SOFRASER
Pioneering viscometry since 1972

INSTALLATION GUIDE

Your process Multiple ways to measure viscosity

A guide to select the right installation



ON-PIPE • FLOW-CELL

ON-WALL • ON-TOP

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01 / GUIDE MAP

Choose your mounting

DIRECT MEASUREMENT

02	On-pipe - Continuous flow process	03
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02 / CONTINUOUS FLOW PROCESS

On-pipe

The MIVI sensor is inserted directly into the process stream to follow viscosity continuously under actual operating conditions.

TYPICAL ARRANGEMENT

Mounted on a suitable pipe angle or straight-line nozzle. The sensing element remains immersed in the product while the sensor body stays outside the pipe.

Best suited when

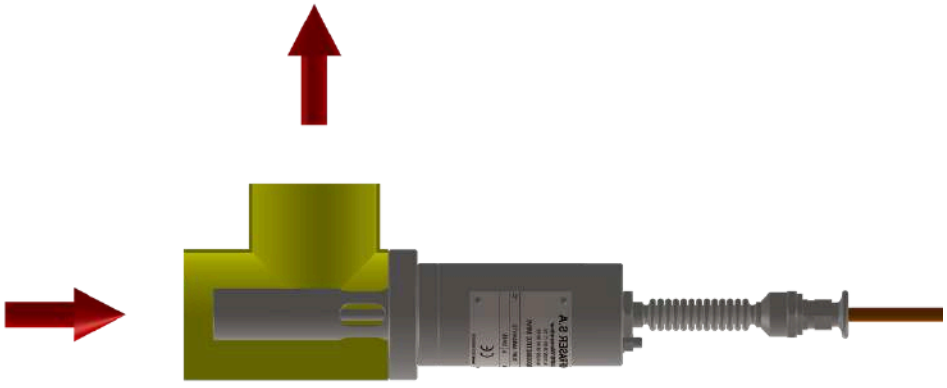
- The main line provides continuous, representative circulation
- Viscosity changes must be detected promptly for process control or automation

Installation principles

- Choose a representative point: avoid dead zones and air pockets
- Check immersion, line velocity, turbulence, pressure and sediments
- Allow space for installation, removal and maintenance
- Select a process connection suited to the application

INTEGRATION FLEXIBILITY

Depending on line geometry, preferably use it on a pipe angle, a flanged nozzle or an immersion arrangement also possible. Evaluate pressure, sanitary and hygienic connection needs with the complete process data.



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03 / CONTINUOUS FLOW PROCESS

Flow cell

A dedicated measuring chamber provides product circulation around the MIVI viscometer sensing needle when insertion into the main pipe is impractical.

HOW IT WORKS?

The MIVI sensor measures the circulating product directly. The cell may sit in the production line, a recirculation circuit or a representative bypass loop.

When to consider it

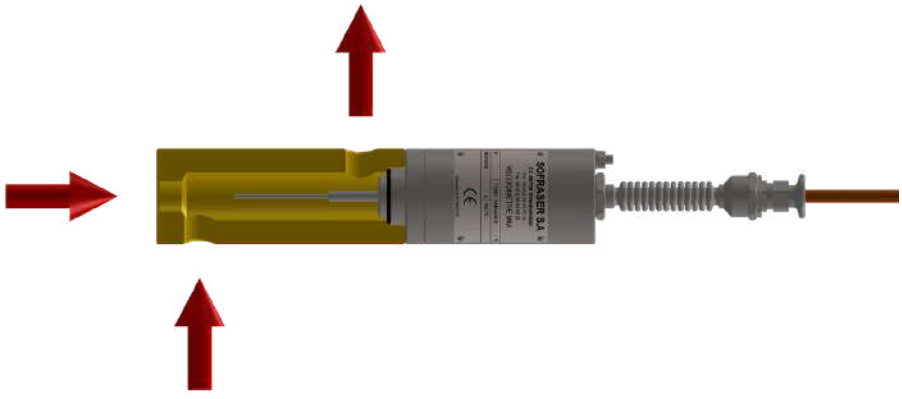
- Small-diameter lines, particularly below ¾ inch
- Restricted insertion space or unsuitable local velocity in the main pipe
- A dedicated section is useful for isolation, drainage or sensor access

Standard chamber and options

- SOFRASER describes a standard chamber with two inlets and one outlet, with ½-inch BSPT ports
- Other port sizes and connections can be reviewed for the application
- Depending on product and operating conditions, the MIVI can be used with or without its Flow Damper

DESIGN REVIEW

Limit residence time and pressure loss.
Maintain representative circulation and temperature.



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04 / BATCH PROCESS

On-wall

Mounted through the side wall of a tank or reactor, the MIVI follows viscosity during mixing, formulation, dilution, heating or cooling.

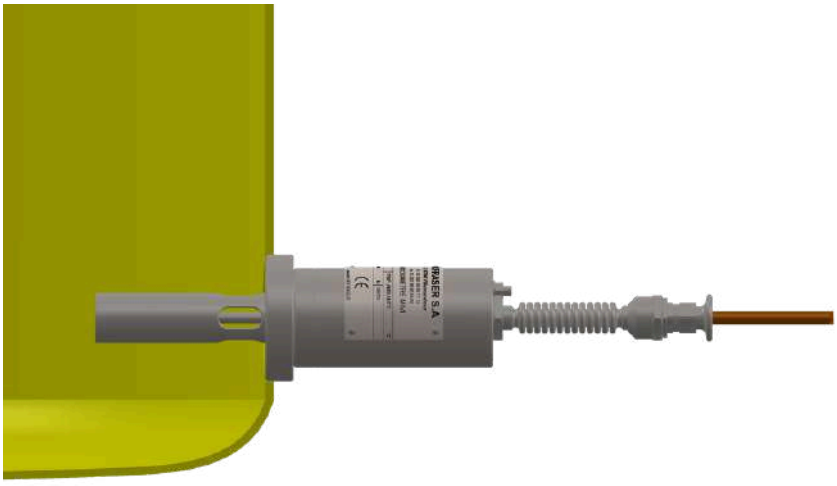
> **POSITION IS CRITICAL**
>
> Place the active element in the liquid phase throughout the required operating range, generally in a lower part of the vessel when suitable

