



30 000 users worldwide

SOFRASER VISCOMETERS

Solutions to process control



Viscometry pioneers
since **1972** and
inventors of the world's
first resonance
frequency viscometer



Sofraser have been frequently copied, but
never matched!

Thanks to our **expertise**, allowing us to
reach an unparalleled level of accuracy.

We develop solutions for numerous
applications in **all industry** segments to
achieve excellence in your production.

OUR HISTORY

- 1972:** Creation of SOFRASER in the energy field.
- 2000:** Dr Luc K. Bellière joins SOFRASER as General Manager.
- 2008:** Dr Luc K. Bellière buys out SOFRASER and creates Ana Bell Group.
- 2011:** The management team becomes shareholder.
- 2013:** Advanced Holdings PTE LTD (Singapore) subscribes new shares (31% of enlarged capital).
- 2020:** Sofraser buys out the shares.



Dr Philippe BURG – Mr Kévin VANCAYZEELE - Dr Luc K. BELLIERE – Dr Valérie BELLIERE – Mr Jean-Marie DUBOYS

And a long history of innovation



A LONG INNOVATION HISTORY

1977: Patent of a first **in-line viscometer** to optimize combustion in boilers and furnaces

1981: Patent of world first **vibrating viscometer at resonance frequency (tuning-type)**

2005: Design of the first **portable viscometer**

2006: Patents of a **high sensitivity viscometer and density meter.**

2007: Patent of a **new electronic principle** to optimize viscosity measurement

2014: Development of the first **viscosity and density sensor for downhole applications**

2015: Patent of the unique **direct in line viscometer** for extrusion

2016: Launch of the first **direct kinematic viscosity analyzer** at reference temperature

2021: Launch of MIVI Hygienic with design certified by EHEDG

INLINE



ONLINE



AT LINE



IN TANK



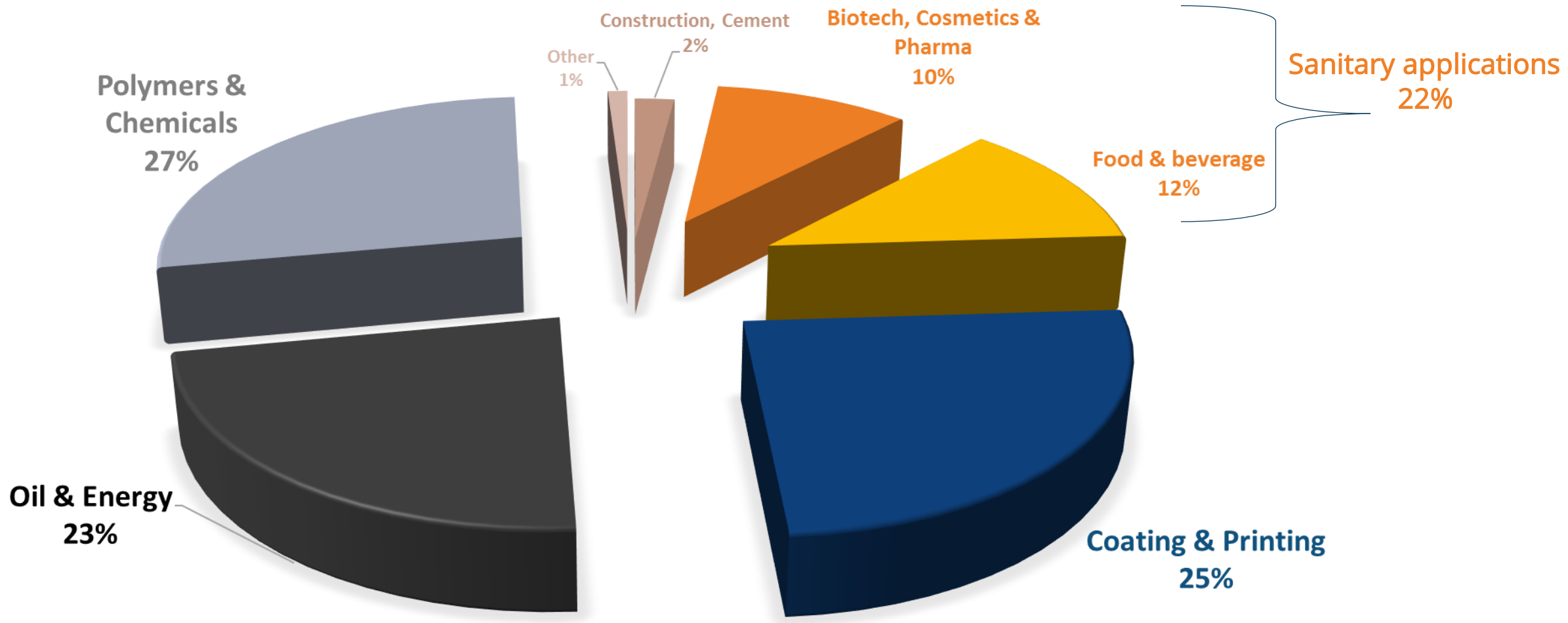
FRENCH TECH FOR A GLOBAL REACH

35 DISTRIBUTORS WORLDWIDE



OVER 30,000 USERS IN MORE THAN 100 COUNTRIES

Worldwide Applications





Always In Control

POLYMERS & CHEMICALS

Because constant adaptation and control are the keys when it comes to polymerization, plastic recycling or latex atomization, we have designed the most accurate viscometers on the market to ease your processes.



