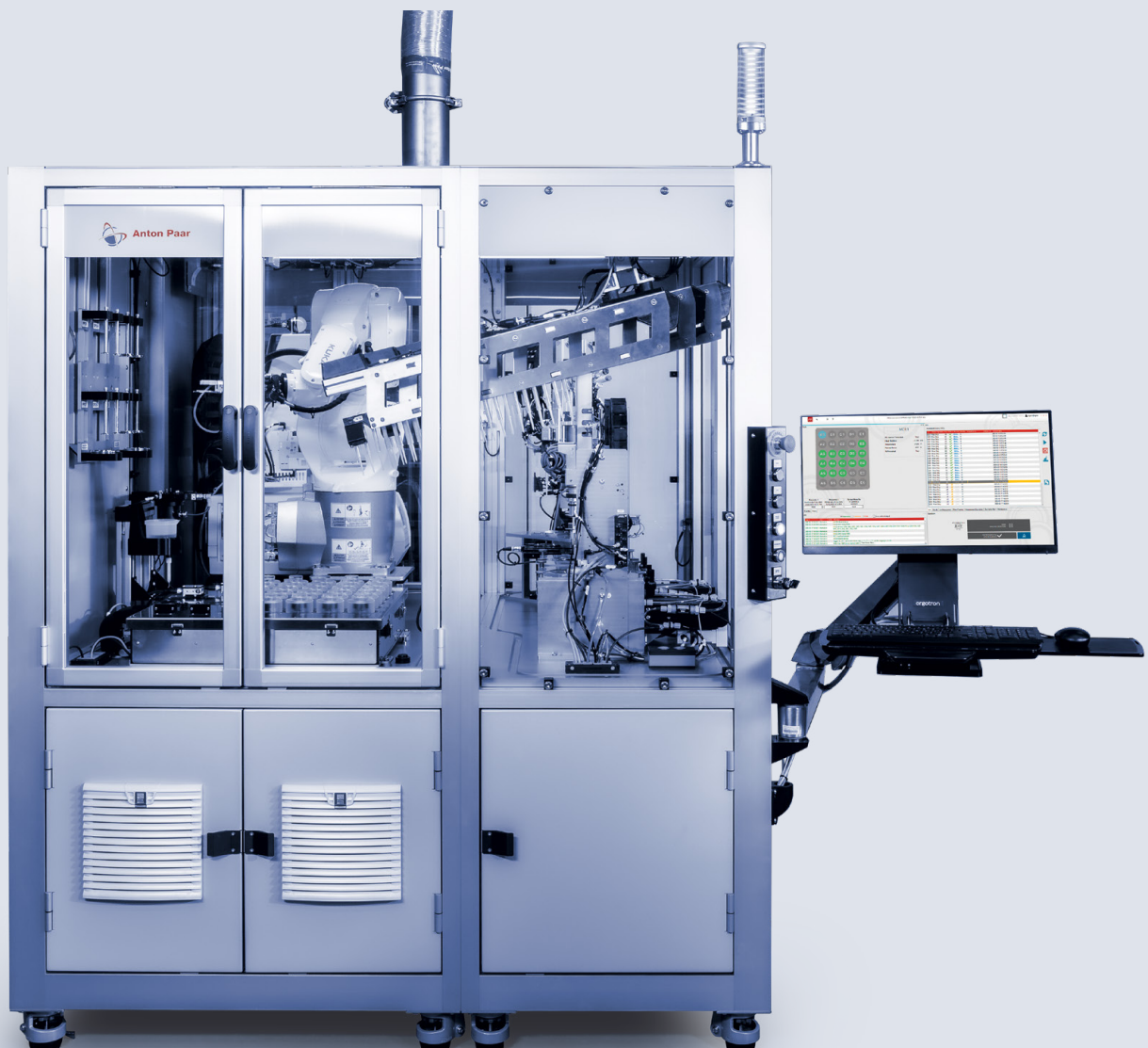


# The Fully Automated Rheometer Workflow

HTR 7000





# HTR 7000 Load. Set. Go.

Automation of lab workflows is key for future innovation and productivity gains. It boosts productivity by accelerating routine tasks, allowing scientists to focus on complex work. It ensures repeatability and consistency, with hands-free testing and rapid data analysis. And it addresses the shortage of skilled workers, while also enhancing safety by reducing exposure to hazardous substances.