Check the vessel geometry

- Ensure the MIVI needle stays immersed at the minimum product level
- Keep clear of agitators, scrapers, coils and other internals
- Choose a zone with representative product movement
- Avoid foam, air pockets, sedimentation and deposit zones
- Allow safe access for removal and maintenance

What continuous measurement can reveal

- Mixing: detect unexpected changes as ingredients combine
- Endpoint: identify when target viscosity or a process stage is reached
- Repeatability: compare viscosity trends across batches



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05 / BATCH PROCESS

On-top

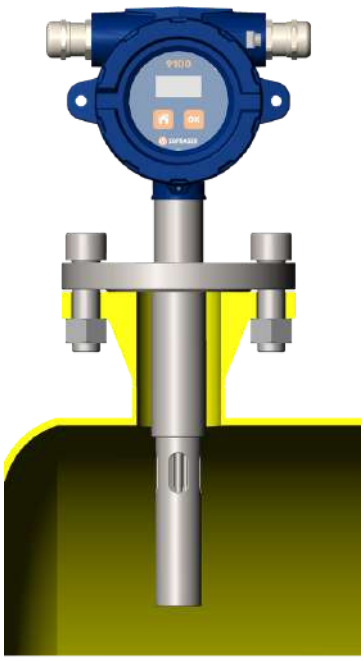
Insertion from the top of a reactor or tank lets the active element reach a representative reaction zone.

ON-TOP / INVI

Feature the INVI on an upper process connection where the selected flange and insertion arrangement can reach the required measuring depth. Validate the exact configuration with SOFRASER

When top access matters

- Lateral access is restricted or a specific measuring depth is needed
- The reactor is jacketed or scraped-wall equipment occupies the sides
- Easy installation on existing flanged nozzle
- Only an upper connection is available



ALSO POSSIBLE: MIVI FROM ABOVE

The SOFRASER in-tank page also illustrates a MIVI from the top via an immersion tube. The final choice between solutions depends on the available nozzle and application geometry

06 /

Managing local flow

High line velocity or vigorous agitation can alter the flow around the sensing element and affect the product being measured.

FLOW DAMPER TECHNOLOGY

An accessory integrated around the MIVI sensing area channels local flow and helps keep flow lines parallel to the vibrating element. It is distinct from a separate flow cell

Where to evaluate it

- On-pipe: high flow speed or turbulence around the measurement point
- On-wall / On-top: strong agitation around the immersed sensing element

APPLICATION DEPENDENT

The flow damper is not systematic. Review product behavior, flow conditions, agitation and mounting geometry before selecting it.

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07 / OPTION

By-pass loop

A by-pass loop or recirculation loop routes a representative portion of product through a measurement point and then to a return.

OPTION 1 / ON-PIPE

Install a MIVI on a suitable pipe section of the bypass loop, with full immersion and representative continuous circulation.

OPTION 2 / FLOW CELL

Route product through a dedicated measuring chamber containing the MIVI, useful when the loop line is small or chamber simplifies integration.

Review the complete loop

- Take off product from representative process location
- Ensure sufficient circulation and avoid stagnant sections
- Review pressure loss, residence time, temperature changes and air ingress
- Plan isolation, drainage, cleaning, access and the return location



ONE DISTINCTION

The bypass loop is a circuit configuration: on-pipe and flow cell describe how the sensor is mounted within it

08 / APPLICATION REVIEW

The information needed

A reliable recommendation requires the complete application context, not only a target viscosity range.

PRODUCT	Fluid, composition, solids, deposits, foaming
VISCOSITY	Expected range, units and process objective
TEMPERATURE	Normal, minimum and maximum process temperatures
PRESSURE	Operating and maximum pressure, transients
PIPE / LOOP	Size and schedule, ID/OD
VESSEL	Fill level, jacket, scrapers coils, internals
AGITATION	Type, speed and circulation pattern
CONNECTION	Flange, thread, sealing, wetted materials
OPERATIONS	Cleaning, drainage, isolation, service access
DATA	Control interface, alarms, response objective

Tip: include a process sketch or P&ID with the proposed measurement point.

9 / SELECTION

Which mounting fits?

Use this matrix as an initial orientation. Final selection must be checked against process conditions.

On-pipe	Direct measurement in the main process line
Flow cell	Small process line or dedicated measuring section
On-wall	Mixing and formulation in a vessel
On-top	Monitoring through an upper vessel connection
MIVI option to review	Top insertion through an immersion tube
Bypass loop + on-pipe or flow cell	Representative diverted process stream
Evaluate a MIVI Flow Damper	High local flow or agitation

10 / DECISION SUPPORT

Find the right solution

The instrument, measurement point, mounting and operating environment must be reviewed together to obtain actionable viscosity data

DISCUSS YOUR APPLICATION

Share your product, equipment, process sketch and operating conditions with SOFRASER experts

READY TO REVIEW A PROJECT?

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This guide provides general guidance. Please verify the equipment and installation against the complete application and applicable requirements.