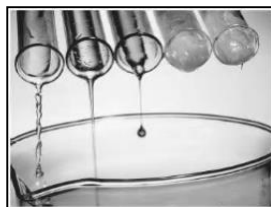




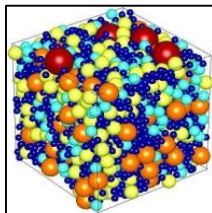
Fungilab  **fgb**

VEL INLINE PROCESS VISCOMETER

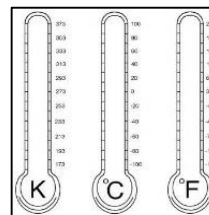
VEL Monitors in real time fluid's, density viscosity and temperature



VISCOSITY



DENSITY



TEMPERATURE

- Based on millimeter-scale, metal-made mechanics positioned across the flow line. Its reduced dimensions allow for a use with small tubings (<1/4") up to mainlines while providing excellent dynamic behavior and tolerance to particles, deposition, vibration and EM fields.
- It can also be used in static fluids, self-compensating the influence of fluid pressure & temperature changes in low power design.

PRECISE

SELF-COMPENSATING

LOW POWER

MINIATURIZED

FAST (1Hz) UPDATE

**AUTO
CLEANING**

AUTO-CALIBRATION

PTFE AND DLC COATED

Ex CERTIFIED






**INDUSTRY STANDARD
PROTOCOLS**

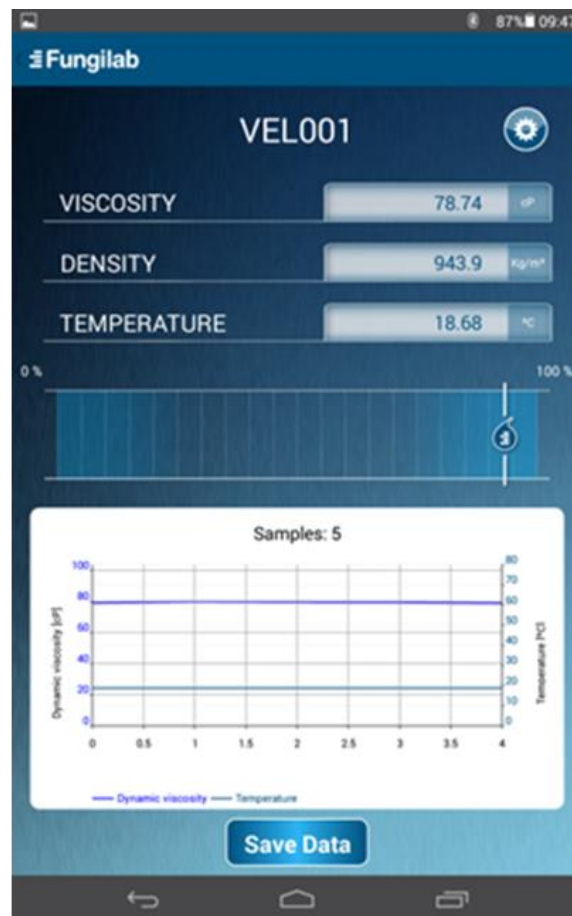
VEL Specifications



The future of viscosity control realized.



PARAMETER	VALUES	
> VISCOSITY		
Range	0.3 to 1000 cP	
Accuracy	0.8% of full scale (typ)	2% of full scale (max)
Repeatability	0.5% of full scale	
> TEMPERATURE		
Range	-55°C to 200°C	-67°F to 392°F
Accuracy	0.1°C	
Repeatability	0.1°C	
> DENSITY		
Range	600 to 2000 kg/m ³	0.6 to 2 g/cm ³
Accuracy	0.1% of full scale (typ)	0.5% of full scale (max)
Repeatability	0.1% of full scale	
> OPERATION ENVIRONMENT		
Operation temperature	-55°C to 200°C	
Operating pressure	Up to 150 bars	Up to 2000 PSI
> MECHANICAL		
Material	Stainless steel 316, Hastelloy	
L x W x H	6.35 x 6.35 x 30 mm	
Coating	PTFE, DLC	
Sample volume needed	< 2 ml	
> FEATURES		
Auto-cleaning	Yes	
Auto-range	Yes	
Update rate	1 Hz	
> COMMUNICATION	USB, RS232, Bluetooth, RS485 MODBUS RTU, MODBUS TCP IEC 62591 (others on demand).	
> CERTIFICATIONS	    	



UNITS

VISCOSITY

☒ Dynamic Viscosity [cP] ☐ Kinematic Viscosity [cSt]

Ford Cup

☐ Ford Cup #2 [cupsec] ☐ Ford Cup #3 [cupsec] ☐ Ford Cup #4 [cupsec]

