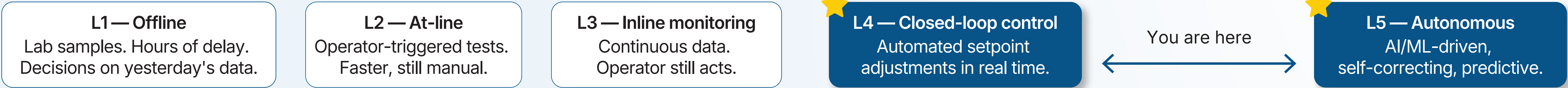


# Achieving "level 5" autonomy in food processing



Offline lab analysis sees only snapshots, leaving operators blind to the process in between and that gap costs yield, energy, and consistency. Rheonics' Balanced Torsional Resonator (BTR) sensors deliver real-time viscosity and density directly in the flow. The result: closed-loop control, and the path to Level 5 Autonomy.

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### Problem

Food and beverage processors lose yield, energy, and consistency to a single root cause: viscosity and density data that arrives too late. Manual sampling means decisions are made on conditions that have already changed, driving rework, off-spec batches, and unnecessary energy use. **Three requirements close this gap and one technology delivers all three.**

01

#### Texture & Mouthfeel

Hold viscosity within tight tolerances to lock in the sensory profile consumers expect from creamy sauces to pourable syrups.

02

#### Formulation Integrity

Verify ingredient concentration and solids content continuously, so flavor and nutrition stay stable across every production run.

03

#### Closed-loop Correction

Adjust formulations automatically before processing or filling, perfect material properties from the first batch to the last.

04

#### The Rheonics Answer

Inline SRV and SRD sensors built on patented BTR technology deliver real-time viscosity and density directly in the flow, enabling every requirement above, in every batch.

### Some food industry application examples



#### Vat Management Challenge

Time-based cutting misses the real coagulation point, lost yield or high-moisture curds.

#### The Rheonics solution

Rheonics CoaguTrack provides objective, real-time signals for optimal cutting point determination.

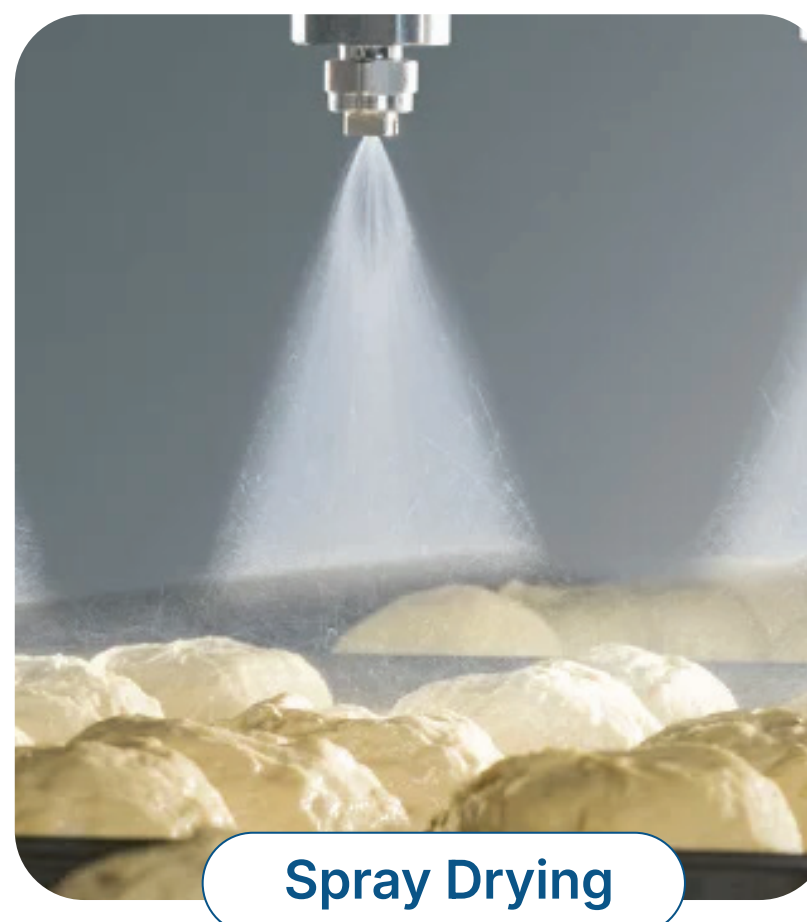


#### Mouthfeel Variability

Non-Newtonian texture shifts are invisible to offline sampling especially scaling to extrusion.

