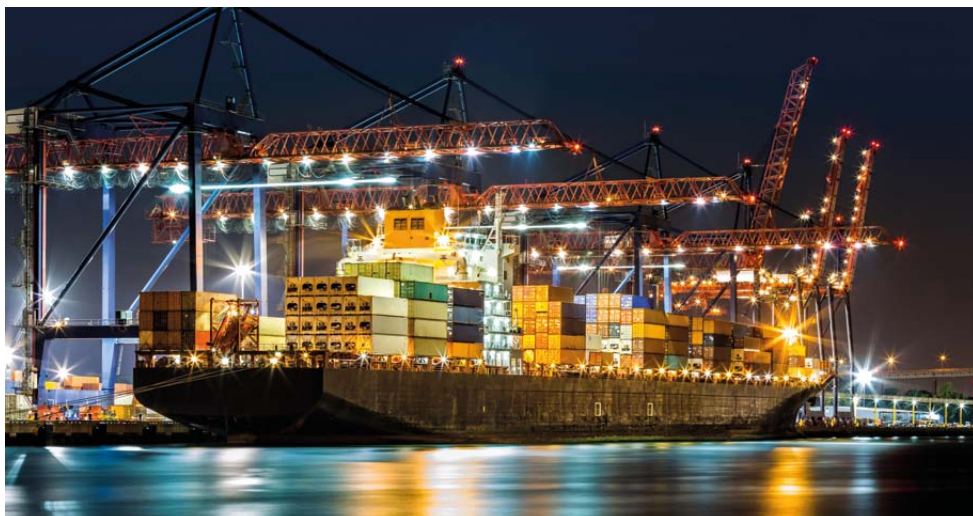


RotrOil

OPTICAL EMISSION SPECTROMETER FOR ELEMENTAL ANALYSIS
OF WEAR METALS, ADDITIVES AND CONTAMINANTS



ANALYTICAL INSTRUMENTS GROUP



About us

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ANALYTICAL INSTRUMENTS GROUP

GNR, thanks to its 35 years of experience, is a worldwide market manufacturer of advanced analytical instruments, developing procedures of analysis for various applications, supplying the corresponding laboratory equipment and providing consulting and Customer support worldwide, through its well established sales and post-sale network.

GNR projects and manufactures Optical Emission Spectrometers (OES) and Rotating Disc Electrode Optical Emission Spectrometers (RDE-OES) for the measurement of elemental composition of metal alloys and the analysis of contaminants, additives and wear metals in oils and lubricants, coolants and hydraulic fluids.

GNR designs and produces X-Ray Diffractometers (XRD) and X-Ray Fluorescence Spectrometers (XRF) for the study of material structure and elemental composition for both academic and industrial applications.



GNR Head Office and Production Site is located in Agrate Conturbia (Novara), near Lago Maggiore; 20 minutes from MALPENSA Airport.

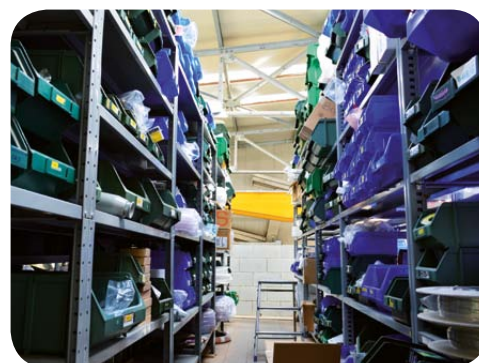
Certified Company

Highest quality in our products and services is a core value for **GNR**.

Full commitment is dedicated to support our quality system in the overall process and continuous improvement is fundamental to guarantee GNR compliance to the internationally accepted quality management standard ISO 9001.



GNR periodically organizes at its facility courses and training for technicians and agents as well as seminars and demonstrations.



Thanks to an extensive network of agents GNR provides technical support and delivers spare parts worldwide.

In relation to the process of continuous development, GNR reserves the right to change specifications of the instruments without previous notice at any time; the real ones will always be those shown in the final order confirmation.



Rotating Disc Electrode Atomic Emission Spectrometer

RotrOil is the latest generation and most advanced version of the traditional Rotrode Emission Spectrometer; thanks to the new compact design it's a very strong and reliable unit, able to be moved and transported to different locations where the analysis must be taken.

The optic chamber of 500 mm focal length based on Paschen-Runge mounting represents the best solution to obtain the better resolution and maximum intensity in order to have the best performances achievable with Rotating Disc Electrode Spectrometry.

RotrOil is available in two different versions, R2 is the more compact one with external personal computer while R3 is the one with PC embedded, in general preferred in the Military domain.

Both instruments are equipped with the new electronic board based on new CMOS detectors that improves the performance of the machine. It allows simple future upgrade possibility with new elements and programs.



R2 Version with external computer



R3 Version with built-in computer



Built-in electrode sharpener

Technical Specifications

R2-R3 RotrOil

Applications	Oil & Grease Condition Monitoring, Fuel & Lubricant Quality Control, Coolant Condition Measurement, Process Water Condition Analysis
Detector	CMOS
Optical System	Paschen Runge mounting
SW	EOS® GNR proprietary SW
Wavelength Range	190 - 800 nm
Power Supply	110/220 V AC 16 A 1 KW
Dimensions	R2: 525 x 500 x 730 mm / 55 Kg R3: 1000 x 500 x 730 mm / 72 Kg
Personal Computer	R2: Optional R3: Embedded





RDE Spectrometer with Auto Samples Changer

GNR developed a new RDE spectrometer, RotrOil Auto Samples Changer (RTL-ASC) that provides automated operation for the analysis of the used oil samples. It is a cost-effective instrument for un-attended operations in oil analysis laboratories, which requires considerable analysis volumes.

