



RTR 91.05 / RTS-TD 97.05
Online Capillary Rheometer

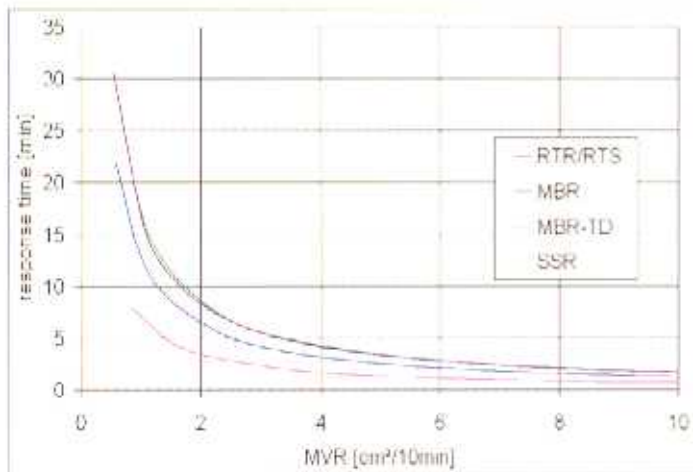


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The Real Time Concept - the solution: RTR

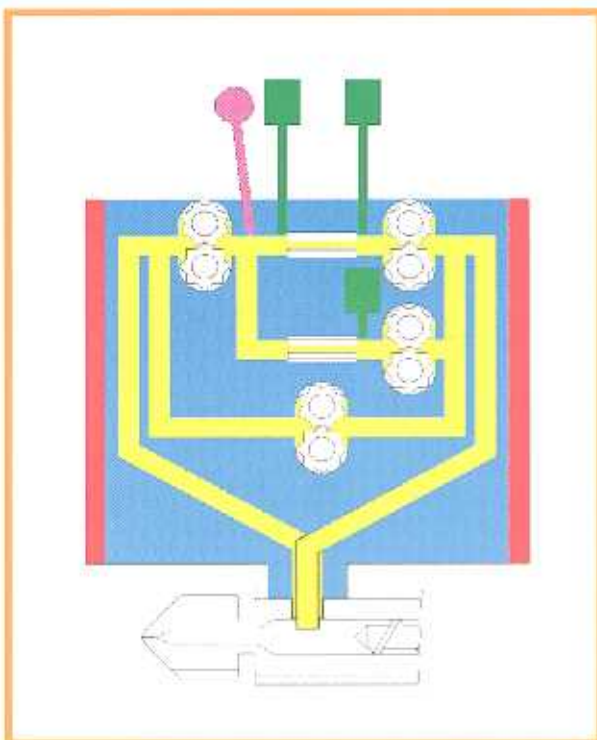
The RTR was the first online capillary rheometer on the market with its patented three-pump-system. More than 150 installations worldwide is proof positive that the RTR has defined the best-in-class in online rheometry

- Especially for low MI materials, it is crucial to generate the measurement results as fast as possible. This can take an ordinary rheometer (single pump) more than an hour. The independently controlled circulation pump in the RTR delivers the melt to the capillary independently of the viscosity of the material, within minutes, mandatory for fast process control.



RTR – RTS

The RTR instrument response time is still excellent even at the very low pump speeds measured with low MI materials.



Why has the RTR been so successful measuring Melt Index?

- Capillary versus Slit Die

- Better simulation of the melt index lab test (instrument similarity)
- Better self cleaning capabilities of a round capillary compared to a slit die with dead edges
- Larger measuring window using a capillary
- Less prone for slippage in a round capillary
- Capable of using a second capillary for extended measurement range

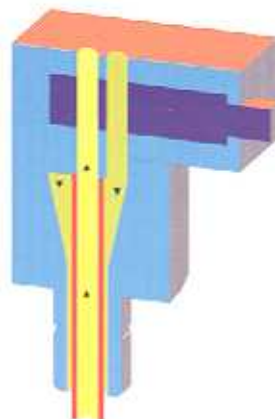
RTR 91.05 / RTS-TD 97.05: highlights of our new top-of-the-line rheometer:

The measuring head was completely redesigned to meet the following goals:

- Smaller dimensions: the new head of the RTR-RTS has been reduced by 40% in width, and takes up significantly less space than its predecessor.
- Fewer moving parts and no gear box simplifies handling for service and reduces the overall costs.
- CAN-Bus technology, employed by the automobile industry for years, is now available in RTR-RTS. Measurement signals such as pressure and temperature are immediately converted to digital signals, leading to a tremendous improvement of the signal quality versus noise. This is most important when it comes to long transfer connections from the measuring head to the control electronics in electrically noisy industrial environments.
- RTR/RTS shows a 30% improved overall accuracy.
- New available adapter saves installation costs; only one bore of M26x1.5mm thread is needed for connection.

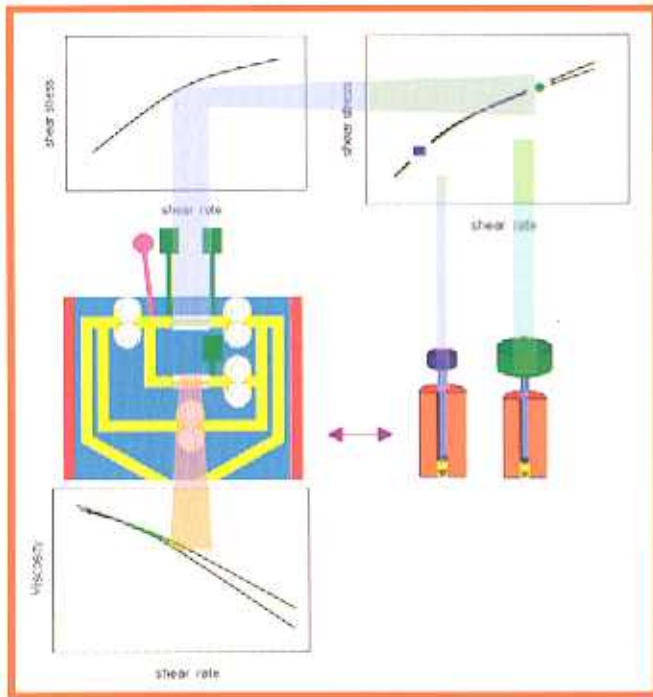


Inlet- and outlet stream in one pipe – the Annular Die System



Most online rheometers, with the exception of GÖTTFERT's SSR, require separate inlet and outlet pipe connections with two bores into the extruder spool piece. To disconnect those rheometers, two shutoff valves are required. The new Annular Die System of the RTR-RTS requires only a single bore with a minimum diameter of 26 mm. Further, only a single shutoff valve is required to interrupt both inlet and outlet streams. The Annular Die System offers the most flexible option to install the RTR-RTS onto extruder heads, needing only a single bore. This simplifies the problem of retrofitting extruders with limited access.

The RTR delivers! Rather than two manual tests in the lab, a single dual-point online measurement gives results in minutes instead of hours!



To determine the stability of product MWD throughout the production process, it has become best practice in QC to run MI measurements at both low- and high load test conditions.

The RTR-RTS with its unique twin capillary configuration simulates this procedure with the advantage that both values, MI_{LOW} and MI_{HIGH} are simultaneously determined in parallel. Ordinary online rheometers can operate only in sequence, one test after the other, which leads to significantly longer response time behaviour compared to the RTR-RTS.

- **Fastest response time behaviour: 0.25 minutes for MI 1 material**
- **Broadest range of MI covered by one die (1: 1000)**

From Real Time Rheometer RTR - to Real Time Spectrometer RTS

With the unique option to add a second capillary of different geometry in parallel to the first, the RTR becomes a Real Time Spectrometer, providing the means to determine a defined spectrum of the viscosity instantaneously. Most importantly, the spectrum as part of the viscosity function is measured under constant single point measurement conditions. The test result is generated immediately without any time delay, offering the best possible chance to control process.



Göttfert, a private company manufactures rheological instruments both, for laboratory and process control

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