#### The Rheonics solution

Inline SRV captures rheology in the extruder feed for consistent texture, from pilot to plant.



#### Atomization Losses

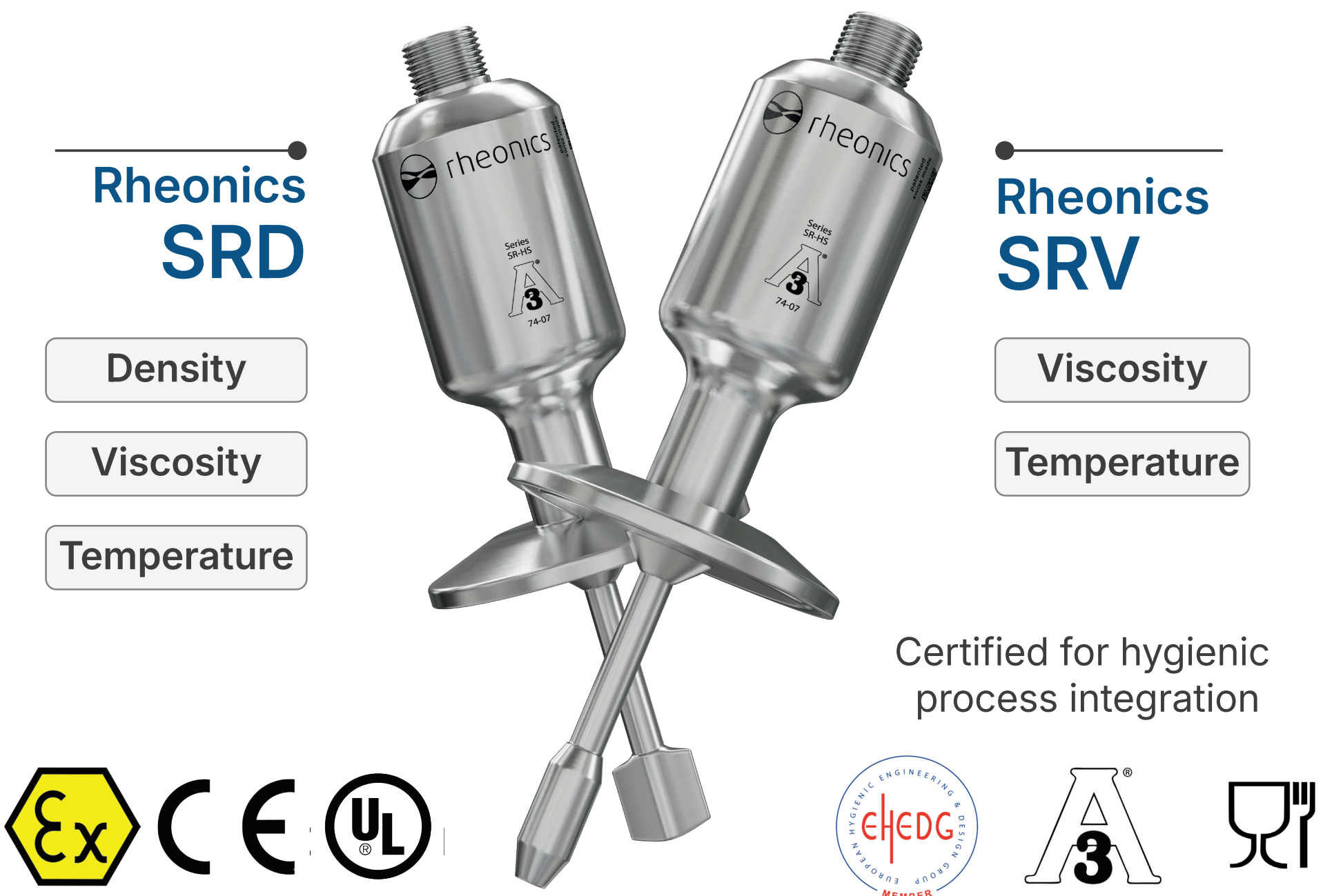
Variable feed viscosity drives inconsistent droplet size, wasted thermal energy, and nozzle fouling. Offline solids tests arrive too late to correct the problem