SOFRASER

Pioneering viscometry since 1972

POLYMERS & CHEMICALS

POLYMERIZATION CONTROL COMMON CONSTRAINTS

- Ⓢ Production capacity limited by batch duration.
- Ⓢ Evolution of reaction controlled by costly and time-consuming laboratory measurements.
- Ⓢ Unknown evolution between laboratory controls, affecting final product quality and end-point detection.
- Ⓢ Lack of control, leading to hardening of polymer (loss of production, great material damage)



POLYMERS & CHEMICALS

OUR SOLUTIONS ALLOW:

- ⑤ To increase production through time cycle optimization.
- ⑤ Better end-point detection.
- ⑤ Easier monitoring.
- ⑤ Prevention of mass solidification.
- ⑤ Reduction of costly and time-consuming laboratory sampling.
- ⑤ One single sensor able to provide high level of sensitivity over a very large measurement range

MAIN COMPETITIVE ADVANTAGE:

You can follow a wide span reaction with one single sensor thanks to its unsurpassed sensitivity



Unmatchable Product Quality

OIL & ENERGY

Influencing storage, handling and operational conditions, viscosity is the key parameter for Oil & Energy industry. In order to provide the best end-quality possible for our customers, our process viscometers are designed to indicate not only viscosity, but also density, temperature and temperature-compensated viscosity (TCV).



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Pioneering viscometry since 1972

OIL & ENERGY

OIL & ENERGY COMMON CONSTRAINTS

- ⑤ Quality of petrochemical products and derivatives depends on viscosity characteristics.
- ⑤ Partial understanding of processes due to lack of monitoring steps.
- ⑤ Viscosity changes with product quality and process temperature.
- ⑤ Difficulty to characterize the behavior of reference products.
- ⑤ Varying origin of crude and refining methods.
- ⑤ Hazardous environment.



OIL & ENERGY

OUR SOLUTIONS ALLOW

- ⑤ A single sensor able to provide instantaneous measurement and efficient analysis: dynamic and **kinematic viscosity**, density and temperature.
- ⑤ Avoids drift during manufacturing and guarantees end-product quality.
- ⑤ Processor directly calculates Viscosity at Reference Temperature (**TCV: Temperature Compensated Viscosity**).
- ⑤ Correlated to the **ASTM** standards.
- ⑤ Works without maintenance and has no wearing parts.
- ⑤ Viscosity meter resistant to high-pressure and high-temperature environments (**HPHT**).

MAIN COMPETITIVE ADVANTAGE:

From Kerosene to Bitumen,
monitor your process
with a sensor that never clog



In Safe Hands

FOOD & BEVERAGE

In Food & Beverages industry, sanitary conditions must be 100% respected. Thanks to our viscometers solutions, designed with sanitary mountings to avoid contamination, our clients guarantee the creation of safe and high-quality products.



SOFRASER
Pioneering viscometry since 1972

FOOD & BEVERAGE

FOOD & BEVERAGES COMMON CONSTRAINTS

- Ⓢ To constantly monitor and prevent products variations
- Ⓢ To obtain a better end-product quality and consistency
- Ⓢ To improve hygienic design, enhancing cleanability, decreasing the risk of biological, physical and chemical contamination
- Ⓢ To control and enhance product safety for customers



FOOD & BEVERAGE

OUR SOLUTIONS ALLOW:

- ⑤ Viscosity sensors specially designed for sanitary environment (MIVI sanitary according to 3A specifications & MIVI Hygienic) with no niche spaces.
- ⑤ Increased safety by avoiding contamination and bacteria proliferation.
- ⑤ Clean-in-place design (CIP), no need to uninstall it from the process.
- ⑤ Corrosion resistant (316L SS) and compatible with sanitizing procedures.
- ⑤ Many mounting positions to avoid dead spaces.
- ⑤ High pressure version and/or electropolish finishing available.

MAIN COMPETITIVE ADVANTAGE:

Just a 316L needle is inserted in your process

MIVI Hygienic, the only process viscometer with design certified by EHEDG



Safety First!

COSMETIC, PHARMA & BIOTECH

In order to master texture, consistency, enzymatic power or product concentration, viscosity measurement has become essential. Especially when it comes to customer safety.

With the adaptability of our viscometers, working in any position (even fully immersed!), it has never been easier to eliminate the risks of contamination.

09/06/2021



SOFRASER

Pioneering viscometry since 1972

COSMETIC, PHARMA & BIOTECH

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Adaptive and Very Tolerant

COATINGS

The best way to guarantee quick and good return on investment of coating processes is through quality excellence and drift-free, real-time viscosity management. Specially designed to meet this need, our process viscometers are equipped with the world's first tuning-type sensor based on a resonance frequency system for ensuring the highest level of quality.