HTR 7000 performs fully automated traceable rheological measurements – from sample preparation to cleaning. It eliminates up to 14 manual steps, and frees up complete shifts.

**Accelerate  
innovation:  
Automate your  
lab workflows**

**Fully automated  
rheometer: 24/7  
operation with  
zero downtime**

**Increase  
walkaway time:  
Storage capacity  
of 60 samples**

**Enable  
digitalization of  
your lab**

**Eliminate manual  
handling: Optimize  
repeatability,  
safety**

**Global support  
and a three-year  
warranty**



Find out more



# Where Precision Meets Performance

Designed with maximum flexibility, automation capabilities, and dependability in mind, HTR 7000 future-proofs your lab, accelerates innovation, streamlines productivity, and maximizes repeatability. With automated sample preparation, integrated rheometer and pH measurements, and a modular design, it simplifies workflows, enhances data quality, and boosts lab productivity – all from one trusted provider.



## **Reproducible data quality and full traceability**

Automated sample preparation and measurement ensure dependable, precise results every time. Integrated tools like sample management, barcode reading, and LIMS connectivity guarantee SOP compliance and complete traceability – even supporting AI model training with image documentation. Automated sample handling and trimming ensure maximum reproducibility. The optional dual rheometer setup enables parallel measurements, saving time and maximizing throughput with consistent performance.

## **Leverage automated workflows**

Load, set, and go – optimize the value stream of your lab. Run up to 60 samples and 14 workflow steps without interruption or supervision. The 24/7 automation handles preparation, trimming, cleaning, and data transfer – freeing you to focus on more valuable tasks or research goals. Say goodbye to manual processes and accelerate innovation and streamline productivity with HTR 7000's automated workflows.

## **Maximum flexibility through modular design**

Trust your results no matter if you're taking on solid, paste-like, or dispensable low-viscous samples. HTR 7000 is suitable for all sample types that are measured with plate-plate or cone-plate measurement geometries. Configure HTR 7000 with up to two rheometers, cleaning stations, various racks, or geometry pairs (CP, PP) to suit any workflow or project requirement. Fulfill requirements for the storage temperature of samples with an optional temperature-controlled rack.

## **Safely open the door to rheology**

HTR 7000 is so safe that virtually anyone can use it. Thanks to automation, human interaction with harmful samples or cleaning agents is minimized and is eliminated for hot instrument geometries. Additional safety features such as the safety doors, monitored ventilation, and an explosion-safety option, mean you can operate the HTR 7000 with confidence.

