PORLA analyser for the refinery industry

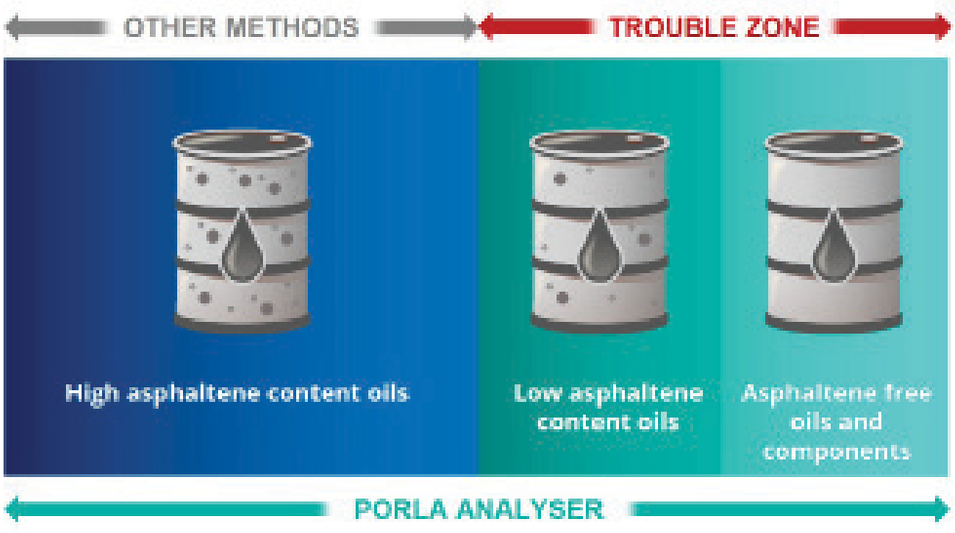
Heavy fuel oil and crude oils stability and compatibility analyser with fully automatic measurement and prediluted sample dilution

Improving profitability of refinery processes

The Porla analyser is a result of co-development with a major Finnish oil refining company, as well as many other refineries and industry professionals.
It complies fully with ASTM standard D7112.

The analyser is used for blending optimisation in crudes, feed stocks, heavy oils and bitumen as well as the maximisation of oil refining process profitability.

As an important part of the Auramarine portfolio the product is further developed together with clients, resulting in enhanced reliability, easier user experience and full customer support.



Auramarine provides the solution

Auramarine's Porla analyser is an easy, reliable and fast analysis instrument that improves profitability of refinery processes by enabling refineries to select more economic mixtures of crude oils with no risk of fouling problems.

The fast, automated, analysis cycle saves working time and increases testing process productivity.

Auramarine's Porla analyser is also designed for testing fuel combinations where at least one of the fuels must contain asphaltenes. The analyser makes it possible to measure lower asphaltene content (even 0,05%) than other comparable analysers available in the market. Very often, especially the fuels with low asphaltene content are subject to stability and compatibility issues, and clogging of asphaltene in the oil, which can cause severe problems in use.

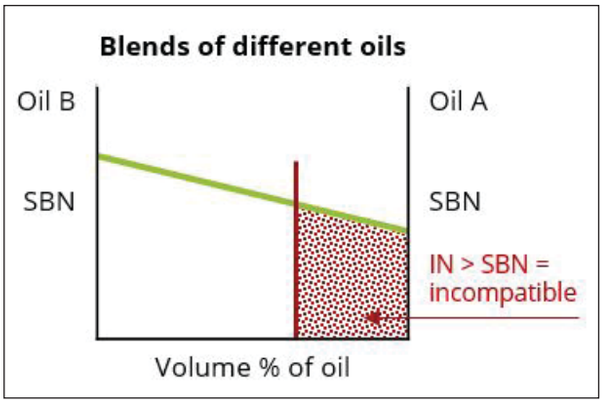
Such accurate asphaltene content analysis for low asphaltene content fuels is essential when the fuel sulphur content goes from 3,5% down to 0,1%. The analyser is suitable also for high asphaltene content fuels analysis.

Technical details:

Operational Specifications	Measurement ranges	1-7 P-Value (stability value) 0-100% Solvent Equivalent
	Detection limit of asphaltenes	0.05%
	Measurement temperature	20 - 80 ºC
	Sample carousel	4 positions, with sample heating
	Analysis duration	Clearly non-compliant combinations are detected in minutes. Normally full cycle takes approx. 45 minutes and borderline cases up to 90 minutes.
Utilities	Electric power	110 or 230 V, 50/60 Hz
	Solvents	Paraffinic and aromatic solvents
Physical Specifications	Weight	35 kg
	Dimensions	H 440 mm, W 535 mm, D 400 mm
Sample Specifications	Sample size	20 - 40 g of fuel directly from tank or other storage

Properties

- The system enables proactive testing of fuel compatibility
- Determination of stability and compatibility parameters In (insolubility number) and SBN (solubility blending number)
- ASTM test method D7112 since 2005
- Possibility to use different paraffinic and aromatic solvent combinations
- The system will self-clean at the end of each test procedure