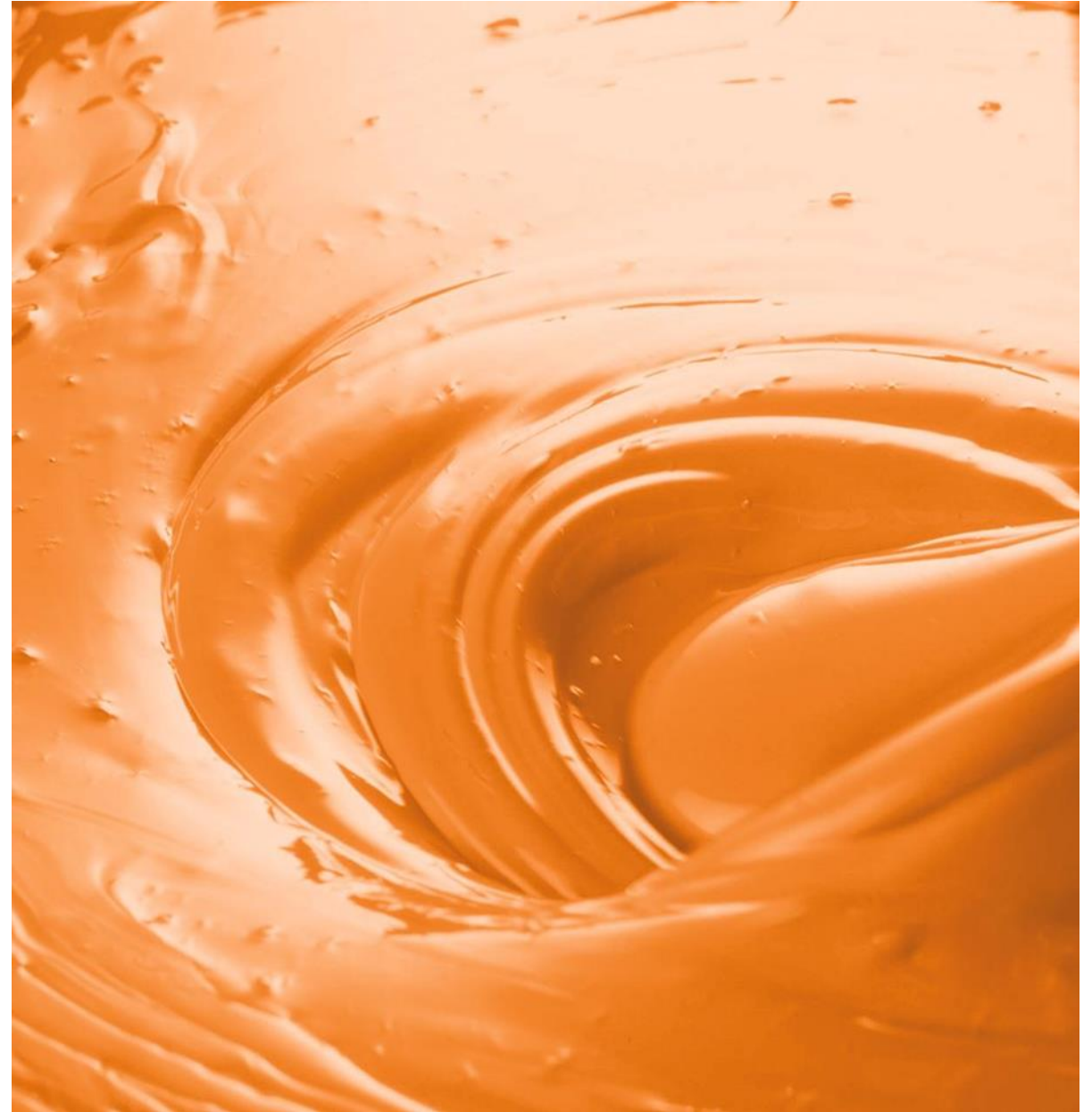


SOFRASER
Pioneering viscometry since 1972

COATINGS

COATINGS COMMON CONSTRAINTS

- ⑤ Material waste due to improper recipe blending for multi-components formulations.
- ⑤ Product evolution due to solvent evaporation.
- ⑤ Losses due to excessive product usage.
- ⑤ Nonconformity due to inhomogeneous or out-of-specification product.



COATINGS

OUR SOLUTIONS :

- ⑤ Provide coating and painting quality and consistency through homogeneity and uniformity.
- ⑤ Continuously deliver viscosity and temperature information.
- ⑤ Are compatible with solvents and water-based formulations.
- ⑤ Are very tolerant to particles.
- ⑤ Can easily be connected to controllers and installed on coating circulation loops.
- ⑤ Contain no wearing parts and require very low maintenance.

MAIN COMPETITIVE ADVANTAGE:

Not affected by particles or bubbles



SOFRASER TECHNOLOGY

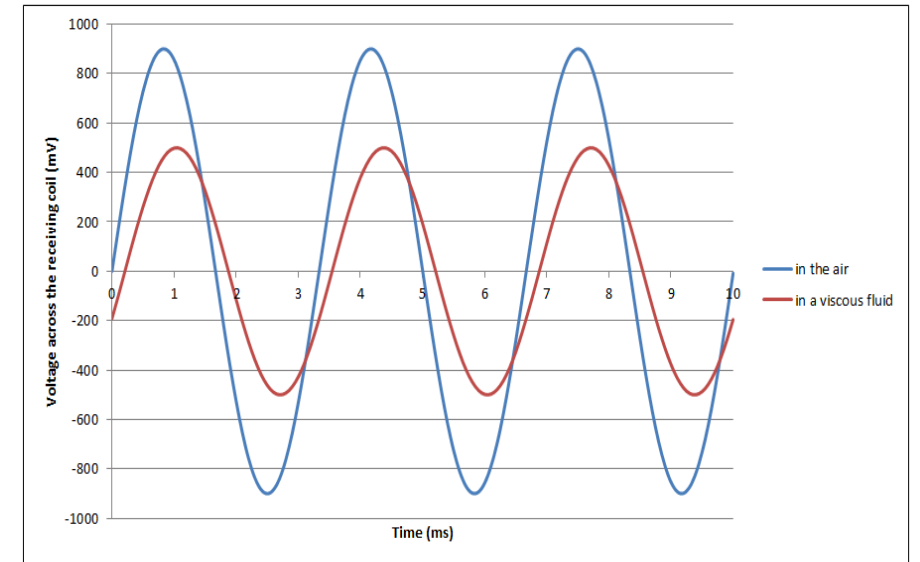
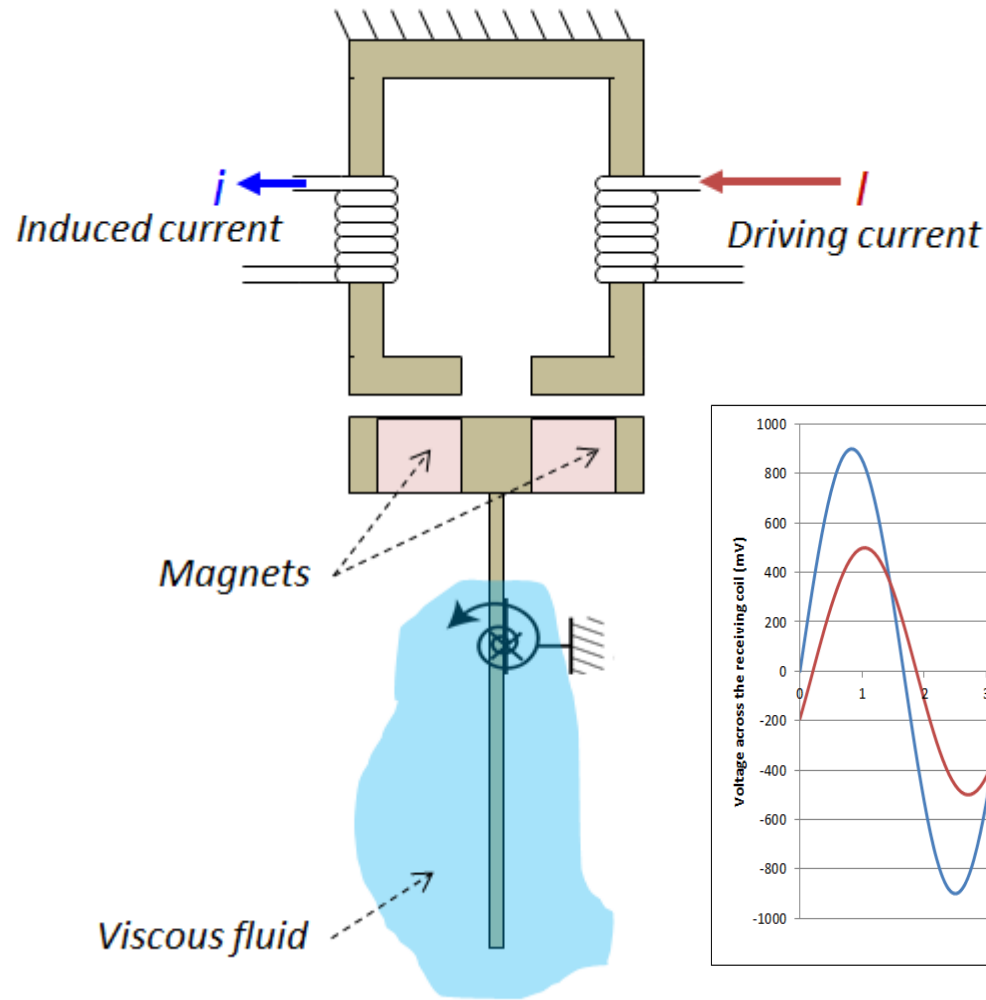


Pioneer in Viscometry

In **1981**, Sofraser invented & patented the **world's first** vibrating viscometer at resonance frequency also called tuning-type.

The vibration amplitude of a needle varies according to the **viscosity** of the product in which it is immersed. The amplitude and the frequency allow the determination of the **density**.

Sofraser remains unsurpassed regarding process reliability and accuracy.

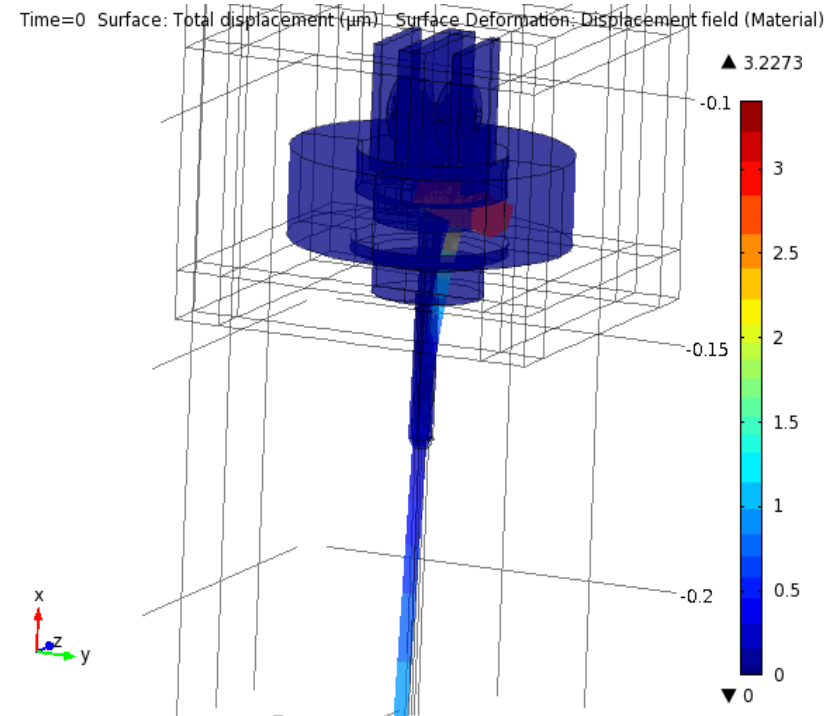
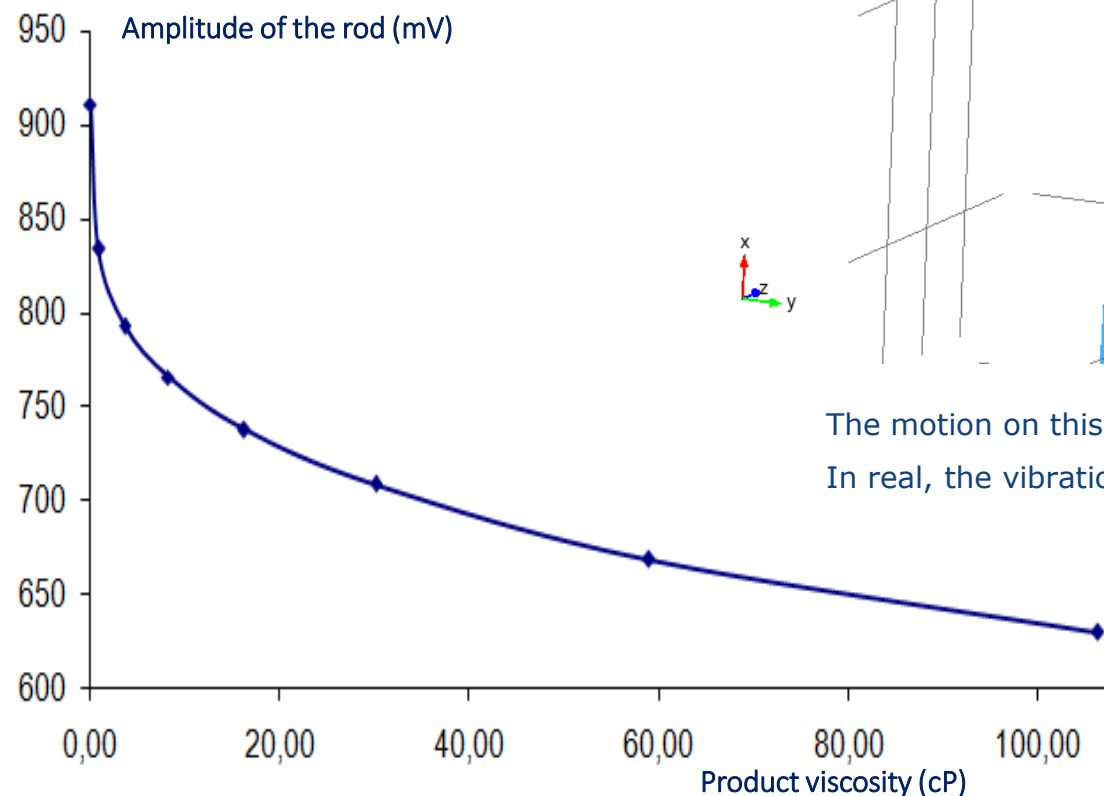