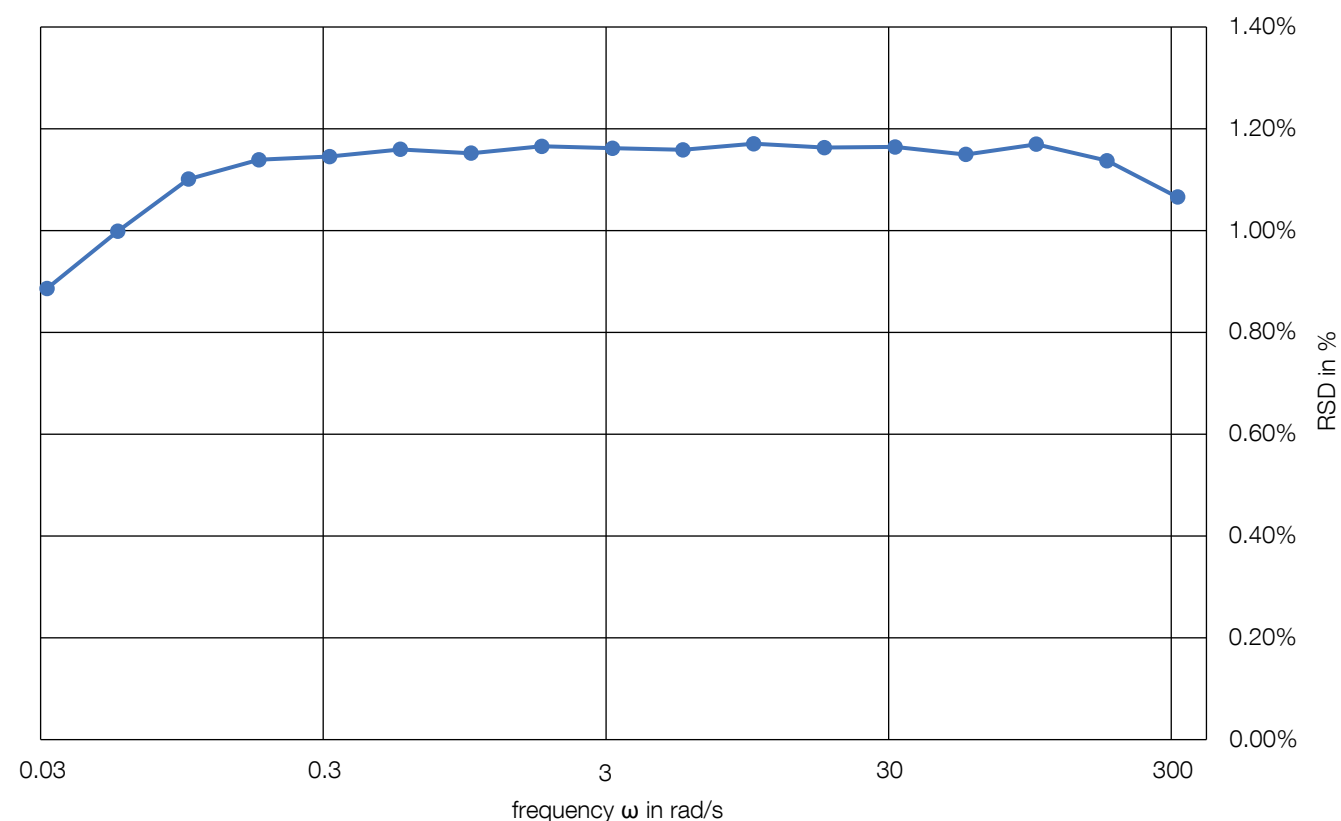
## **Precision meets performance**

Benefit from best-in-class service, wear, and spare part packages, as well as support that guarantees punctual delivery, maximum uptime, and efficient knowledge transfer. We're so confident in the quality of our instruments that they all come with a three-year warranty.