Zahn Cup

☐ Zahn Cup #1 [cupsec] ☐ Zahn Cup #2 [cupsec] ☐ Zahn Cup #3 [cupsec]

☐ Zahn Cup #4 [cupsec] ☐ Zahn Cup #5 [cupsec]

DENSITY

☒ Kg/m³ ☐ g/cm³

TEMPERATURE

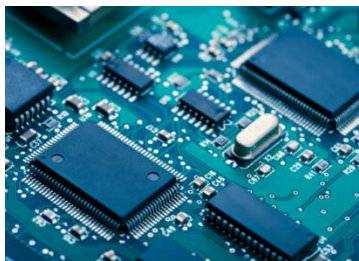
☒ °C ☐ °F

CHART

☒ Viscosity ☐ Density

OK

VEL Integration Examples



OEM embedded in analyzers



Tanks & Terminals



Pipelines



Fuel Tankers

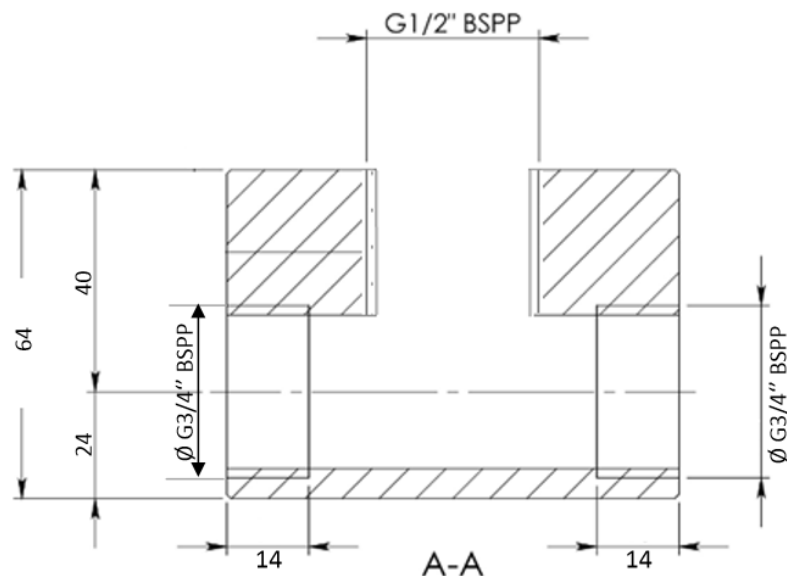


Marine Transport

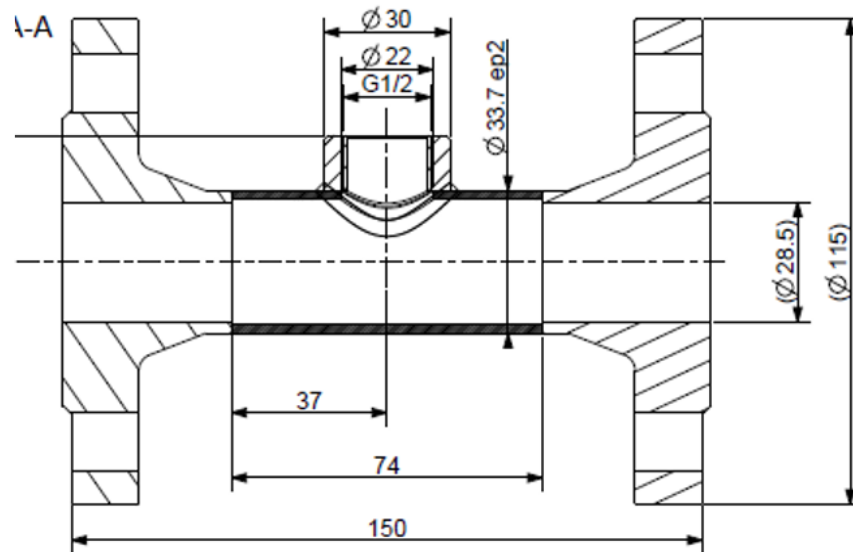


Deicing Trucks

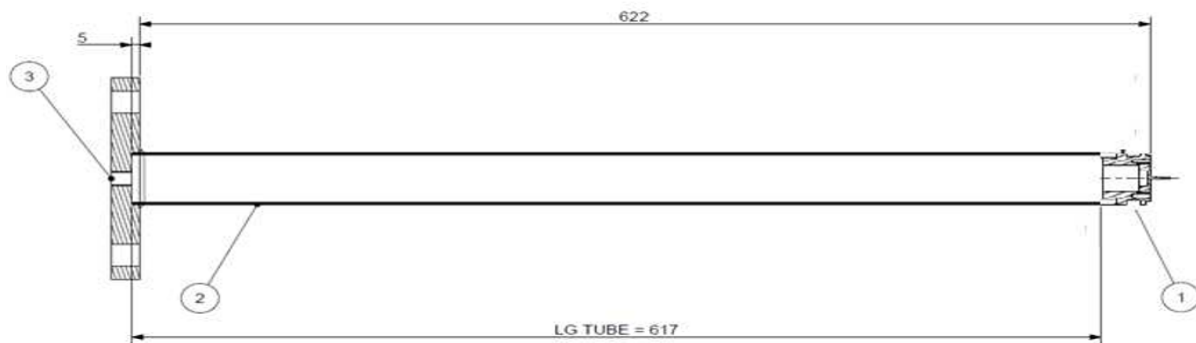
VEL Mechanical Installation



Baseplate for small pipes & bypass



Between flanges



Flanged for insertion into tanks

Others mounting options:

- Threaded G 1/2"
- Customized baseplate in/out sizes
- Sanitary fittings, tri-clamp mountings
- Portable probe
- Between flanges for large pipes

VEL Viscosity Applications (½)

INKS	<ul style="list-style-type: none"> In line In tank Reactor In line reactor <p>Flexography</p> <p>Printing press</p> <p>Lacker coating</p> <p>Bottle printing, container printing</p>