Viscometer principle

The vibration amplitude of the needle is directly correlated to the viscosity of the product. As the viscosity, the amplitude is decreasing.

The non-linear correlation allows a **very high sensitivity** in the beginning of the range even with **large range** sensor.

The calibration is made at the factory on certified oils.



The motion on this simulation is amplified by 100.
In real, the vibration is invisible.

Insert a Needle in your Process

The shape of the sensing rod allows it to be :

- ④ **Sanitary**
- ④ **Low intrusion probe:**
Mounted on very small pipe or reactor
- ④ **Extremely easy to clean**
- ④ **Very resistant (pressure, particles):**
Not destroyed by viscosity or pressure overshoot
- ④ **Electropolished or in different material or coated or enamel**



Tune your Process with a Diapason

The resonant vibration principle allows the viscometer to be:

- ⌘ **Not influenced by external vibration:**

The marine approvals vibration tests are here to prove it

- ⌘ **Extremely sensitive:**

Follow your full reaction with only one sensor

- ⌘ **Maintenance free and reliable in time**



Tune our needle in your process

The resonant vibration principle combined to the needle shape make our viscometer

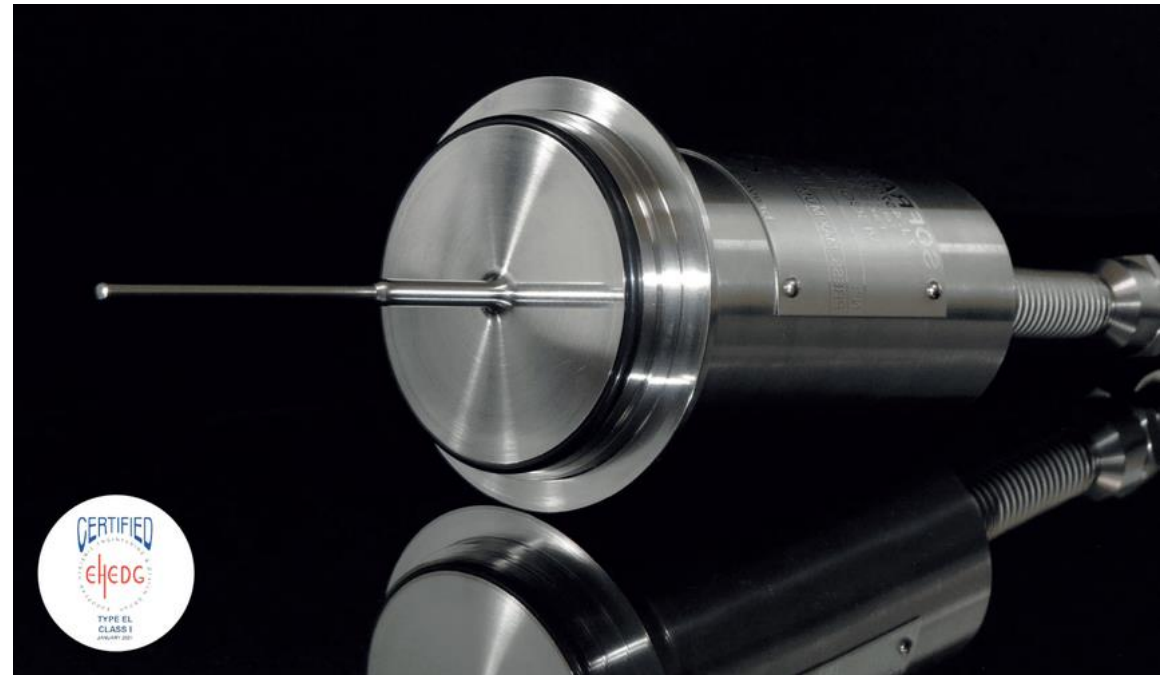
- Ⓢ Not disturbed by particles or bubbles
- Ⓢ Performant in very high viscosity
- Ⓢ Selfcleaning



