



VAPOR PRESSURE



MINIVAP ON-LINE

The RVP profit analyzer

The MINIVAP-ONLINE from GRABNER INSTRUMENTS is a process monitoring analyzer used for the determination of vapor pressure of gasoline, crude oil, LPG and NPG. Its core shares the same triple expansion measurement method, which is used in the MINIVAP laboratory analyzers. Based on the results of extensive ASTM interlaboratory measurements, the MINIVAP ON-LINE outperforms other vapor pressure process analyzers in precision and helps refineries to save millions of dollars per year.



KEY BENEFITS

- **One analyzer for all vapor pressure standards**

MINIVAP ON-LINE is the only process analyzer which directly measures RVP, TVP and vapor/liquid ratio according to all major industry standards – **in a single analyzer!**

- **Highest profits through best precision**

MINIVAP ON-LINE is the only RVP process analyzer to perform a triple expansion, which considerably improves the quality of your measurements and reaches highest Round Robin proven precision! Blending as close as 0.3 kPa (0.05 psi) to vapor pressure limits is possible. **Optimize your profits!**

- **Quality inspection of fuels**

Only the triple expansion method allows for monitoring the amount of dissolved gas delivered in a batch of fuel. A high value indicates a leakage in the system or several light ends were included within the batch.

Protect your investment!

- **New and improved maintenance**

MINIVAP ON-LINE incorporates an automatic piston lubrication and an extensive self diagnostic testing system. The measurement cell is mounted with quick fittings and can be exchanged in 1 minute:

No down times are experienced in process!

- **Automatic calibration with laboratory precision**

MINIVAP ON-LINE is automatically calibrated with 2.2 Dimethylbutane in programmable intervals and calibration corrections are completed fully automatically for all measurements going forward. The result from the last calibration is always displayed together with the measured vapor pressure of the sample.

No need to adjust correlation formulas or to take offline samples to verify analyzer results against laboratory equipment!

**SAVINGS AT A GLANCE –
how triple expansion profit
optimization works**

In the following example, normal Butane is blended into Unleaded Gasoline, while a maximum vapor pressure of 69 kPa has to be observed:

BLENDING BUTANE

RVP (Gasoline @ 37.8°C): Before: 62 kPa (9 psi) / After: 69 kPa (10 psi)

Price per Barrel: n-Butane: \$ 65.1 / Gasoline: \$ 81.9

PROFIT AND PRECISION PER METHOD

Method/Standard	Reproducibility (kPa)	Blending	Possible profit per 100 000 barrels	Possible profit per YEAR (volume: 100k bpd)
Triple Expansion Method	0.7	1.41%	\$ 24 024	8.77 \$M
ASTM D6378-08	1.89	1.14%	\$ 19 320	7.05 \$M
ASTM D5191-07 + EN 13016-1	2.75	0.95%	\$ 16 128	5.89 \$M
ASTM D5482-01 (ABB 4100)	4.14	0.64%	\$ 10 752	3.92 \$M
ASTM D323-06	5.2	0.38%	\$ 6 384	2.33 \$M



Interested in replacing your old RVP analyzer? Ask your distributor how to calculate your savings today!

STANDARDS

Vapor Pressure of Gasoline:

- ASTM D6378, D5191, D4953/323 (corr.)

- ASTM D5188 (V/L = 20)
- EN 13016-1+2
- IP 394
- IP 409

Vapor Pressure of Crude Oil:

- ASTM D6377, D323 (corr.)

Vapor Pressure of LPG:

- ASTM D6897, D1267 (corr.)

FEATURES

- Highest precision and performance
- US- EPA and CARB approved Grabner method
- Fully automatic calibration, verification and pressure correction

- Built-in diagnostic and safety features
- Remote control
- Directly connects to SCADA/DCS via MODBUS
- 7 minute cycle time
- 10 ml of sample for a complete measurement

- Peltier cooling
- Modular configuration
 - Multiple sample streams
 - Sample conditioning systems
 - Optional sample recovery system
- **New Automatic Lubrication System!**

TECHNICAL DETAILS /SPECIFICATIONS

Temperature range	Internal operation: 5 to 60°C (41 to 140°F) Measurement temperature: 20 to 60°C (68 to 140°F)
Pressure range	0 to 1000 kPa (0 to 145 psi)
Repeatability	0.3kPa (0.04psi) @ 37.8°C, 70kPa
Reproducibility	0.7kPa (0.10psi) @ 37.8°C, 70kPa
Power requirements	100/120/230/240 V AC, 50/60 Hz, 110 W
Maximum physical dimensions	W x H x D = 650 x 1380 x 400 mm (25.6 x 54.4 x 15.8 inches)
Weight	Approx. 50 kgs (110 lbs)
Fast loop sample stream	Minimum flow: 2 L/min, Minimum pressure (Gasoline): 50 kPa (7 psi), Minimum pressure (LPG): 500 kPa (70 psi), Maximum pressure: 7,000 kPa (1000 psi)
Explosion protection	Explosion proof Class 1, Type X or ATEX certified – EU EX Pressurized Enclosure-System (EN 60079: BVS 06 ATEX E 088; EN954-1 Cat. 3) – US EX px purge control unit (NEMA Class 1, Div 1, BCD, T6, Type X)
Data output	– ASCII code and MODBUS communication protocol – 4-20 mA analog data output



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