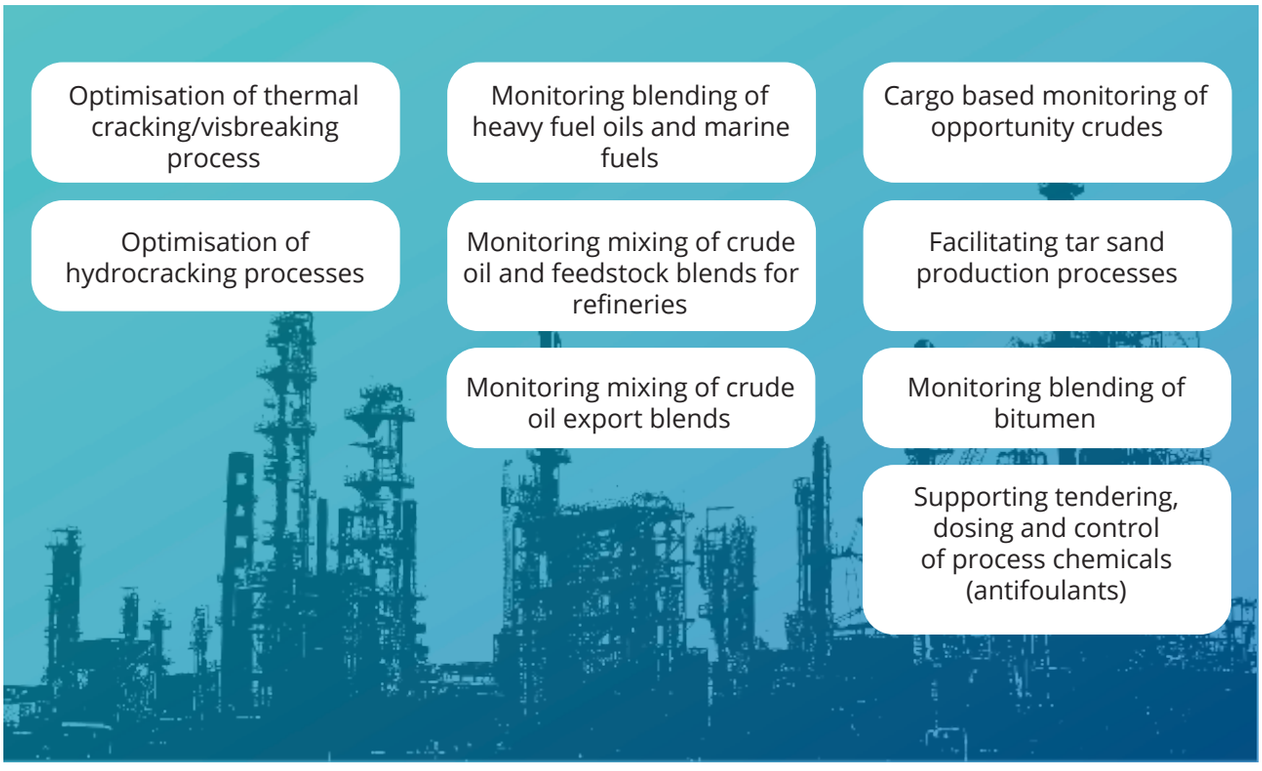


Fuel compatibility

Advantages

- Requires only a few minutes of active operator time, test results in 45-90 minutes
- More accurate than manual methods
- No removal of coke particles by filtration required prior to analysis
- Accurate tool for optimisation of visbreaker and hydrocracker processes
- Enables refineries to select more economic mixtures of crude oils with minimised risk of fouling problems
- Determines full set of stability and compatibility parameters (FRmax, Xmin, P, Pa, Po, FR5/1, TE, In and SBN) by one run
- Reporting also ExxonMobil heavy and crude oil blending model parameters In (insolubility number) and SBN (solubility blending number)
- Capable of analysing stability and compatibility parameters of low asphaltene content oils
- Offers a unique method to analyse compatibility parameters of asphaltene-free oils

Applications for refineries



Accessories and maintenance

Auramarine provides the users a complete range of consumables needed to operate the Porla system, ensuring repeatable and reliable results.

Please contact Auramarine to find out the recommended replacement intervals for your Porla analyser parts. We provide prisms, pumps, solvents, sample bottles, sample containers. Scales are also available.

You can benefit from our technical support and sample analysis services are available upon request.

In addition, it is possible to opt for an analyser unit maintenance contract.

Definition of parameters

Porla analyser analyses the following values, including the important P-value (stability):

- P-value, define state of peptisation of asphaltenes in oil
- Pa, peptizability of asphaltenes
- Po, peptisation power of oil medium
- FR5/1 or xylene equivalent, measure of oil aromaticy, the smaller the value, the more aromatic is the oil
- FRmax, flocculation ratio at infinite dilution
- Xmin, paraffinic solvent consumption of pure oil
- IN, insolubility number, the higher the bigger precipitation risk
- IN_{mix}, is the highest IN of components of the blend
- SBN, solubility blending number, ability of oil to keep asphaltenes in solution, the higher value the lower precipitation risk
- SBN_{mix}, volumetric average of SBNs of blend components

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