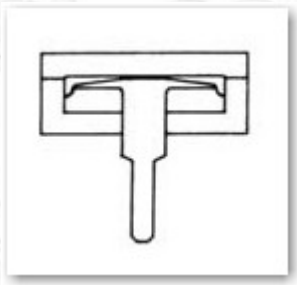
The seal extends from the edge of the rotor to the inside wall of the die. This prevents the sample from flowing under the rotor, and contains it in the upper die cavity.

The contribution of the seal to torque is small and readily corrected. Thus, the heated third member actually becomes a moving heated die, i.e., a "Virtual" Moving Die Rheometer.

The thin sample rapidly achieves testing temperatures, the sample is easily removed from the test chamber, and the simplicity of the design provides for easy maintenance.

It should be noted that a strain transducer is a key component in the design of this curemeter. It provides a continuous measurement of the strain imposed on the test sample.

This measurement allows the determination of the mechanical properties of the test sample as well as correcting for any unavoidable deflections in the system. The application of this feature are key to overcoming some of the performance limitations of existing curemeters. These facets are discussed in detail in the article "Innovations".



" ... in the Moving Die Rheometer configuration the sample is sealed between the upper die cavity and an elastomeric seal ... allowing the uniquely heated third member to become a virtual moving die."

XDR® Moving Die Rheometer: Features & Benefits

XDR® MDR FEATURES:
- S', S", and S* data;
- Pneumatic rotor clamping;
- Uniquely heated third member;
- Convertibility to an ODR or Mooney reduces initial and future investments;
- MDR Module is compatible with ASTM D5289.

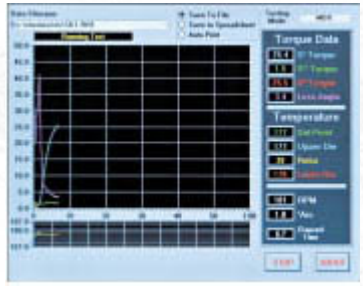
XDR® MDR BENEFITS:
- Quick & easy sample removal;
- Modular design reduces maintenance cost & down time;
- Reduced sample size & test time;
- Obtains complete dynamic properties;
- Easily & inexpensively reconfigured to an ODR.

XDR® Moving Die Rheometer: Specifications

- Torque:
  - 0.1 to 200 lb/in
- Selectable Test Times:
  - 0.0 to 99 minutes
- Selectable Temperature Range:
  - Ambient to 225 C°
- Angular Displacement:
  - ± 0.5°, 1°, 3°, 6° (selectable)
- Weight:
  - 160 kg (352.8 lb.)
- Space Requirements:
  - Instrument: 610 x 610 x 1220 mm (24 x 24 x 48 in.)
  - Computer: 300 x 610 x 710 mm (varies) (12 x 24 x 27 in.)
  - Monitor: 410 x 410 x 410 mm (varies) (16 x 16 x 16 in.)

XDR® OPERATING SYSTEM FEATURES:

- Computerized data acquisition & analysis meets ASTM E1579;
- Viscometer Module complies with ASTM D1646, ISO R289, & BSI 1673;
- ODR Module complies with ASTM D2084, ISO 3417, & BSI 1673;
- MDR Module is compatible with ASTM D5289;
- Microsoft® Windows Operating System;
- Pentium® Processor & Intel® chipset;
- Computerized PID temperature management systems;
- Automatic system calibration;
- Computerized torque measurement system;
- Computerized calibration and verification (no mechanical adjustments necessary);
- Automatic mechanical deflection corrections;
- Superior ability to detect differences in compounds and raw polymers;
- Raw data stored for easy retrieval or transfer;
- Standard and User defined test parameters;
- Real time display of test data and parameters;
- Selectable presentation of data in printed, graphed or overlay formats;
- Real Time Plot & Digital display of:
  - S', S", and S* Data
  - Loss Angle Data
  - Temperature, All Dies
  - Temperature Set Point
- Digital display of:
  - Test Mode
  - Operation Mode
  - Test File Name
- Printed Data Output Options:
  - Single Test
  - Overlay Multiple Tests
  - Overlay Historic Tests
- Display Data Output Options:
  - Test In Progress
  - Historic Single Test
  - Overlay Historic Multiple Tests
  - Apply different parameters to historic results for an “if—then—else” analysis.



XDR® eXchangeable Die Rheometer: Module and System Pricing

XDR® Individual Modules	
MDR	Please Submit a RFQ
ODR (heated rotor standard option)	Please Submit a RFQ
Mooney Viscometer	Please Submit a RFQ
XDR® Module Combinations	
MDR & ODR Modules	Please Submit a RFQ
MDR & Mooney Modules	Please Submit a RFQ
ODR & Mooney Modules	Please Submit a RFQ
XDR® Complete	
Mooney, MDR & ODR Modules	Please Submit a RFQ
Lease Options Available	

Please visit the ODR and Viscometer pages to learn more about the flexibility of the XDR®. Detailed technical aspects of the XDR® are examined at length in the article titled “Innovations”.

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