#### The Rheonics solution

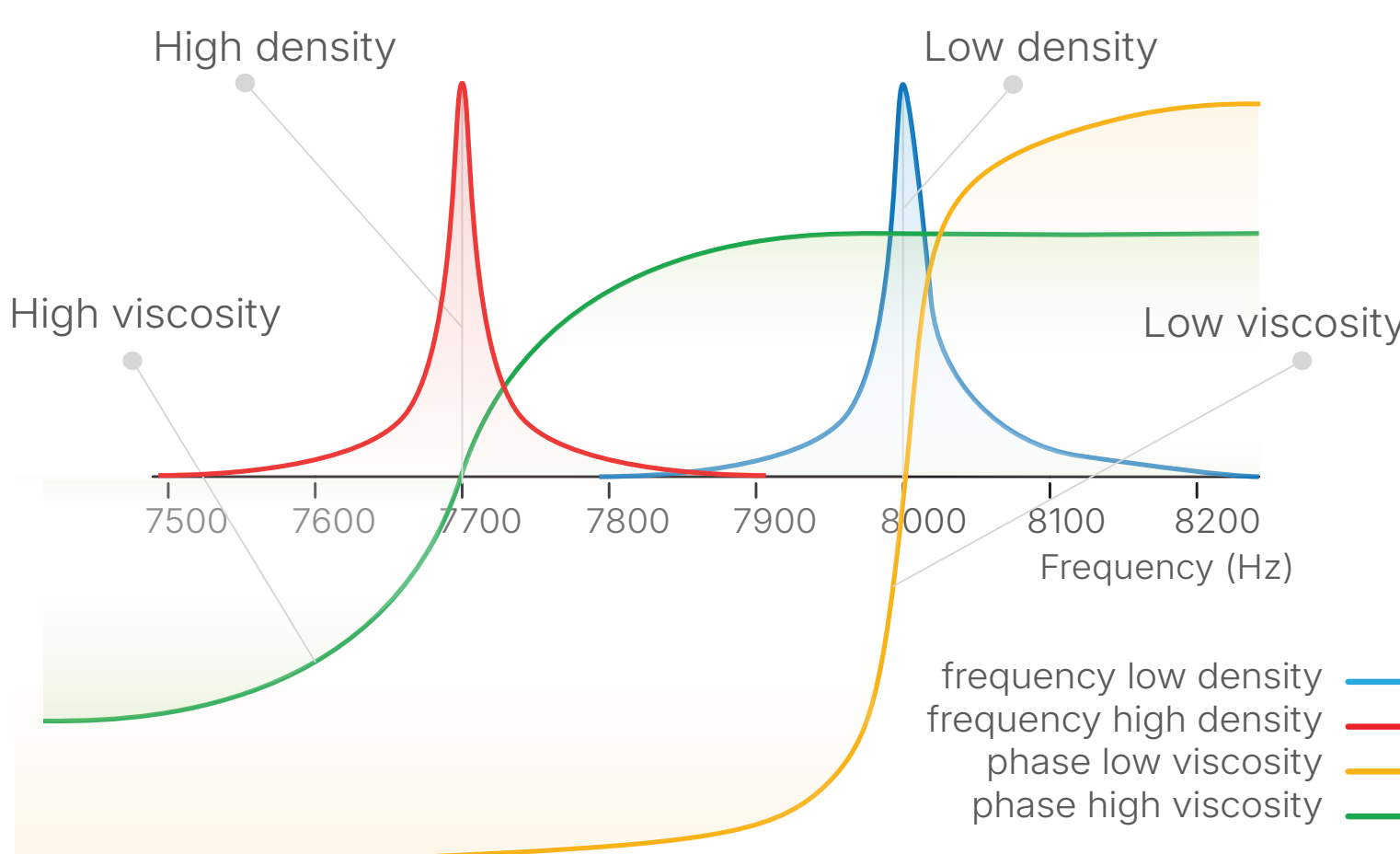
SRV measures feed viscosity inline at the pre-atomizer. Stable droplet formation, lower evaporation energy, no fouling-driven downtime.