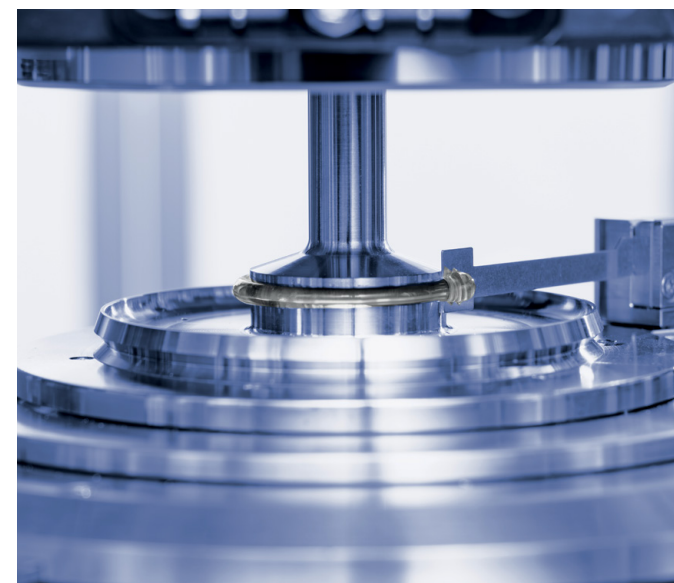
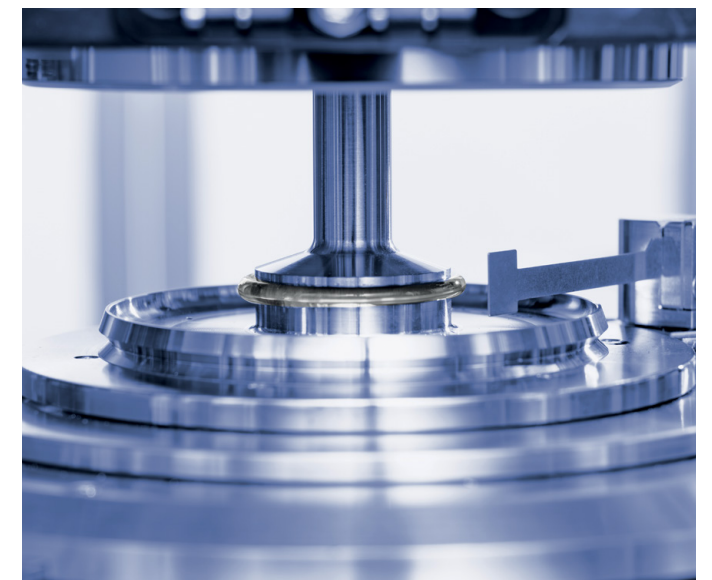
With subsidiaries around the globe, Anton Paar's global sales and service network is always nearby, offering comprehensive training, support, and individual maintenance and service.

# Operator-Independent Results: Automated Trimming

Relative standard deviation (RSD) of  $G^*$  in a frequency sweep<sup>1)</sup>



<sup>1)</sup> Study with polyethylen sample characterised at 190 °C



## Precision across industries

Developed to meet the high-precision demands of the polymer industry, the fully automated trimming tool of HTR 7000 is redefining sample preparation across multiple sectors. By eliminating manual variability, it delivers unmatched reproducibility – within absolute deviance of  $\pm 1.76\%$  of  $G^*$  and a standard deviation of only  $1.12\%$  for polyethylene samples – and ensures consistent sample quality with minimal exposure to atmosphere. The automated trim tool is fully integrated into Anton Paar's MCR 702e rheometer, to deliver consistent results. The integrated camera ensures thorough documentation and full traceability of every trim result. Today, HTR 7000 is trusted not only in polymer workflows but also in applications ranging from personal care and adhesives, to paints and food.

## What is the benefit of automated trimming?

Compared to manual workflows, automated trimming with HTR 7000 reduces the sample's exposure to ambient conditions by over 52 % – from an average of 66.1 seconds down to just 31.3 seconds. This significant reduction not only enhances reproducibility but also helps preserve sensitive material properties, especially in applications where moisture, temperature, or oxygen can impact results. Less handling means fewer risks – and more reliable rheological data.

By eliminating the need for manual trimming at elevated temperatures, HTR 7000 significantly improves operator safety. Especially for measurements above 180 °C, the system removes the risk of handling hot samples and geometries, reducing the potential for burns or heat-related accidents. With fully automated sample preparation, critical steps are performed with precision and without human contact – keeping both users and results safe.



# The Rheo Workflow Reimagined

Samples from different industries have different requirements: HTR 7000 can adapt. It can be configured depending on the sample with various standardized options. Operators no longer spend time on rheological testing and cleaning tasks; their role is reduced to loading samples, defining methods, and analyzing results: Load. Set. Go.

The high-end MCR 702e rheometer measures samples with various plate-plate and cone-plate geometries. Depending on the sample, modules for sample conditioning, sample preparation, and sample cleaning can be added.