MIVI hygienic

The only process viscometer with design certified by EHEDG *European Hygienic Engineering and Design Group*

Ⓢ to be mounted on a VARINLINE® assembly



World largest configuration choice

In order to fulfill any kind of need, Sofraser has developed over **1500** different possible configurations.

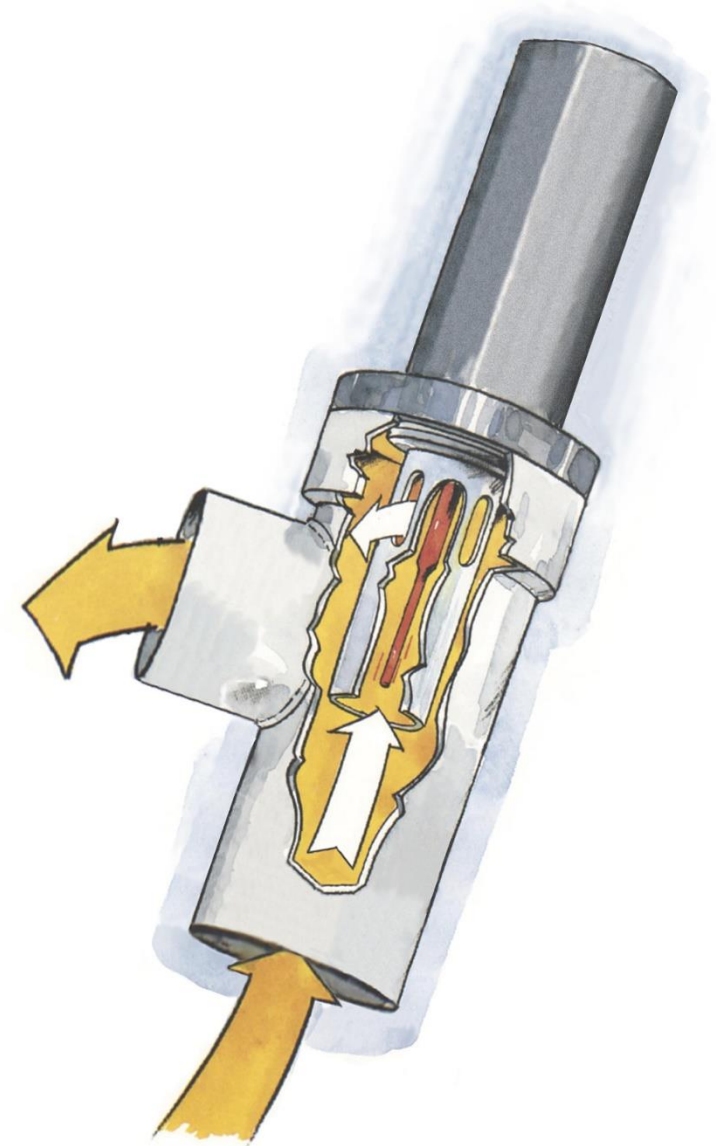
- ⑧ 8 Exproof approvals, Sanitary, High pressure, High temperature, High sensitivity
- ⑧ The largest choice of viscosity processors.



Flow damper technology

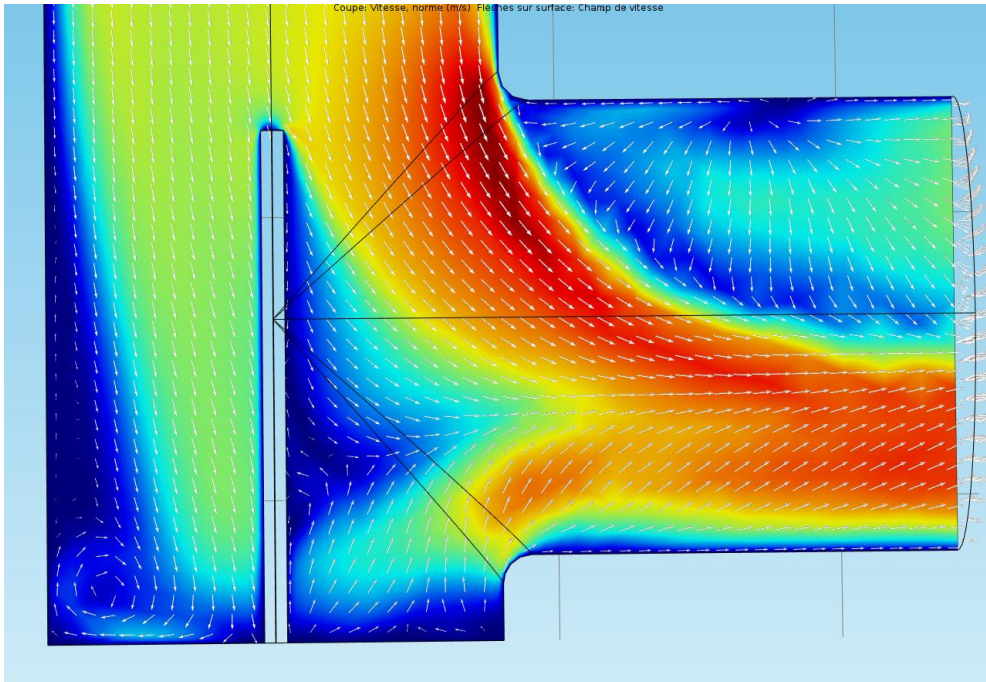
On reactor or large pipe, high flow rate to measure low or medium viscosity, turbulences can create instabilities in the product to measure.