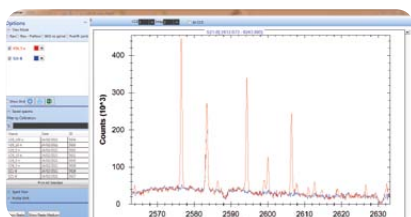
Scope of the instrument is to support end user activity in case of several samples per day to be analyzed providing a robotizing automatic oil sample changer.

Uploaded the samples (up to 48 samples) in the carousel, R4 RotrOil, in an automatic way, is able to load oil samples, perform the spark and analysis, remove oil sample and used disc electrodes reducing preparation time for the operator and related cost per analysis.

R4 RotrOil has an innovative design for automation that consists of a robotic system to exchange consumables and an automatic sample changer for fully automatic and un-attended operations.



48 samples carousel



Technical Specifications

R4 RotrOil

Applications	Oil & Grease Condition Monitoring, Water Condition Analysis, Coolant Condition Measurement
Detector	CMOS
Optical System	Paschen Runge mounting
SW	EOS® GNR proprietary SW
Wavelength Range	190 - 800 nm
Power Supply	110/220 V AC 16 A 1 KW
Dimensions	1500 x 615 x 975 mm / 130 Kg
Personal Computer	Optional



RotrOil Spectrometer:

Precision and Simplicity at your fingertips!

Oil analysis provides early indications of equipment wear and identifies the root causes of corrosion. RDE-OES technique is a proven means of precisely determining elemental composition in engine oil, coolant, fuel, grease, process water and a wide variety of critical operating fluids. Nowadays it is adopted in several applications to test oils to determine additive, presence of contaminant elements at trace level and metal coming from wearing and corrosion.

The determination of debris in used oil is a key diagnostic method practiced in machine condition monitoring programs. The presence or increase in concentration of specific wear metals can be indicative of the early stages of wear if there are baseline concentration data for comparison. A marked increase in contaminant elements could be indicative of external components in the lubricants, such as anti-freezer or sand, which may lead to wear or lubricant degradation.

The test method identifies metals concentration (ppm level) so that trends relative to time or distance can be established and corrective action can be taken to anticipate any serious failure.

The RotrOil product family is the optical emission spectrometer that enables fast and accurate measurements on a variety of fluid types for quality control tool and machine health monitor.

RotrOil Equipments are compliant with ASTM D6595-00 (oil) Standard Test Method for determination of Wear Metals and Contaminants in used lubricating oils or used hydraulic fluids by Rotating Disc Electrode Atomic Emission spectrometry and with ASTM D6728-01 (fuel) Standard Test Method for Determination in Contaminants in Gas Turbine and Diesel Engine Fuel by Rotating Disc Electrode Atomic Emission Spectrometry.

RotrOil Features

- Measure sub-ppm elemental concentrations with high purity carbon electrodes
- Direct light collection without fiber optic coupling
- Built-in electrode Sharpener
- Analyze up to 32 elements simultaneously
- No special utilities or gas required, only AC power
- Easy to Operate, suitable for in-site inspection and condition-based maintenance sites

Application	Wear Metals and Contaminants			Coolant	Fuels
	Basic	Lubricants	Extended Option		
Ag	0-1000	0-1000			
Al	0-1000	0-1000		0-50	0-900
As			0-1000		
B	0-1000	0-1000	0-6000	0-1000	
Ba	0-1000	0-6000			
Bi			0-1000		
Ca	0-3000	0-6000	> 20000	0-50	0-900
Cd	0-1000	0-1000			
Ce			0-1000		
Co			0-1000		
Cr	0-1000	0-1000			0-900
Cu	0-1000	0-1000		0-50	0-900
Fe	0-1000	0-1000		0-50	0-900
In			0-1000		
K		0-1000		0-1000	0-900
Li		0-1000			
Mg	0-2000	0-2000	0-6000	0-50	0-2700
Mn	0-1000	0-1000			0-900
Mo	0-1000	0-1000		0-500	
Na	0-1000	0-1000	0-6000	0-1000	0-100
Ni	0-1000	0-1000			0-900
P	0-2000	0-2000	0-6000	0-2500	
Pb	0-1000	0-1000		0-50	0-900
Sb		0-1000			
Si	0-1000	0-1000		0-500	0-300
Sn	0-1000	0-1000			
Sr			0-1000		
Ti	0-1000	0-1000			
V	0-1000	0-1000			0-900
W			0-1000		
Zn	0-2000	0-2000	0-6000	0-50	0-900
Zr			0-1000		
Total#	21	24	+8	13	15

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Highlights and applications

- Wide range of analysed Elements and Applications
- Outstanding analytical performance using CMOS detector
- Reduced measurement time
- New EOS® SW with different results formats
- Compact size and limited weight
- Best price - to - performance ratio

GNR Service

GNR Global Support Network offers an excellent technical service to ensure the full instrument operation.

- **Training**
Understand your analyser and its features
- **Online Remote Help Desk**
Troubleshooting at your fingertips
- **Certification and maintenance**
Keep your spectrometer in line with international regulations
- **Spare parts and consumables**
Extensive stock availability of spare parts, consumables and accessories
- **Warranty plans**
Protect your investment subscribing extended maintenance plan
- **Maintenance**
Effective and fast recovery operations conditions

More information

To find out more about GNR range of optical emission spectrometers, visit:

<http://www.gnr.it/products/optical-emission-spectrometry/>

Local Agent



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