Our new sulfur-in-oil analyzer combines the established functions with new functions to improve the ease of use and enlarge the application.

Today’s world is facing many environmental problems. In order to prevent harmful pollution high precision analysis technology with a high degree of sensitivity, precision and repeatability gains importance. The effort is to decrease the sulfur content in diesel fuel, light and heavy oil. This is due to present regulations concerning the sulfur content, which become even stricter in the future coupled with the rising environmental consciousness.

HORIBA’s SLFA-2800/2100 meets all demands for on innovative analytical technology.

New features that enlarge the application and make the use of the analyzer easier.

The SLFA-2800/2100 includes several convenient new features without increasing its size. The software has been updated, measure range has been enhanced and the new sulfur-in-oil analyzer presents itself in the new Horiba design.

- **Software**
  The new software does not only simplify the use of the analyzer; it also extends its application with new functions.

  **Measurement units**
  For the measurements it is possible to choose between the units % and ppm.

  **Sample identification**
  The new SLFA-2800/2100 makes the identification of the samples very easy. Sample IDs can include numbers (0-9) and alphabetic characters (A-Z) up to ten digits.

  **Calibration**
  In this new sulfur-in-oil analyzer the calibration graphs have been extended. The analyzer selects automatically out of seven scales (0.002 / 0.01 / 0.05 / … / 10 %). The graphs are in available in both units, % and ppm. The curve format, linear or parabolic, can be either picked manually or set automatically. It is possible to store up to five calibration curves. You can choose if the analyzer should select the most suitable curve for you or if you want to do it manually.

- **Measure range**
  This new model can measure a wider rage of sulfur content. It can measure between 0 – 9.999 % sulfur content in a sample. Consequently the equipment is applicable in more specific fields. Either a very small sulfur content as in diesel oil or a high sulfur content as in heavy oil can be determined.

- **Design**
  The SLFA-2800/2100 shows the new design philosophy of HORIBA. Also the function keys have been rearranged. Now the keys are arranged like cell phone keys which makes the operation and the data input even easier.

<table>
<thead>
<tr>
<th>Concentration of Sulfur in Samples (ppm)</th>
<th>Average Value(ppm)</th>
<th>Standard Deviation(σ) (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>5.1</td>
<td>1.1</td>
</tr>
<tr>
<td>200</td>
<td>198.3</td>
<td>1.1</td>
</tr>
<tr>
<td>500</td>
<td>500.6</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Sample: light oil  Measurement conditions: measurement time 600 sec.  Ten measurements

Easy to operate function keys.
Detector protection mechanism
The SLFA-2800/2100 includes a mylar film in order to protect the detector. Its design corresponds to the cell window’s design and can be replaced easily. It is inserted between the detector and the sample cell. For that reason the detector is protected from sample drops in any case – even when sample cell breaks.

Features for operator’s convenience and safety

■ Easy-to-read large screen
Due to the large backlit LCD of the display the results of the measurements can be read well. Operations can be also easily monitored.

■ Coherent large printouts
The printouts are understandable and the size (80 mm wide) enables modest reading. All important information such as for example the sample ID, X-ray spectrum, date and time of the measurement, measuring time, number of accomplished measurements, average value, standard deviation and calibration curve graph are shown on the printouts.

■ Digital data output (RS-232C interface)
If storing of many results or further statistical processing of results is wished the measurement results can be put out to an external computer. Thus the analyzer can be used in laboratory or factory automation.

■ Safety mechanism
The operating and maintenance of our sulfur-in-oil analyzers is without any risks because no radioactive source is used. The exposure of X-rays is not possible due to a two-stage-fall-safe mechanism.

■ Turntable for sequential analysis and priority measurements (SLFA-2800)
The SLFA-2800 is equipped with a turntable, which makes sequential measuring of up to eight samples possible. With this feature the effort concerning each analysis decreases significantly. With the SLFA-2800 it is also possible to do priority measurements at any time. It does not matter if the SLFA-2800 is analyzing a single sample or a group of samples, it can always be paused to do measurements of higher priority.

Features to ensure exact and reliable data

■ Precision and repeatability
The new SLFA-2800/2100 investigates measurement results with an amazing precision. Due to the established miniature X-ray tube, which makes the purging of helium or another gas redundant extremely precise results can be achieved. In addition sudden fluctuations in temperature or detector time-drift are prevented through an automatic pulse-height compensation function. This system does also include a correction function for temperature and atmospheric pressure eliminates need for helium purging. As a result the measurement of low-concentration samples is no problem. The repeatability for the samples with a low sulfur content (0 %S) shows good performance with 1.6 ppm. Also measurements of samples with heavy sulfur concentration can be undertaken fast.

■ Automatic compensation of C/H ratio
Problems caused by measuring different oil types are solved by this function. Thus highly accurate measurement results can be achieved regardless of the oil type.

■ Spectrum measurement
The analyzer includes a spectrum measurement mode for assessments of the whole sample. In this mode you can print out a spectrum of the fluorescent X-rays, which is also useful for checking the state of the X-ray source or detector assembly.
Horiba continues contributing to the preservation of the global environment through analysis and measuring technology.

Please read the operation manual before using this product to assure safe and proper handling of the product.

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Specifications

- Principle: Non-dispersive X-ray fluorescent (NDXRF) analysis.
- Range: 0-99.999% S.
- Repeatability: 5 ppm (standard deviation with sample containing 1% S.)
- C/H ratio error: Within ±0.5 ppm/1 C/H, with sample containing 1% S.
- Detection limit: 5 ppm
- Optical path: Ambient air; He or N₂ purges are unnecessary.
- Calibration curves: Automatic and manual selection of up to five curves; automatic and manual selection of either linear or parabolic format.
- Calibration: By optional standard solution; from 2 to 20 calibration points.
- Sample Cell: Disposable, sealed container
- Sample requirement: 4 to 10 ml
- Measurement time: Any time between 10 and 600 sec.

Sample Changer:
Automatic sequential measurement up to 8 samples on the SLFA-2800; 1 sample on the SLFA-2100
- Operating temperature: 5°C to 35°C
- Relative humidity: 30% to 85%, noncondensing, atmosphere.
- Spectrum measurement: Standard on both models.
- Data output: RS-232C, output after measurement, auto calibration, and spectrum measurement.
- Power: 100V-240V AC±10%, 50/60Hz
- Power consumption: 150VA
- Dimensions: 430(W) x 500(D) x 230(H) mm
- The SLFA-2800/2100 conforms to the following standards:
  - ASTM D4294(U.S.A.)
  - EN ISO 8754
  - JIS K2541, B7995(Japan)

SLFA-2800 SLFA-2100

Dimensions (Unit: mm)
- 230(H) x 500(D) x 430(W)
- Dimensions:
  - 230(H) x 500(D) x 430(W)

Sample position detector
Shutter open detector
Propotional counter tube
High-voltage power
AGC: Auto gain controller
A/D: A/D converter
MCA: Multi-channel analyzer
RS-232C:

Operation:

- (up/down Motor operation)
- (rotation Motor operation)

System Diagram:

Turntable Sample
Table up/down detection
Thermal sensor
Atmospheric pressure sensor
High-voltage power
AGC: Auto gain controller
MCA: Multi-channel analyzer
RS-232C:

Operation:

- (up/down Motor operation)
- (rotation Motor operation)
Thank you for reading this data sheet.

For pricing or for further information, please contact us at our UK Office, using the details below.

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