### Rheonics Solution

#### Sensor Introduction



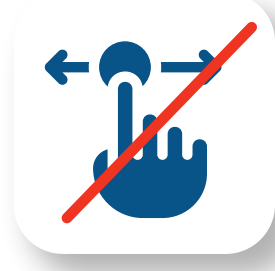
#### Resonance Response



- Patented BTR (Balanced Torsional Resonator) technology.
- Unaffected by external vibrations.
- Plug and play design.
- 3-A and EHEDG certified for sanitary applications.
- Robust and hermetically sealed.

#### Consideration of the sensing area

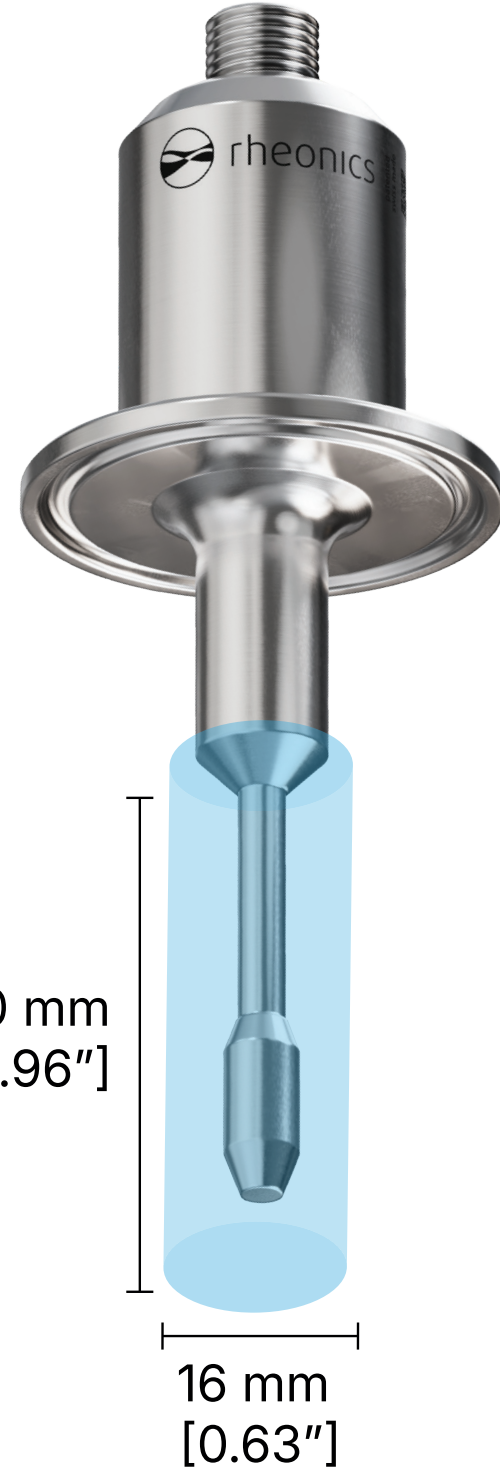
Ensure that the sensing area (red zone below) is always in contact with the fluid and avoid stagnations or dead zones.