PAINTS	<p>Spray painting</p> <p>Open tank</p> <p>Paint coating</p> <p>Lasure (requires D+V)</p> <p>Laque (requires D+V)</p>
COATING	<p>Resins for organic composites</p> <p>Solder flux for wave soldering</p> <p>Conformal coating</p> <p>Flow coating</p> <p>Varnish for wire coating</p>
SOLVENTS	
POLYMERIZATION	<p>PVC</p> <p>PC / PP / PE</p> <p>PMMA...</p> <p>Polyesters</p> <p>Polyamids</p> <p>Hyaluric acid</p>

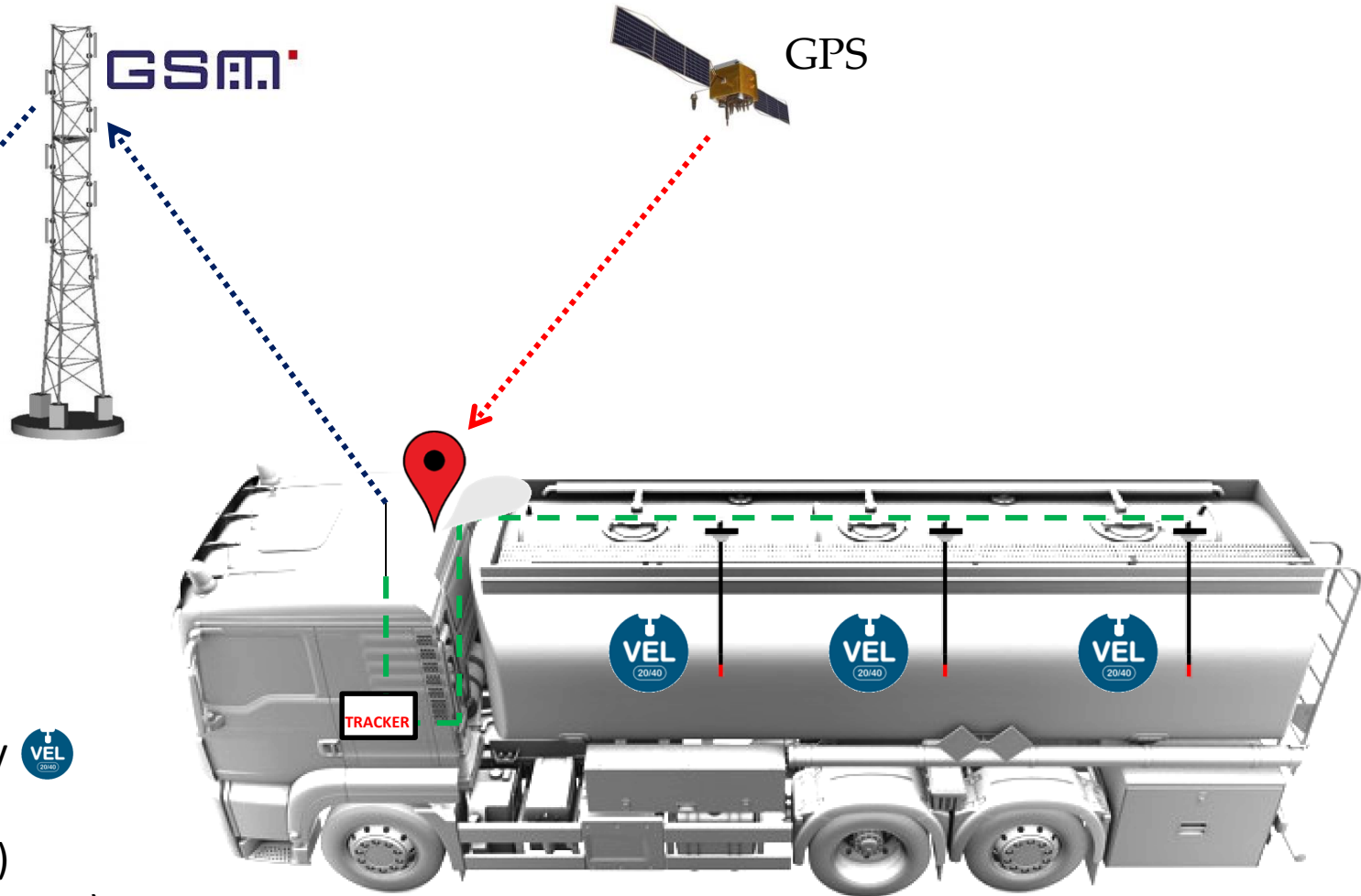
OIL & GAS	<p>Crude oil</p> <p>Oil exploration & production</p> <p>Injection fluids</p> <p>Product identification</p> <p>Pipelines</p> <p>Quality</p> <p>Silicone oils</p> <p>Heavy Fuel Oils</p> <p>Hydraulic oils</p> <p>Transformer oils</p> <p>Mineral oils</p> <p>Fuel storage</p> <p>Tank water removal</p> <p>Diesel</p> <p>Gasoline</p> <p>Biodiesel</p> <p>Ethanol</p> <p>Av gas</p> <p>Jet fuel</p> <p>Kerosene</p> <p>Fuel identification</p> <p>Fuel quality</p> <p>Fuel distribution</p> <p>Fuel contamination</p> <p>Fuel adulteration / fraud</p> <p>Fuel ageing</p> <p>Biodiesel</p>
HFO / DIESEL ENGINES (@ fluid injection)	<p>Burners</p> <p>Thermal plants</p> <p>Marine engines</p>