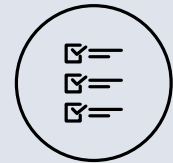
## 1. Load



### Load samples

- Up to 60 samples
- Configurations for solid, paste-like, or dispensable samples available

## 2. Set



### Set configuration

- Define analysis parameters via workflow configuration
- Define sample priorities

## 3. Go

### The automated rheo workflow



### Sample preparation

- Sample tempering
- Bar code reading
- Sample homogenization (mixing)
- Vial handling (opening, closing)
- Dispensing/loading the sample



### Analysis

- Loading of upper/lower geometry
- Automated trimming
- Rheological measurement
- pH measurement



### Finishing and documentation

- Clean measurement geometries
- Document results

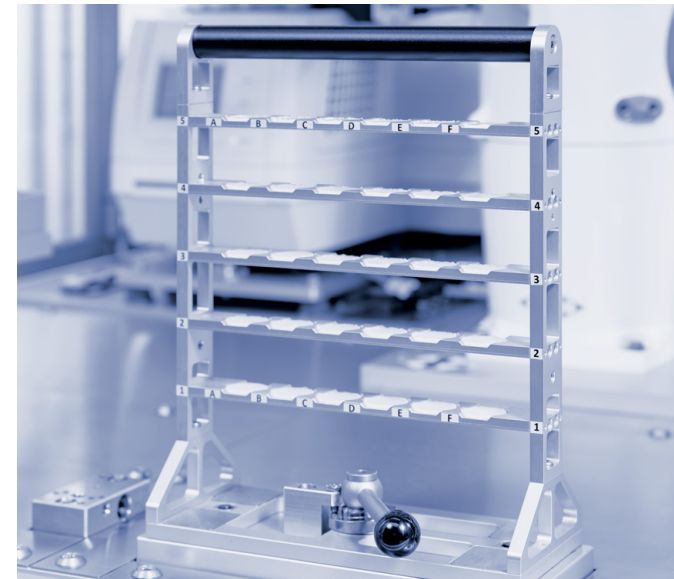


### Data export

- Automated data transfer
- Connection to network or LIMS

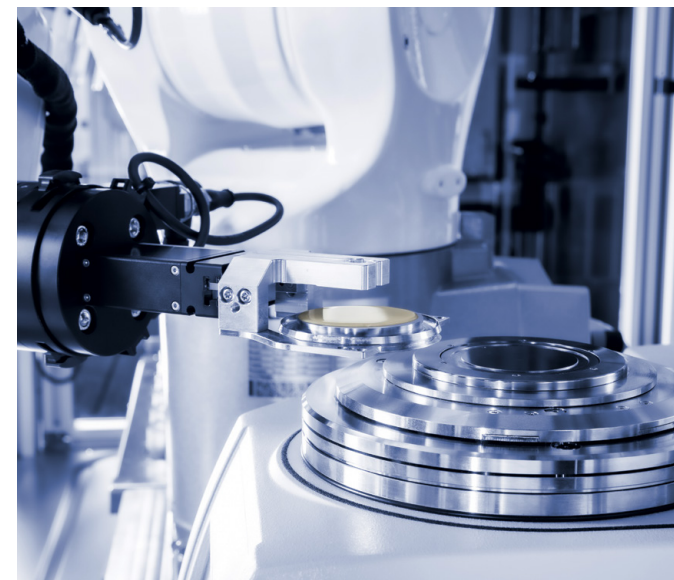
# Load: Configure for Your Samples

Built around the high-precision MCR 702e rheometer, HTR 7000 features a modular automation platform powered by a six-axis robot and enclosed within a safety cell. Its modular design enables customization for a wide range of applications by adding functional elements tailored to different sample types.



## **Solid samples**

Configured for solid samples, HTR 7000 can process solid disc specimens, such as polymer-melt samples, without manual intervention.



## **Dispensable samples**

The system covers natural flowable fluids (low-viscosity samples) such as shampoos, conditioners, and food or polymer solutions, and can be equipped with an optional pH station. For food samples in particular, temperature-controlled sample storage ensures the protection of perishable materials.



## **Pre-dispensed samples**

Pre-dispensed samples, including paste-like materials such as adhesives or creams that are neither syringe-dispensable nor solid (e.g., highly viscous pastes), are accommodated by preloading them onto the lower measurement geometry. These samples can then be sealed with a gravity cap.