No re-calibration over sensor lifetime



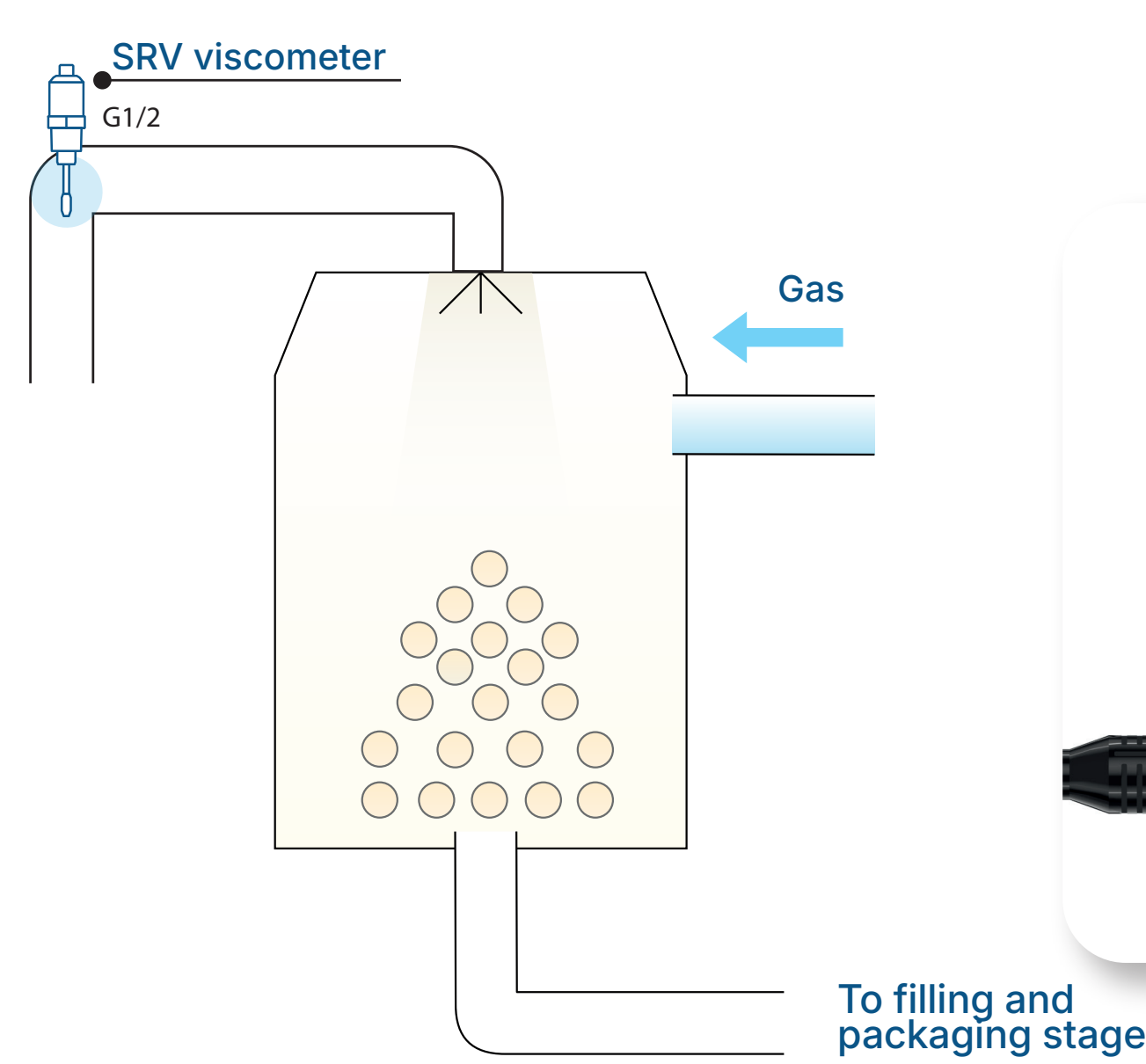
NIST-traceable factory calibration and field verification



