

# LaserNet 200 Series

PARTICLE COUNTER, WEAR CLASSIFIER, FERROUS MONITOR



The LaserNet 200 Series is much more than a particle analyzer. It also calculates free water in ppm, and differentiates contaminants (silica) from machine wear (metal). In addition, this instrument provides particle counts and codes, abnormal wear classification and ferrous wear measurement.

- Widest range up to 5,000,000 particles/ml
- Oil viscosity testing up to ISO 320 without dilution
- Imaging of dark fluids containing up to 2% soot
- Error correction for water and air bubbles

## The LaserNet 200 Series is the world's best particle counter for lubrication oil testing.

In commercial laboratories, power generation plants and industrial facilities, the LaserNet 2000 Series offers unrivaled functionality for contamination control and condition-based maintenance programs.

### FEATURES INCLUDE:

- Particle count, size distribution and codes (ISO 4406, NAS 1638, NAVAIR 01-1A-17, SAE AS 4059, GOST, ASTM D6786, HAL and user-defined bins).
- Differentiation of contaminants (silica and fibers from machine wear metal)
- Classification of wear particles, image storage and reporting of particle count and size for Cutting, Sliding, Fatigue, Fibers and Non-metallics wear types
- Total ferrous content measurement in the sample with ferrous particle count and size distribution

Q200 SERIES COMPARISON	Q210	Q220	Q230
Total particle count & codes	✓	✓	✓
Non-metallic particles (sand/dirt)	✓	✓	✓
Free water measurement	✓	✓	✓
Air bubble/water droplet correction	✓	✓	✓
Wear particle classification		✓	✓
Ferrous content			✓
Ferrous particle count & size distribution			✓
Autosampler option	✓	✓	✓

**Multiple configurations and options cover the needs of commercial laboratories and industrial plants for contamination control and predictive maintenance.**

### OPTIONS INCLUDE:

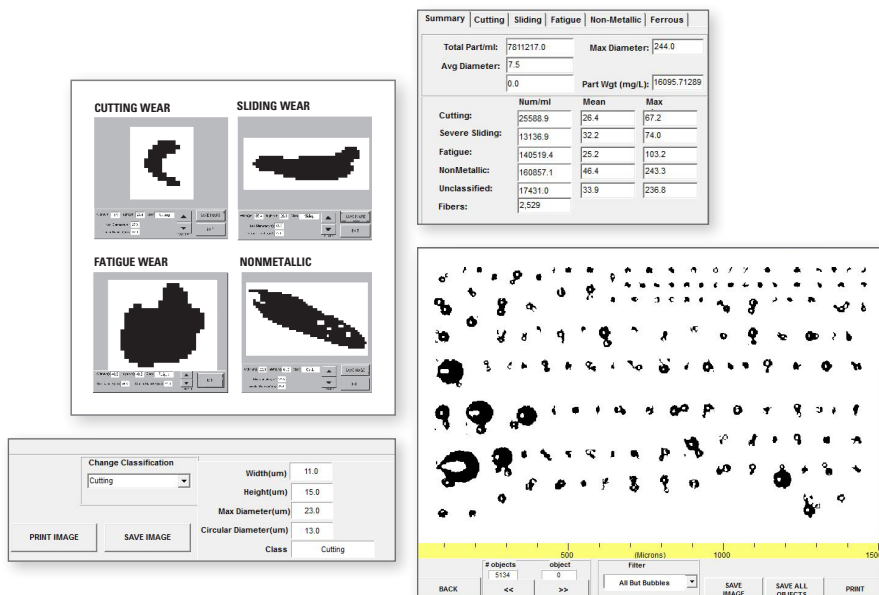
**Ferrous Monitor to measure ferrous content** – enables measurement of both ferrous content and total particle count on the same sample, eliminating the need to measure ferrous content on another instrument

**Classification of wear particle shape** – directly images wear particle silhouettes and counts and classifies wear particles over 20 microns

**Autosampler for high throughput sample processing** – provides automated, unattended processing of up to 24 used oil or hydraulic fluid samples

# Particle Counter, Wear Classifier, and Ferrous Monitor

The LaserNet 200 Series provides particle counts and codes, large wear particle classification and ferrous wear monitoring. Options include an autosampler for high throughput sample processing as well as configurations without the ferrous monitor and wear classification.