# Go: Modularity, to Customize Your Workflow


HTR 7000's modularity empowers you to tailor an automated workflow to your application. You choose the modules that fit your samples and your SOP, from sample preparation to geometry cleaning.

## High-impact features

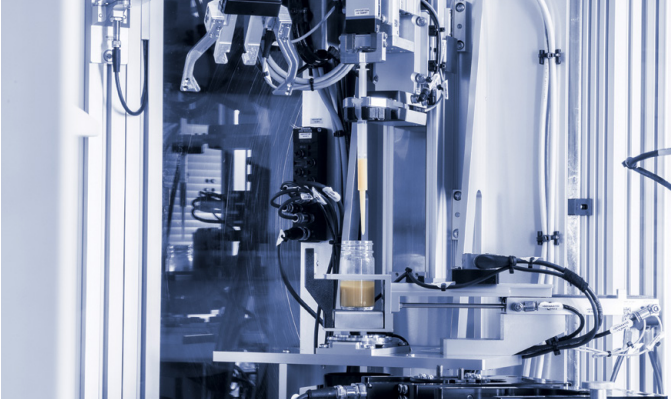
Sample preparation



**Temperature-controlled rack**  
A temperature-controlled rack keeps the sample temperature-conditioned before the rheological test (for perishable samples).



**Bar code reader**  
The bar code reader ensures full data traceability of the samples measured. It enables bi-directional LIMS integration so you can easily keep track of your measurement data.



**Dispensing station**  
An optional homogenization station delivers reliably uniform samples with precisely controlled mixing times. Low-viscosity materials can then be aspirated and dispensed according to the SOP using syringes or pipettes.

Analysis



**Rheometer**  
Equip the rheometer with versatile temperature control options spanning -50 °C to +300 °C, and add capabilities such as trimming or measurements under a nitrogen atmosphere. Expand your setup by integrating an optional second rheometer to match your testing needs.



**pH station**  
For samples loaded in vials, an optional pH station opens the door to an additional parameter. Rely on semiautomated two-point pH calibration and an integrated cleaning station of the pH sensor after every measurement.



**Cleaning station**  
Tailored for the applied sample type, cleaning stations with water and detergent, solvents, or mechanical cleaning stations are available to clean measurement geometries after analysis.

Finishing

	HTR 7000
Dimensions (W x D x H)	approx. 1,650 mm x 1,580 mm x 2,300 mm
Dimensions unassembled (W x D x H)	max. 980 mm x 1,580 mm x 1,980 mm
Weight (net)	approx. 1,200 kg (robotic cell) + approx. 200 kg (electrical cabinet)
Mains supply	400 V, 16 A, 50 Hz / 60 Hz
Media interfaces	Compressed air, cleaning solvents (optional), water (optional)
Waste disposal	Drain for liquids
Communication interface	Ethernet
Rheometer MCR 702e MultiDrive specifications	
Max. torque	230 mNm
Min. torque (rotation)	1 nNm
Min. torque (oscillation)	0.05 nNm
Max. angular velocity	314 rad/s
Max. angular frequency	628 rad/s
Normal force range	0.005 N to 50 N

# Reliable. Compliant. Qualified.



Our well-trained and certified technicians are ready to keep your instrument running smoothly.

**Maximum uptime**

Regardless of how intensively you use your instrument, we help you keep your device in perfect shape and safeguard your investment. For at least 10 years after the discontinuation of a device, we'll provide you with any service and spare part that you might need.

**Warranty program**

We're confident in the high quality of our instruments. That's why we provide a full three-year warranty. Just make sure to follow the relevant maintenance schedule. You can also extend your instrument's warranty beyond its expiration date.

**Short response times**

We know that sometimes it's urgent. That's why we provide a response to your inquiry within 24 hours. We give you straightforward help from experienced people, not from bots.

**Global service network**

Our large service network for customers spans 85+ locations with more than 600 certified service technicians. Wherever you're located, there's always an Anton Paar service technician nearby.