Sofraser has developed an exclusive **Flow Damper** included on the sensor that acts like an **embedded flow cell** or re-circulator and laminarizes the flow around the sensing element.

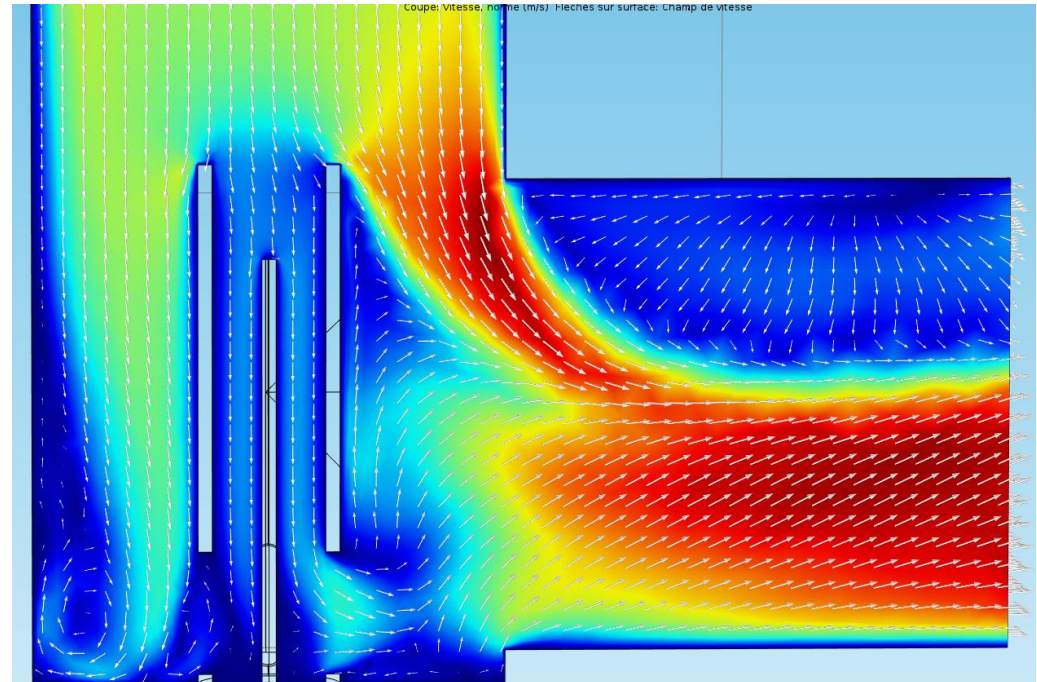


Flow damper on elbow mounting

WITHOUT



WITH



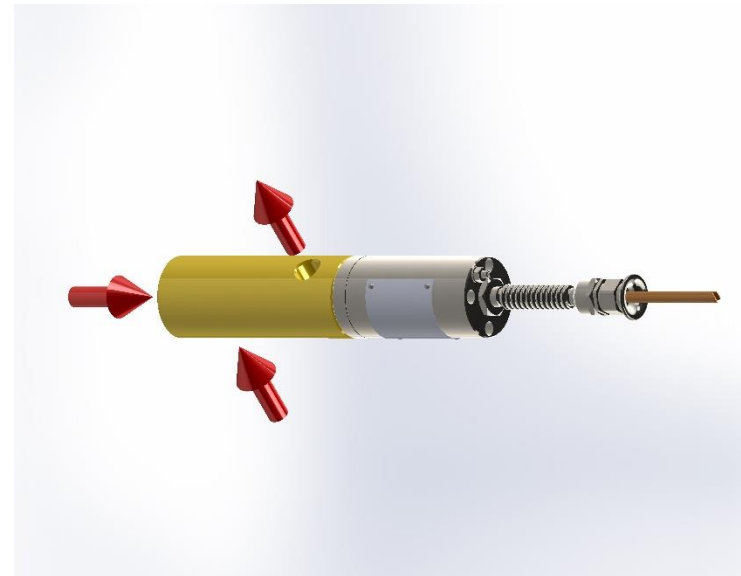
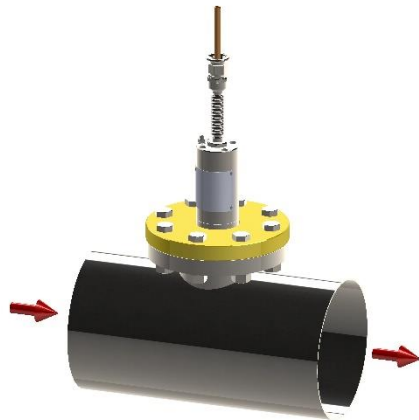
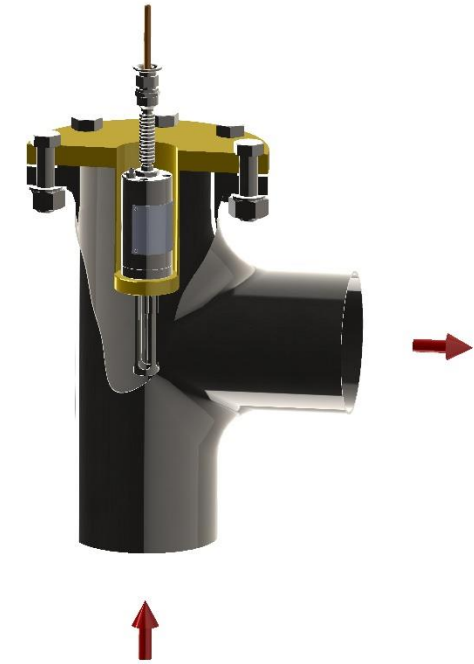
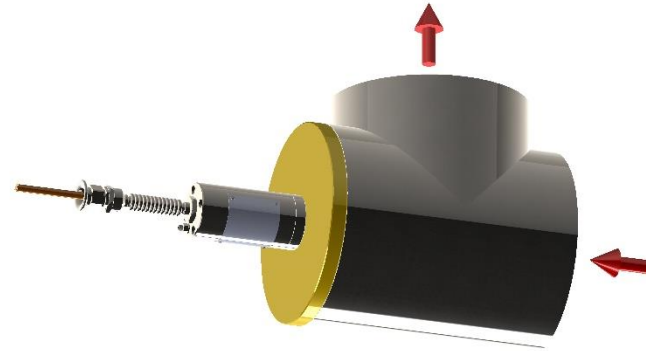
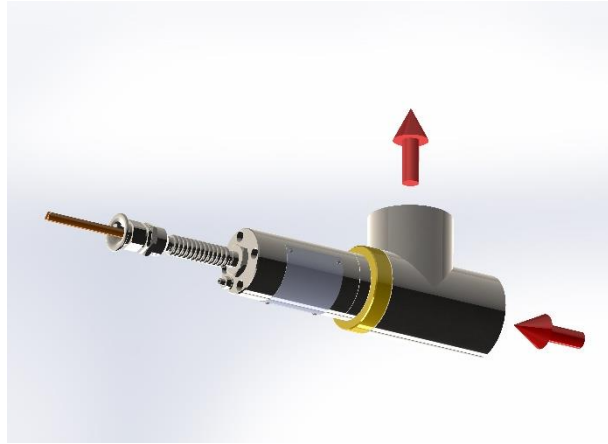