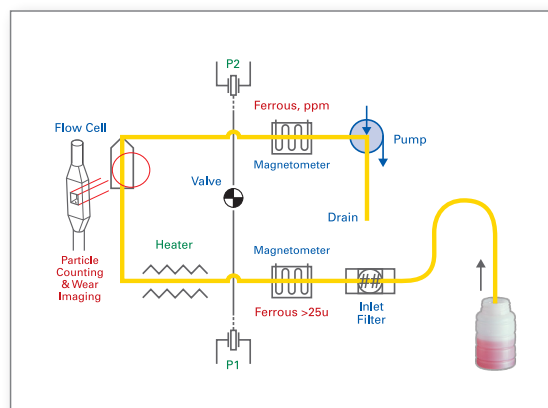
Wear images are stored and analyzed directly on the LaserNet 200 software. They can be sorted by wear class. OilView™ software also reports on particle count and size distribution by wear category.

Establishing alarm limits and condemnation levels for large machinery wear particles is often challenging. Unlike parameters such as ISO code, water, elemental concentration and TAN, there are no pre-defined limits set by the equipment supplier. In each piece of equipment, machinery wear particles of different sizes reach their own dynamic equilibrium condition. The LaserNet 200 software calculates recommended wear particle limits for categories of cutting wear, severe sliding wear and fatigue wear by analyzing a series of six or more samples.

	Slide	Fatigue	Cut	Non Metallic
20-25 um	33	39	41	38
25-50 um	4	6	3	0
50-100 um	0	0	0	0
>100 um	0	0	0	0
Total	35	39	42	38

Calculate Limits from Particle Data	
Limits	Mult.
Sublim	2
Calculate	

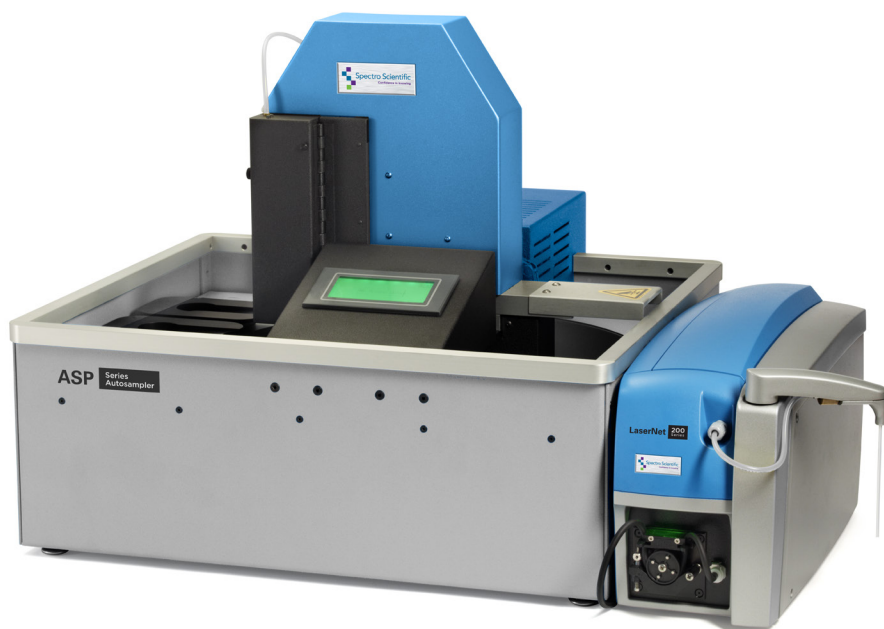


Schematic of LaserNet 230 Series

## Sample preparation

Sample preparation is efficient with the LaserNet 200 Series – viscosities up to 320cSt can be processed without dilution due to the wide dynamic range. And, unlike conventional light blockage particle counters, there are no flow control valve adjustments needed when testing different sample viscosities.

With an intuitive, configurable graphical user interface and no calibration required, the LaserNet 200 Series is fast, accurate and easy to use.