FOOD & BEVERAGE	Fruit juices
	Soups
	Food oils <div> <div>Palm oils</div> <div>Olive oils</div> <div>...</div> </div>
	Milk
	Wort
HEALTH	Liqueurs
	Wine
	Concentration of <div> <div>Proteins</div> <div>Enzymes</div> </div>
	Flavours
	Sugar boilers (crystalization control)
BIOTECH	Plasma
	Serum
	Gels
	Bioremediation
ICE DETECTION	Microbial concentration
	Cellulose nitrates



HFO / DIESEL ENGINES (@ fluid injection)	Burners Thermal plants Marine engines
LUBRICANT MONITORING	Thermal plants Marine engines Hydroelectric plants Rail powertrains Wind turbines Gas turbines Rotating machineries (industrial)
COSMETICS	Lotions Perfumes Detergents

CUSTODY TRANSFER	<p>Aircraft refueling</p> <ul style="list-style-type: none"> Onboard planes Fueling trucks
REFINING	<p>Light fuel refining</p> <ul style="list-style-type: none"> Jet 100LL Kerozene Jet A1 Gasoline <p>API density</p> <p>Diesel oil refining</p> <p>Tank emptying</p> <p>Water removal</p>
PIPELINE MONITORING	
CRUDE OIL	Specific gravity
CHEMISTRY	<p>Concentration of additives</p> <ul style="list-style-type: none"> coating ... <p>Sulfuric acid in battery packs</p> <p>Binary mixes</p> <ul style="list-style-type: none"> pharma mixes of two liquid phases ... <p>Distillation monitoring</p> <p>Phase changes detection</p> <p>Reaction monitoring</p> <ul style="list-style-type: none"> polymerization ...

FOOD & BEVERAGE	<p>° BRIX</p> <ul style="list-style-type: none"> Fruit juices Brewing Wine making Carbonated beverages ... <p>Milk</p>
SOLVENTS	Concentration analysis
AIRCRAFT DEICING	<p>Type I Propylene Glycol</p> <p>Type I Ethylene Glycol</p> <p>Type IV Propylene Glycol</p> <p>Type IV Ethylene Glycol</p>
FUELS	<p>Fuel identification</p> <ul style="list-style-type: none"> Diesel Gasoline Biodiesel Ethanol Av gas Jet fuel Kerosene <p>Fuel quality</p> <ul style="list-style-type: none"> Fuel contamination Fuel adulteration / fraud Fuel ageing Biodiesel



Real time monitoring of:

- Fuel density & viscosity 
- Fuel temperature 
- Fuel level (level sensor)
- Truck location (GPS receiver)