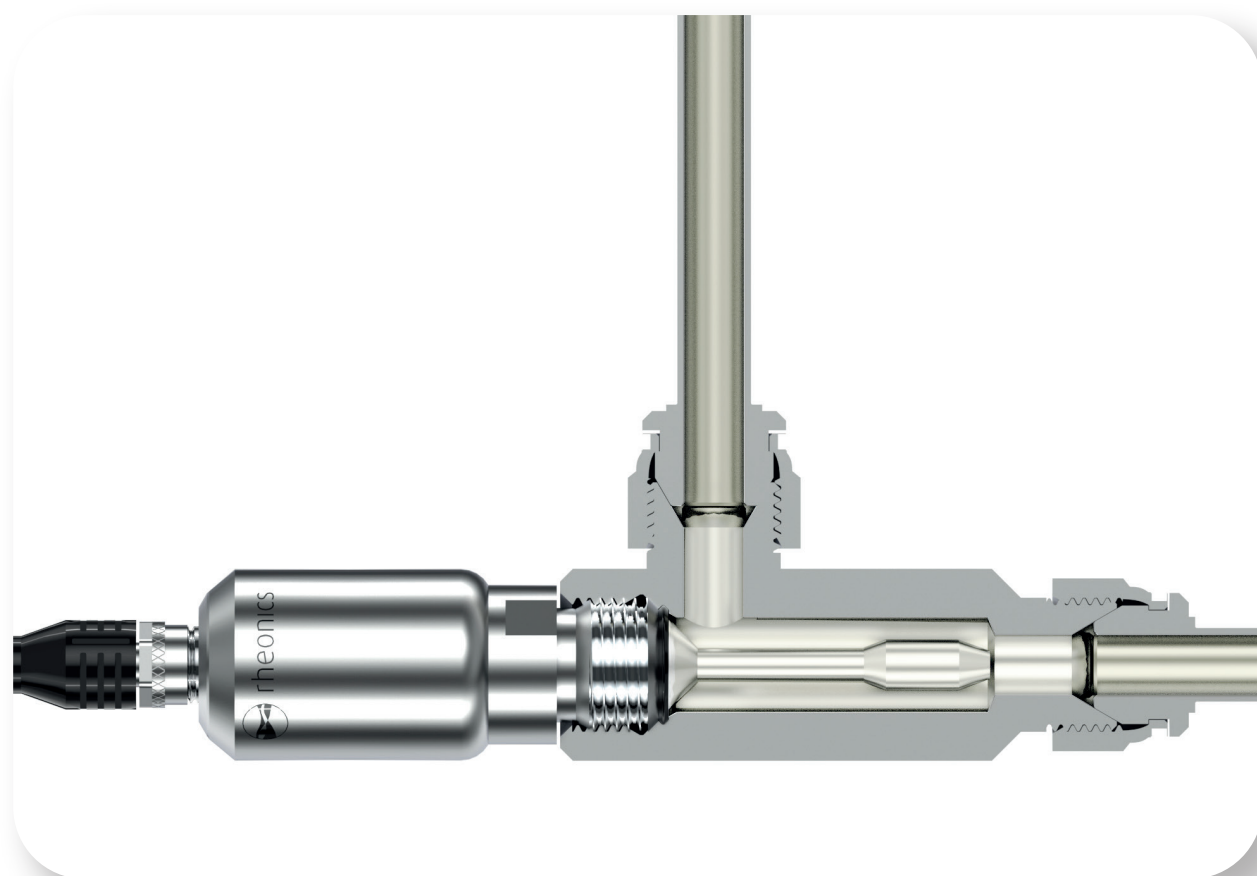
Come and see the sensors at Rheonics Booth