## ASP Autosampler

The ASP autosampler is a low cost solution for automatic and unattended processing of a batch of up to 24 samples. The ASP may be added to existing LaserNet 200 installations with minimal setup. Features include:

- Automatic reversing stirrer
- Two-stage wash system using focused spray jets
- Quick disconnect/shutoff for solvent supply and drainline

## Data Management

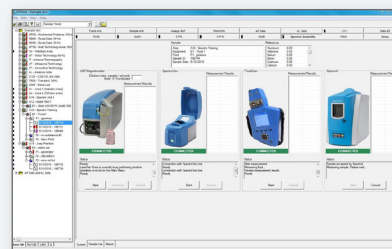
The LaserNet 200 Series has a data export capability to laboratory LIMS systems as well as comma or tab delimited text file formats. The wear images can be exported as .jpeg or .bmp files.

Spectro Scientific's MiniLab Series software, when integrated with the OilView LIMS module, can transfer data to the AMS Machinery Health Manager LIMS module.

SpectroTrack is a browser-based Laboratory Information Management System (LIMS). It provides a single view of a sample lifecycle from scheduling the sample to report generation and includes a customizable asset management database for trend analysis.

Filter Analyte Type	Import Instrument Data	Add Import Data
Oil	Viscosity	Sample
Model SHC 9040	8000 (0)	827
Model SHC 9040	8000 (0)	845
Model SHC 9040	8000 (0)	852
Model SHC 9040	8000 (0)	857
Model SHC 9040	8000 (0)	858
Model SHC 9040	8000 (0)	859
Model SHC 9040	8000 (0)	860
Model SHC 9040	8000 (0)	861
Model SHC 9040	8000 (0)	862
Model SHC 9040	8000 (0)	863
Model SHC 9040	8000 (0)	864
Model SHC 9040	8000 (0)	865
Model SHC 9040	8000 (0)	866
Model SHC 9040	8000 (0)	867
Model SHC 9040	8000 (0)	868
Model SHC 9040	8000 (0)	869
Model SHC 9040	8000 (0)	870
Model SHC 9040	8000 (0)	871
Model SHC 9040	8000 (0)	872
Model SHC 9040	8000 (0)	873
Model SHC 9040	8000 (0)	874
Model SHC 9040	8000 (0)	875
Model SHC 9040	8000 (0)	876
Model SHC 9040	8000 (0)	877
Model SHC 9040	8000 (0)	878
Model SHC 9040	8000 (0)	879
Model SHC 9040	8000 (0)	880
Model SHC 9040	8000 (0)	881
Model SHC 9040	8000 (0)	882
Model SHC 9040	8000 (0)	883
Model SHC 9040	8000 (0)	884
Model SHC 9040	8000 (0)	885
Model SHC 9040	8000 (0)	886
Model SHC 9040	8000 (0)	887
Model SHC 9040	8000 (0)	888
Model SHC 9040	8000 (0)	889
Model SHC 9040	8000 (0)	890
Model SHC 9040	8000 (0)	891
Model SHC 9040	8000 (0)	892
Model SHC 9040	8000 (0)	893
Model SHC 9040	8000 (0)	894
Model SHC 9040	8000 (0)	895
Model SHC 9040	8000 (0)	896
Model SHC 9040	8000 (0)	897
Model SHC 9040	8000 (0)	898
Model SHC 9040	8000 (0)	899
Model SHC 9040	8000 (0)	900

