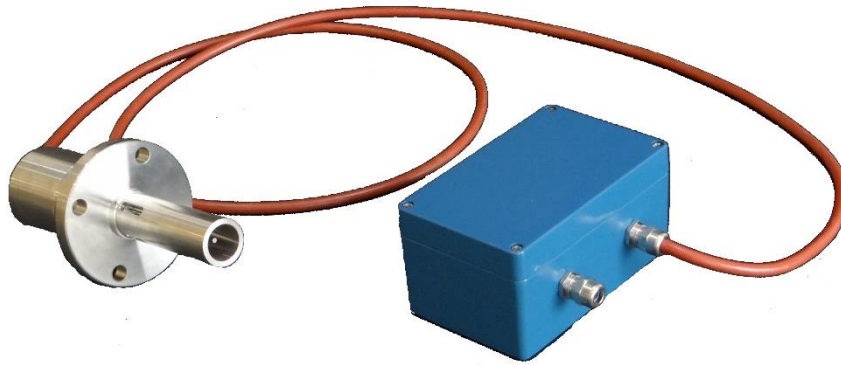


## VISCOMETER DESIGNED FOR MARINE COMBUSTION CONTROL



### TYPICAL APPLICATION FIELDS

- HFO regulation
- MDO, MGO regulation
- Diesel oil regulation
- Marine distillate regulation
- Bunker oil regulation



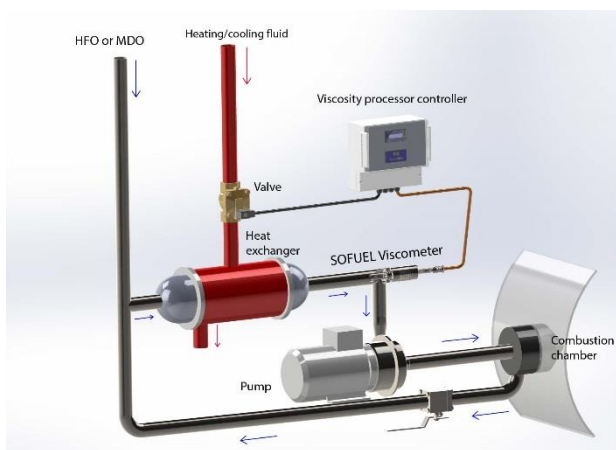
Whatever your industry, we understand  
And develop solutions for many applications.  
For a personalized approach, contact us at  
[instruments@sofraser.com](mailto:instruments@sofraser.com)

### PROCESS VISCOMETER SPECIFICALLY DEVELOPED FOR SHIP COMBUSTION SYSTEMS

Based on Sofraser's 40 years of technological experience, the **Sofuel viscometer** assures the improvement of ship equipment's performance by allowing instant viscosity and temperature measurements.

Matching the maritime industry requirements, it is the ideal instrument for achieving optimal combustion efficiency with any kind of fuel.

- **Reduce fuel consumption by improving combustion parameters:** Providing accurate fuel oil viscosity measurement, the Sofuel manages to correct the variations for each supplier's fuel oil quality and composition.
- **Stand-alone equipment:** Keeping the same level of performances at high viscosity & high temperature as at low viscosity & low temperature, the Sofuel viscometer allows an **easy switch from HFO to MDO** without any external intervention.
- **Rugged, reliable and maintenance-free:** With **thousands of units** installed around the world, Sofraser marine sensors have proven their polyvalence and reliability while providing long-lasting customer satisfaction.
- **Easy-to-handle and install:** The Sofuel sensor can be mounted in any position and is **unaffected** by vibration or flow variation. Moreover, it can easily be retrofitted thanks to standard housing dimension.



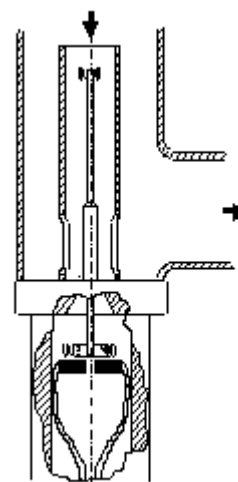
## SOFUEL VISCOMETER

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

The vibration amplitude varies according to the viscosity of the product in which the rod is immersed.

The active part of the sensor, a vibrating rod held in oscillation at resonance frequency, is driven by constant electrical power.

Sofraser remains unsurpassed regarding process reliability and accuracy.



### SOFUEL FEATURES AND SPECIFICATIONS

|                         |   |
|-------------------------|---|
| Measuring range         | <ul style="list-style-type: none"> <li>0 – 25 or 0 – 50 mPa.s</li> <li>Other ranges on request</li> </ul>   |
| Precision*              | <ul style="list-style-type: none"> <li>± 0.2 % of reading</li> </ul>  |
| Accuracy**              | <ul style="list-style-type: none"> <li>± 0.5 % of reading</li> </ul>  |
| Working conditions      | <ul style="list-style-type: none"> <li>Up to 180 °C max.</li> <li>Up to 20 bar (more on request)</li> </ul>   |
| Temperature measurement | <ul style="list-style-type: none"> <li>Included Pt100 probe: thermowell inserted directly in the product</li> </ul>   |
| Size and Weight         | <ul style="list-style-type: none"> <li>Sensor total length: 220 mm</li> <li>Sensor weight: 2,8 kg</li> <li>Flange diameter: 99 mm</li> </ul>  |
| Material                | <ul style="list-style-type: none"> <li>316L stainless steel (other on request)</li> </ul>   |
| Cable                   | <ul style="list-style-type: none"> <li>Halogen free</li> <li>Resistant up to 180 °C</li> </ul>  |
| Process mounting        | <ul style="list-style-type: none"> <li>Straight line or pipe angle</li> <li>DN 50 or 2 inch pipe</li> <li>DN 40 or other on request</li> </ul>  |
| Body watertightness     | <ul style="list-style-type: none"> <li>IP67</li> </ul>  |
| Regulatory              | <ul style="list-style-type: none"> <li>CE marked (European conformity)</li> </ul>   |
| Electronic interface    | <ul style="list-style-type: none"> <li>Viscosity and temperature outputs: <ul style="list-style-type: none"> <li>4-20 mA</li> <li>RS485, Modbus RTU protocol</li> </ul> </li> <li>Density coefficient settable for kinematic viscosity measurement</li> <li>Supply voltage: 24 VDC ( ± 2,4 V)</li> <li>Power consumption: 1.5 W</li> <li>Salt water proof box</li> <li>EMC shield protection</li> <li>Ambient temperature: up to 55 °C</li> <li>IP66</li> <li>Wall mounting: <ul style="list-style-type: none"> <li>Dimension: L = 160 mm; D = 100 mm; H = 80 mm</li> <li>Weight: 1 kg</li> </ul> </li> </ul> |

\* From 10% to 90% of the full scale range. Depends on electronic resolution

\*\* From 10% to 90% of the full scale range. Depends on calibration options