### Sensor Implementation



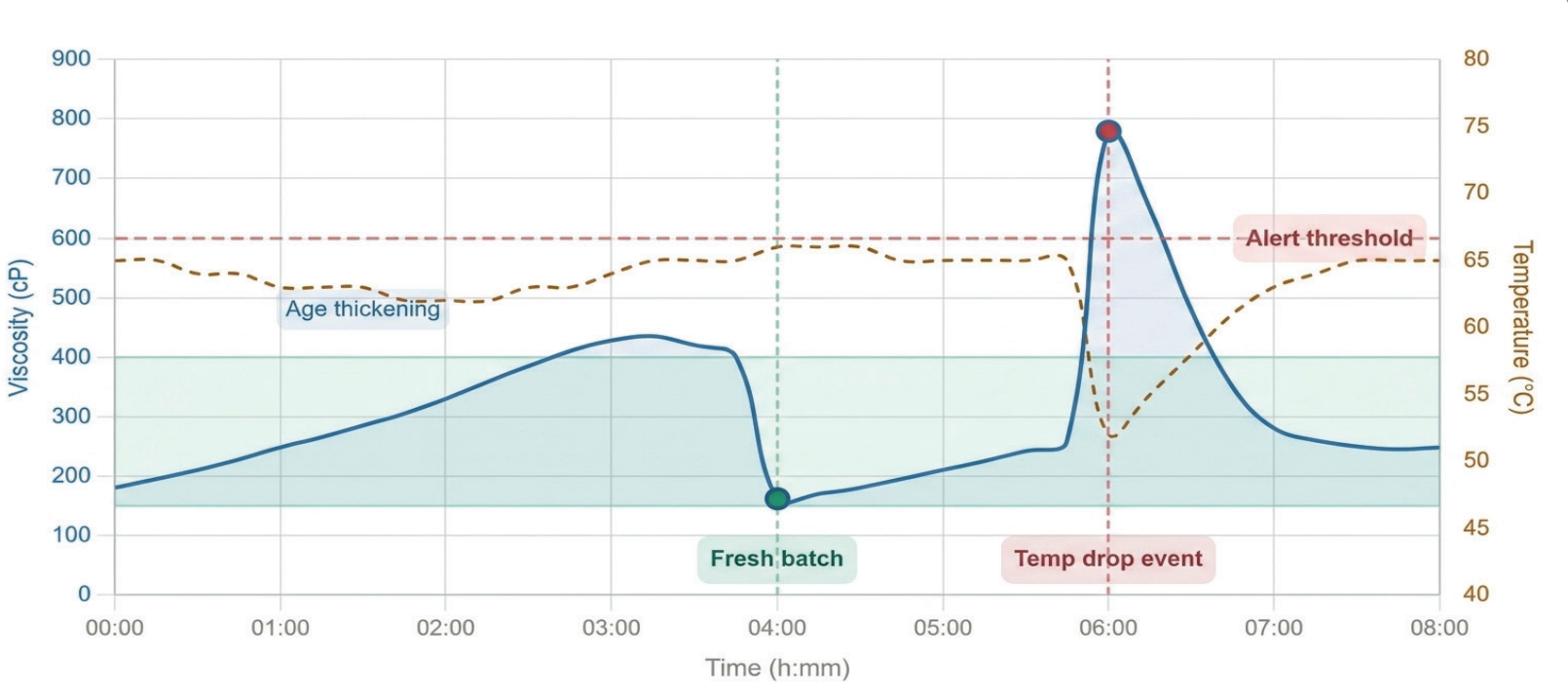
#### Milk powder drying stage



#### Cheese Vat Installation



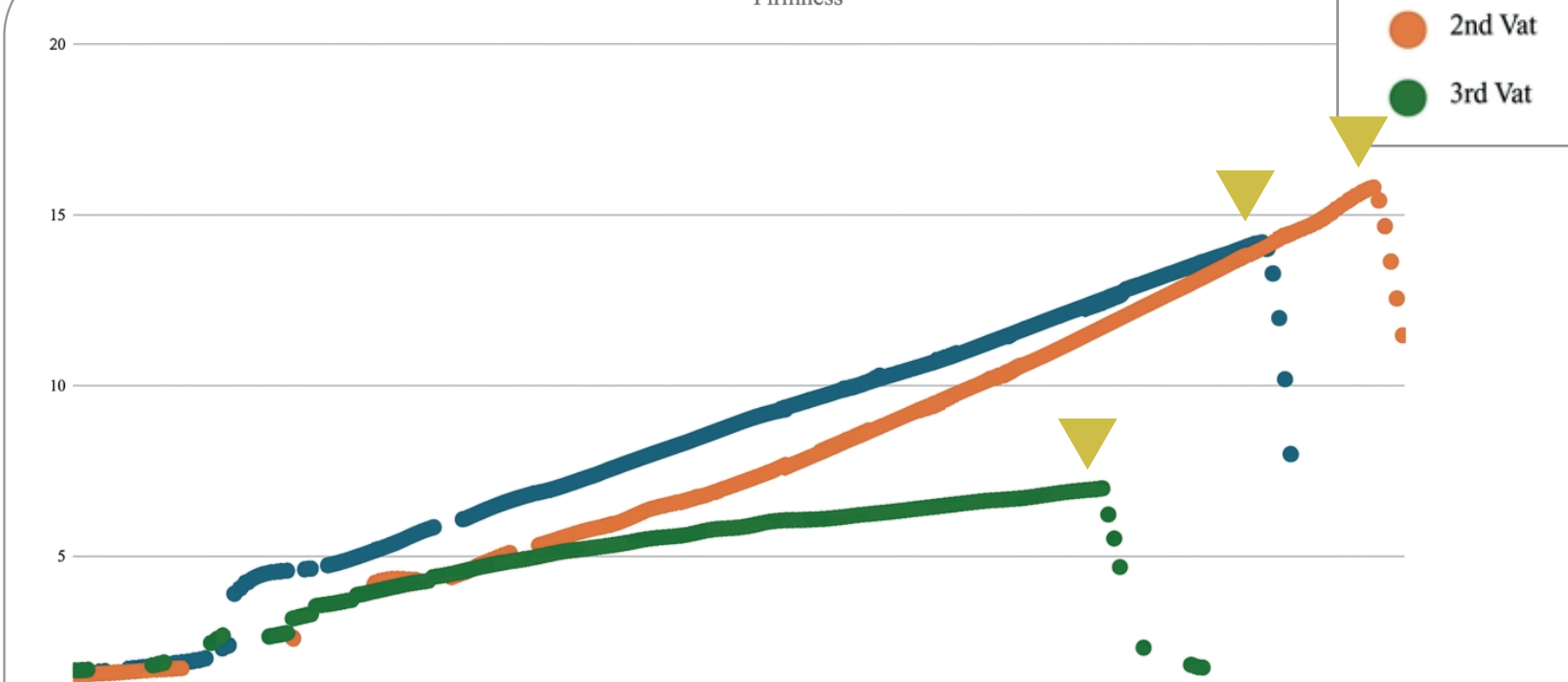
#### Milk powder plot



#### Rheonics SRV

Target band 150-400 cP  
Feed Temp 60-70 °C  
Dry Matter 50% DM  
Alert Threshold 600 cP

#### Cheese vat plot



#### Rheonics SRV

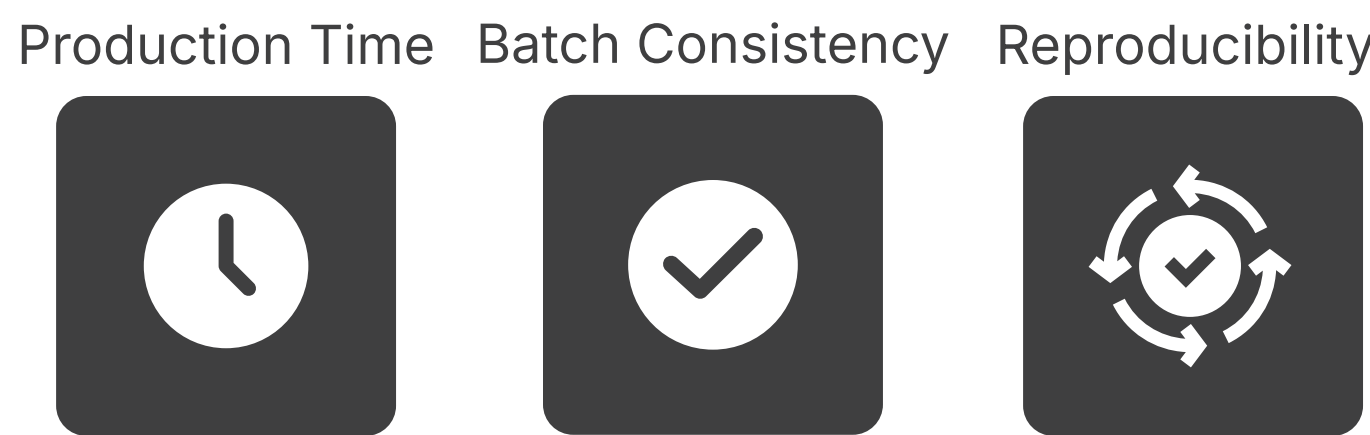
Firmness Setpoint  
Vat 1: 4  
Vat 2: 11  
Vat 3: 8  
Reproducibility Better than 1% of reading  
Cutting point [Automated blade control]

### Impact on KPI

#### Real-Time Measurement



#### Process Efficiency



#### Coagulation Control



### Ready to Improve Your Process?

Visit us at the **entrance to the Process Engineering Live Demo** and discover how to improve efficiency, quality, and control in your operation.



SRV: <https://rheonics.com/products/srv/> CoaguTrack: <https://rheonics.com/products/coagutrack/>  
SRD: <https://rheonics.com/products/srd/> Drying Page: <https://rheonics.com/milk-powder-viscosity-control>

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