Skyray Instruments

fast and accurate
metal analysis

Metals Analyzer

OES 6000

Optical Emission Spectrometer

Metals Analyzer

OES 6000

Optical Emission Spectrometer

Application fields

Elemental analysis plays a crusial role in the quality control of the metal smelting, casting and processing industry.

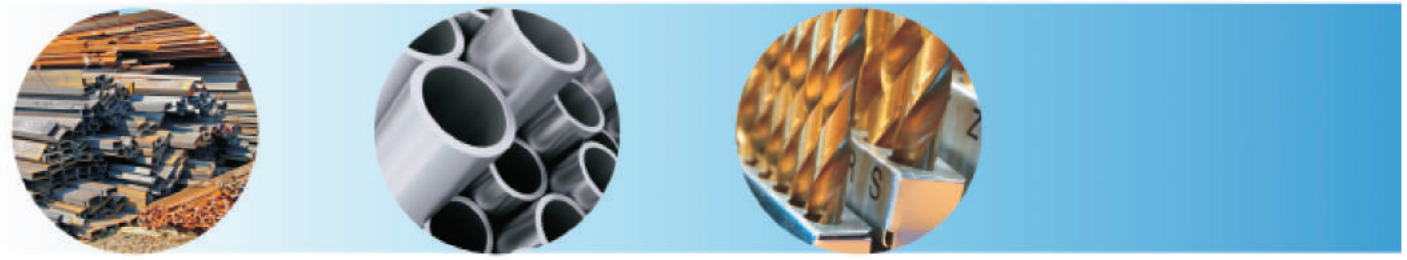
Skyray Instruments Optical Emission Spectrometers are widely used for elemental analysis of ferrous and non-ferrous metals. OES 6000 and OES 8000 can simultaneously analyze dozens of elements with excellent precision and fast performance, greatly benefitting operators in metal industries.

OES6000 is the instrument of choice for companies in the metal production and processing industry, who need a cost-effective and compact optical emission spectrometer.

Performance Advantages

Based on the Multi-CCD detector and total spectrum technology, OES 6000 Optical Emission Spectrometer is able to detect all the spectral lines within the wavelength range. OES 6000 Optical Emission Spectrometer features a new design which eliminates the need of a vacuum pump and vacuum sealed chamber for accurate analysis. Thanks to its compact size, OES 6000 is a convenient instrument for the analysis of ferrous and non¬ferrous metals

- Fast analysis: 35 seconds testing
- Excellent reliability and repeatability: 24/7 operation
- Polychromator operates without the need of a vacuum pump
- Total spectrum technology simplifies installation of new matrix or channel
- Simplified calibration procedure with the standard samples
- Safe and eco-friendly analysis without chemical reagents



CARL ZEISS Grating and Optical lens
Toshiba CCD Detector & Agilent Optical Fiber

Technical Specifications

Requirements

Ambient temperature: 15-30°C
Atmospheric humidity: <70%
Power: Voltage 220V ± 5V 50Hz: single phase with protective ground
Environment free from vibration, dust, strong electromagnetic interference, strong airflow or corrosive gases

Control Circuit Specifications

Spectrometer design

- Paschen-Runge polychromator
- Temperature controlled at 34 ± 0.5°C
- Special casting materials reduce chamber deformation

Grating

- Holographic concave grating; 3600 l/mm
- Dispersion of the first order spectrum: 1.2nm/mm
- Effective wavelength range: 200-500 nm

Detector

- High-performance linear array CCD

Analysis Time

- Depend on material-typical test 35 seconds

Auxiliary equipment

Argon - The purity is above 99.999%
AC parameter - 1 KVA stabilized power supply
Grinding machine - for high hardness metal samples similar to: Steel, Nickel alloy, etc
Lathe - for low hardness metal samples similar to: Aluminum, Copper, Zinc, Magnesium, etc

Other Specifications

Spark Source

- Digital plasma generator
- High energy pre-spark (HEPS)
- Frequency: 100-1000Hz
  Current: 1-80A

Spark Stand

- 4mm analytical gap
- Jet stream technology
- No Argon consumption in standby mode

Dimension and Weight

- Dimensions LxWxH: 45cm x 50cm x 30cm
- Weight: 30 kg

Electrical Power

- Operation: max 700VA
- Standby mode: 40VA

Metals Analyzer

OES 6000

Optical Emission Spectrometer

Testing Procedure

Reference

The following reference standards should be used when testing with OES8000

ISO 14284 Steel and Iron-Sampling and Preparation of Samples for the Determination of Chemical Composition

ASTM E 1806 Standard Practice for Sampling Steel and Iron for Determination of Chemical Composition

ASTM E 716 Standard Practices for Sampling and Sample Preparation of Aluminum and Aluminum Alloys for Determination of Chemical Composition by Spectrochemical Analysis

Preparation

High hardness metal samples require grinding the surface. Typical samples include steel, Nickel, Cobalt alloy and others

Low hardness metal samples require turning the surface with the lathe. Typical samples include Aluminum, Copper, Zinc, Magnesium alloys and others

Analysis

Place the sample on the spark stand and start the analysis with the software. The test is complete in less than 40 seconds and all the results of the customized elements are displayed.The results of the analysis can be stored in the software database or printed directly.

Metals Analyzer

OES 6000

Optical Emission Spectrometer

Test Example

Al-Si alloy E513e

Elements	Si	Fe	Cu	Mn	Mg	Ni	Zn	Ti	Pb
Reference Value	12.640	0.212	2.070	0.540	0.753	0.066	0.216	0.042	0.074
Results	12.742	0.198	2.025	0.523	0.742	0.070	0.201	0.048	0.080
Elements	Sn	Sr							
Reference Value	0.021	0.062							
Results	0.029	0.056							

Low alloy Aluminum E423b

Elements	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti
Reference Value	1.280	0.432	0.522	0.234	0.911	0.340	0.030	0.091	0.028
Results	1.265	0.412	0.511	0.222	0.943	0.329	0.022	0.097	0.025

Copper 31XB21

Elements	Cu	Zn	Sn	Pb	Fe	Ni	Al	Si	Mn
Reference Value	69.6793	29.500	0.132	0.120	0.129	0.107	0.121	0.147	0.0647
Results	69.619	29.423	0.142	0.131	0.138	0.122	0.136	0.132	0.068

Zn-Al alloy 43XZ4

Elements	Al	Cu	Fe	Mg
Reference Value	4.760	3.210	0.064	0.043
Results	4.823	3.288	0.070	0.037

Mg-Al alloy E2612

Elements	Al	Zn	Mn	Si	Fe	Cu	Ni
Reference Value	7.180	2.990	0.339	0.097	0.013	0.087	0.0045
Results	7.213	3.042	0.341	0.102	0.015	0.089	0.005

Skyray Instruments

Contact us for LATAM:
Nanometrix Analytical Instruments
México

++55 4350 1226
www.nanometrix.com.mx
info@nanometrix.com.mx

- Spectroscopy
- Chromatography
- Mass Spectrometry

Skyray Instruments specializes in the R&D, manufacturing and sales of analytical and measuring instruments in Spectroscopy, Chromatography and Mass Spectroscopy fields. Our Products include X-ray Fluorescence Spectrometry, Atomic Absorption Spectrometry, Gas Chromatography, Inductively Coupled Plasma Spectrometry, Mass Spectrometry and many others

Skyray has been providing customers around the world with reliable and affordable Scientific Instruments for more than 20 years