SpectroTrack LIMS sample lifecycle report



LaserNet 200 Series integrates with the AMS Machinery Health OilView™ LIMS

## LaserNet 200 Series Ordering Information

PART NUMBER	
SpectroLNF-Q210	LaserNet 210 particle counter. Requires SA1023 or SA1024 accessory kit and a PC.
SpectroLNF-Q220	LaserNet 220 particle counter with wear particle shape classifier. Requires SA1023 or SA1024 accessory kit and a PC.
SpectroLNF-Q230	LaserNet 230 particle counter, wear particle classifier, and ferrous monitor. Requires SA1025 or SA1026 accessory kit and a PC.
SA1023	LaserNet 210/220 standard accessories with ultrasonic cleaner, 115V
SA1024	LaserNet 210/220 standard accessories with ultrasonic cleaner, 220V
SA1025	LaserNet 230 standard accessories with ultrasonic cleaner, 115V
SA1026	LaserNet 230 standard accessories with ultrasonic cleaner, 220V
ACCESSORIES AND CONSUMABLES	
LNF-909	LaserNet 200 Series routine maintenance kit
LNF-910	LaserNet 200 Series with Skydrol configuration routine maintenance kit
LNF-509	Calibration check fluid 2806, 400 ml
LNF-545	Ferrous validation standard, 400 ml
P-10193	Electron solvent (1 gallon)
LNF-902	Skydrol kit (phosphate ester fluids) for LaserNet 210 and LaserNet 220 only (factory installation)
LNF-905	Skydrol kit (phosphate ester fluids) for LaserNet 230 only (factory installation)
MHM-10605	10 ml plastic syringe, package of 100
M99919	ASP sample bottles, 120 ml (4 oz), package of 50
600-00008	Spectro Certified Sample Bottle, PET, 120 ml (4 oz), package of 50
A5051SF	Solvent Filtration and Dispenser
ASP	Autosampler for LaserNet 200 Series, 115/230V
A475101	OilView LIMS software
750-00047	MiniLab Software for Oilview LIMS interface
M90035	SpectroTrack base product <i>For other configuration options see SpectroTrack datasheet</i>
PRODUCT INFORMATION	
Applications	Mineral and synthetic lubricants including gear, engine, hydraulic, turbine and distillate fuels
Output	Particle count: ISO 4406, NAS 1638, NAVAIR 01-1A-17, SAE AS 4059, GOST, ASTM D6786, HAL and user defined Total ferrous, ppm Ferrous particle count and distribution Free water, ppm; Soot wt. %; Particle shape per LaserNet 200 Series method

Methodology	ASTM D7596, ASTM WK52557
Standard Analytical Range	Particles 4 µm - 100 µm
Calibration	Not required. Validation standards supplied with instrument.
OPERATIONAL SPECIFICATIONS	
Sample Volume	5-30 mL, varies with viscosity
Solvents/Reagents	Solvent options when processing mineral based oils: Electron-22 Environmentally Safe Solvent Lamp Oil/Kerosene Diesel or Jet Fuel  Note: Higher flammability solvents (Isopropyl Alcohol (IPA), Hexane, Heptane, Naptha, Mineral Spirits, Toluene, Petrol) may be used with appropriate caution in the LNF, however these may NOT be used with an ASP.  Solvent options when processing Skydrol: IPA (Isopropyl Alcohol) or Acetone only
Environmental Operating Requirements	5C to 40C ambient temperature, 10-80% relative humidity, non-condensing, 2000 m maximum altitude
USER INTERFACE SPECIFICATIONS	
Software/Operating System	Windows®7 Pro, 32 or 64 bit, US English version
POWER REQUIREMENTS	
Power	LaserNet 200 Series: AC 110/240 V, 50/60 Hz, 10 Watts ASP: AC 115/230 V. 50/60 Hz, 2.5A/1.6A
MECHANICAL SPECIFICATIONS	
Dimensions H x W x D	LaserNet 200 Series: 22.9 cm 17.8 cm x 43.2 cm (9 in x 7 in x 17 in) ASP: 55 cm x 62 cm x 52 cm (21.5 in x 24.5 in x 20.5 in)
Weight	LaserNet 200 Series: 7.7 kg (17 lbs) ASP: 35 kg (76 lb)
Shipping Package Dimensions H x W x L	LaserNet 200 Series: 35.6 cm x 36.8 cm x 78.7 cm (14 in x 14.5 in x 31 in) ASP: 82 cm x 76 cm x 71 cm (32 in x 30 in x 28 in)
Shipping Package Weight	LaserNet 200 Series: 12.2 kg (27 lbs) ASP: 60 kg (130 lbs)
COMPLIANCE	
CE Mark: EMC Directive (2004/108/EC); RoHS, UL, CSA, ETL	
SUPPORT CONTRACTS	
SVC025	Service Contract LaserNet 210/LaserNet 220
SVC026	Service Contract LaserNet 230