**Mechanical Testing**

Mechanical testing allows measuring strength, stiffness and ductility of materials. Mainly metals but also polymer composites, rubbers and building materials are tested in tension, compression, impact, shear in machines ranging from 100g to 60t. Apart from standard specimens Spectrumlabs undertakes testing of components such as chain-links, steel rebars, steel-wires. Machining of typical and complex specimens is performed in our fully-equipped workshop.

- Tensile / Yield strength
- Bend / Flexure
- Compression
- Flattening
- Proof load
- Flaring / Expansion
- Charpy impact (V-notch)
- Hardness test (Vickers, Brinell, Rockwell)
- Welder & Welding Procedure Qualifications (EN, ASME, API)

**Corrosion Testing**

The Laboratory can offer a range of services related to corrosion among which are the following:

- Salt spray test according to ASTM B117.
- Pitting and Crevice corrosion test according to ASTM G48 method B.
- Stainless Steels and Related Nickel-Chromium-Iron Alloys susceptibility to Stress-Corrosion Cracking according to ASTM G35.

**Failure Analysis & Metallurgical Investigation**

Spectrumlabs has performed hundreds of failure analysis investigations in sectors such as marine, power generation, oil refineries, automotive, cement factories etc. Depending on the case the following investigative methods may be used: non destructive testing, visual examination, metallurgical examination via optical and electron microscope, metallographic and fracture surface replicas, chemical analysis, mechanical testing etc. Spectrumlabs has, throughout the years, successfully undertaken failure analysis services for components and cases such as:

- Marine engine parts and ancillary equipment
- Pressure vessels, boilers and process piping
- Corrosion issues
- Coating, finishing and insulation problems
- Polymer composites yachts, rafts and structures
Non Destructive Testing (NDT) identifies defects before they become problems, without destroying the sample material. Spectrumlabs NDT services comply with international standards, industry requirements and classification societies rules. Services are timely, accurate, confidential and available in our laboratory or in the field. Spectrumlabs technicians are certified to meet industry requirements to EN 473 and ASNT SNT-TC-1A.

- Ultrasonic inspection
- Ultrasonic thickness measurement
- Magnetic Particle Inspection (MPI)
  visible & fluorescent
- Liquid Penetrant Inspection (LPI)
  visible & fluorescent
- Radiographic testing (X-rays & γ-rays)
- Visual examination
- Eddy current testing
- Vacuum test
- Coating thickness measurement
- Surface roughness
- Hardness testing
- Fracture surface and metallographic replica preparation
- Positive Materials Identification (PMI)
  in situ materials identification by XRF
- Crack depth measurement

Heat Treatment
Spectrumlabs utilizes portable heat treating equipment to provide services such as stress relieving during welding, shrink fitting, preheating for heavy welding projects and preheating of high strength steel that is prone to cracking. Services include:

- Annealing
- Stress relieving
- Pre-heating

Laser Alignment & Vibration Analysis
Laser Alignment Techniques can reduce the amount of time spent in the alignment process. Precise laser coupling alignment is used to reduce bearing and seal damage, minimize energy loss and reduce production downtime. Performing coupling alignment on a scheduled basis, will make machinery last longer and perform more efficiently. Offered services include:

- Shaft alignment
- Bore alignment
- Center of circle
- Shave and pulley alignment
- Cardan alignment
- Flatness and straightness
- Parallelism and squareness

Advanced vibration monitoring and analysis can be performed for each type of machine or structure, in order to reliably detect and diagnose the possible source. If performed early, expensive capital equipment replacement and unplanned maintenance down-time can be avoided. The following services are provided:

- Spectrum analysis
- Peak to peak analysis
- Fast Fourier Transformation (FFT)
- Balancing of rotors, turbines and other rotating equipment

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The Laboratory undertakes instrument calibration and certification such as:

- Explosimeters
- Oxygen meters
- Gas sampling pumps
- Thermometers

All calibrations and certifications of instruments are based on standards and instruments whose certificates are traceable to international metrological institutes.

Consultation & Support

Organizations need a trusted partner who will help them navigate through the ever-changing conditions. Spectrumlabs delivers superior value to all our customers by leveraging our expertise in Materials Testing Services, NDT Inspection, Consulting, Contract Research and Training.

Our priority is to ensure that your expectations are met through high quality services. Whether your deadlines are challenging or your technological needs unique, Spectrumlabs guarantees a job well-done, on-time and with the utmost customer satisfaction.

Our most important asset, our highly trained, committed and passionate staff, is the answer to your business needs.

Spectrumlabs, with a team of experienced expert consultants and the support of selected partners, can provide the following services to your company:

- Training
- Contract testing services and development of new testing procedures
- New buildings pre-delivery inspection
- Welding engineering
- Asbestos surveys
- Claims support for P&I Clubs and shipping companies
- Electromechanical equipment contamination inspections
- Reverse engineering

Chemical Analysis

The Chemical laboratory, one of the first established units of the company has a team of highly qualified and experienced chemists. Their work is complemented by a full range of analytical instruments. A wide variety of testing services is provided such as:

- Marine bunker fuel analysis in compliance with ISO 8217 and MARPOL 73/78, Annex VI Reg. 18. All necessary accessories and instructions for a representative sampling such as drip sampling flanges, cubitainers, sampling kits and labelled shipping containers for global dispatch
- Lubricating oil testing complying with international standards.
- Analysis and certification of bilge water separator effluent
- Condition monitoring of each cylinder of two-stroke engines through used cylinder oils, fuel and system lubricating oils (DRAIN ANALYSIS)
- Ballast water management plants analysis in line with the national and IMO regulations
- Ferrous and non-ferrous metals analysis by spectrometric and wet chemistry techniques
- Drinking water and wastewater analysis.
- Fire fighting foams testing.

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Energy, Marine & Industrial Services

Spectrumlabs is a constantly evolving Quality Assurance Laboratory with a 40 year experience in the Energy, Marine and Industrial Services. Providing a full range of Chemical, Mechanical, Metallurgical and Non Destructive Testing Services, Spectrumlabs has the solutions your company may need on material properties, characteristics, composition, defects or discontinuities. With fully equipped laboratories and highly trained staff, Spectrumlabs will provide support on all aspects of Materials Engineering, Failure Analysis Services and Consulting.

Quality Assurance

Spectrumlabs is a certified laboratory since 2002 accredited with an ISO 17025 and ISO 9001. The quality management system applied at Spectrumlabs ensures the reliability of our results, the completeness of the reports and the satisfaction of our clients.

Our procedures conform to ISO, EN, ASTM, ASME and API specifications. Our quality manual is available upon request and we welcome audits of our quality assurance system.

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