IN LINE MOUNTINGS



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MIVI sensor in line examples



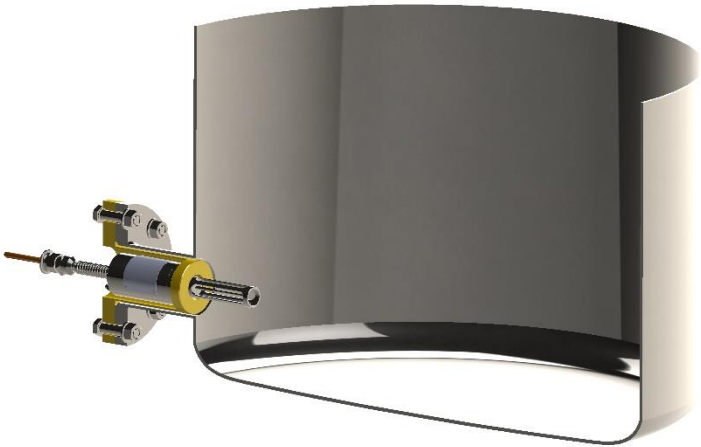
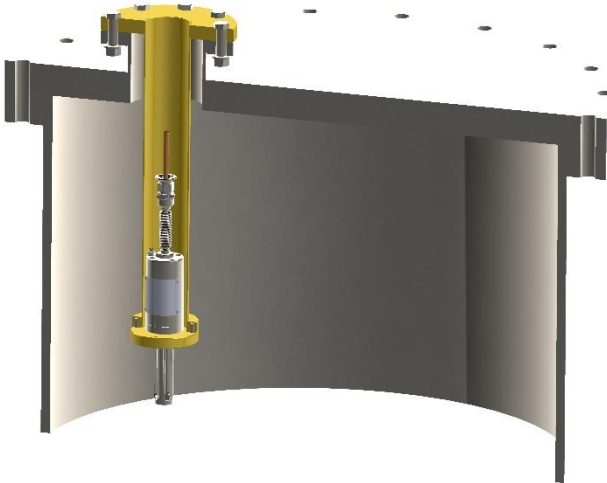


IN TANK – ON REACTOR MOUNTINGS



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MIVI sensor on reactor examples





ON LINE INSTALLATIONS



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Viscosity Analyzer @ Ref. Temperature

THERMOSET RANGE : On Line installations

Correlated to ASTM
D-445



THERMOSET Versions

THERMOSET Version	Kinematic viscosity KV	Lite LT	Complete Field CF
DESCRIPTION	Kinematic viscosity at reference temperature	Dynamic viscosity at reference temperature	Dynamic viscosity at reference temperature
VISCOSITY MAX.	1000 cSt	10 000 cP +	10 000 cP
DENSITY MEASUREMENT	Included	Optional external meter	Optional internal meter
EXTRA-INSTALLATION	Thermostatic bath and pump if necessary	Minimal (pump if necessary)	No extra-installation
CORRELATED TO	ASTM D445 ASTM 2270-04	ASTM D445 ASTM 2270-04	ASTM D445 ASTM 2270-04
MAIN ADVANTAGE	Directly correlated to ASTM D445	The most economical solution	ALL-IN-ONE



AT LINE USES



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Pioneering viscometry since 1972

Sofast BV

BENCHTOP VISCOMETER



PIVI

PORTABLE INDUSTRIAL VISCOMETER





Thank you

Sofraser Headquarters

ZI 15, rue Pierre Nobel

45700 Villemandeur

France

instruments@sofraser.com

www.sofraser.com

Tel. +33 2 38 85 77 12

Fax: +33 2 38 85 99 65



INLINE



ONLINE



AT LINE



IN TANK



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