



POWER & RENEWABLE ENERGY SERVICES

Move Forward with Confidence



**BUREAU
VERITAS**

- ✓ Siting - Assistance to permitting
- ✓ Environmental Impact Assessment
- ✓ Safety and environmental audits

- ✓ Construction code compliance and design review
- ✓ Supplier Technical Assessment
- ✓ Shop Inspection, Expediting

- ✓ Pressure Equipment Certification services (PED, ASME, local schemes)
- ✓ Assistance to Project Management
- ✓ Procurement inspection

- ✓ QA/QC Management and outsourcing
- ✓ Quality Site Inspection
- ✓ Health & Safety Management
- ✓ Welding and Welders Qualifications
- ✓ Non-Destructive Testing

- ✓ Emissions Measurement
- ✓ Performance Testing and Witnessing
- ✓ Site Inspections during commissioning and before hand-over
- ✓ Review of commissioning reports

- ✓ In-Service Inspection and Verification
- ✓ Health & Safety Compliance
- ✓ Outage & Maintenance Sub-Contractor Audit
- ✓ Outage Planning Management
- ✓ Turbines, boilers, HRSG, transformer expertise audits

- ✓ Maintenance Planning Review
- ✓ Training
- ✓ Asset Integrity Management
- ✓ Remaining life assessment of critical equipment
- ✓ Greenhouse gas and system certification

- ✓ Health and Safety Compliance
- ✓ Project Close-out Documentation
- ✓ Code Compliance
- ✓ QA/QC Management
- ✓ Environmental Due Diligence



Fossil Fuel

New fossil fueled power stations are commissioned every month worldwide. Along with the increase of carbon free power production, such as wind power and photovoltaics, fossil fuels remain the major source of energy.

For the past thirty years, Bureau Veritas has catered to the fossil fueled power generation industry and has built up its core know how of Quality Assurance /Quality Control with its main players. This industry represents one of the oldest and most central market for Bureau Veritas and makes up the backbone of our services.

Nuclear Power

The nuclear industry is one of the most regulated and complex industries. In large nuclear plant projects, mastering safety, quality and environmental challenges of installations and equipment is a key success factor.

Qualified by major National Nuclear Safety Authorities, Bureau Veritas has extensive knowledge of nuclear codes and standards, compliance process designs and execution. Our experts provide support throughout the nuclear plant life cycle, from construction to dismantling. Additionally, to respond to the nuclear supply chain challenges, the NQSA, an association jointly launched by Areva and Bureau Veritas, created and promoted a new standard: NQ5100.

Hydro Plant

Hydropower is the most widely used form of renewable energy. The increased emphasis given to the impact of developments on water environments requires the provision of expert hydrological advice during the entire life cycle of the construction.

Our team of civil engineers and hydrologists provide expert advice. We provide risk assessment, hydraulic and hydrological modelling, environmental impact assessment, flood alleviation schemes and drainage analysis. We also offer civil construction inspections for dams and their related constructions, such as penstocks or spillways. Our services are key for reliable and sustainable use of water resources worldwide.

Solar Thermal

This energy generation process uses the sun's heat. Solar radiation is concentrated and converted to high-temperature steam or gas to drive an electric steam turbine generator.

Bureau Veritas provides companies in the thermal industry with QA/QC site inspection, shop inspection as well as project management (planning, organizing and managing resources) and performance assessment (mirror alignment).

Photovoltaics

Over the past decade, the photovoltaic market has experienced unprecedented growth. In the context of fighting global warming, photovoltaic power is part of a global renewable solution and several photovoltaic devices exist to catch and transform solar radiations.

To ensure your equipment is fully performing, Bureau Veritas provides you with a complete project study: from the verification of feasibility studies to performance studies. You will be able to identify, qualify, quantify and manage all the risks related to photovoltaic installations.

Biomass

Biomass has been heavily promoted as part of the solution to mitigate climate change as well as anticipating the scarcity of fossil fuels in the future.

Bureau Veritas experts are highly qualified and deliver a full range of services addressed to the biomass industry, such as performance verification, commissioning and gas emission measurements.

Wind power

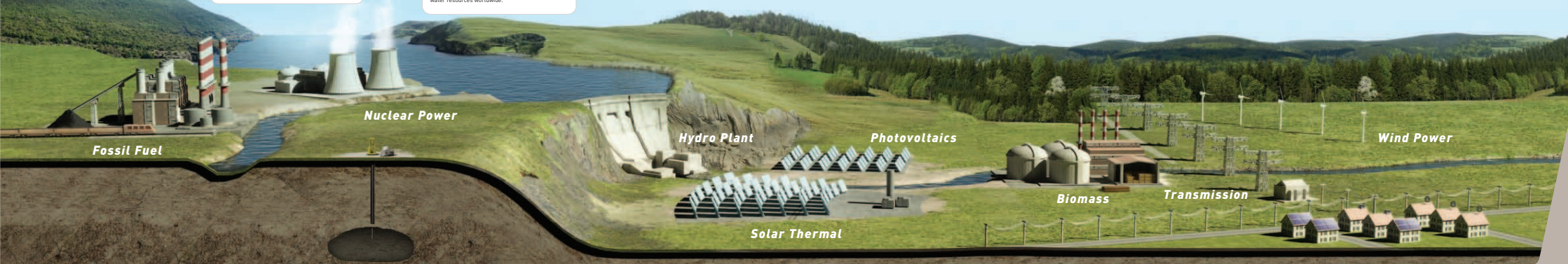
Since 2000, wind energy has encountered spectacular growth worldwide. Wind farms are moving offshore and the new market trends bring numerous technical and regulation constraints.

Bureau Veritas provides a one-stop solution for all aspects of the wind power industry: Wind Turbine Generator Certification, type and project certifications, review and controls, HSE and regulatory services, in-service inspections, non-destructive testing, etc. We stand by you to provide full compliance support and to prevent risks regarding quality, health, safety and environmental issues.

Transmission

Our society is today extremely dependent on reliable and high quality electricity supply. All around the world, the power industry is facing a very complex technological context and has to cope with constantly changing regulations.

With extensive knowledge and experience of electric power systems worldwide, Bureau Veritas brings a unique combination of skills to power transmission projects. Our electrical engineers provide complete power system analyses, helping you to optimize your investments and secure operations.



Our Power and Renewable Energy Expertise



Fossil-Fired



Nuclear



Renewables



Hydro

Capabilities along the Value Chain

Inspections

We carry out shop inspection of your equipment procurement and site inspections of power utilities, using our international network.

Testing

Our fully equipped laboratories and non-destructive testing experts provide a comprehensive range of services to meet clients' specifications or local regulations. They perform construction material testing, non-destructive testing, destructive testing, environmental analyses and many others.

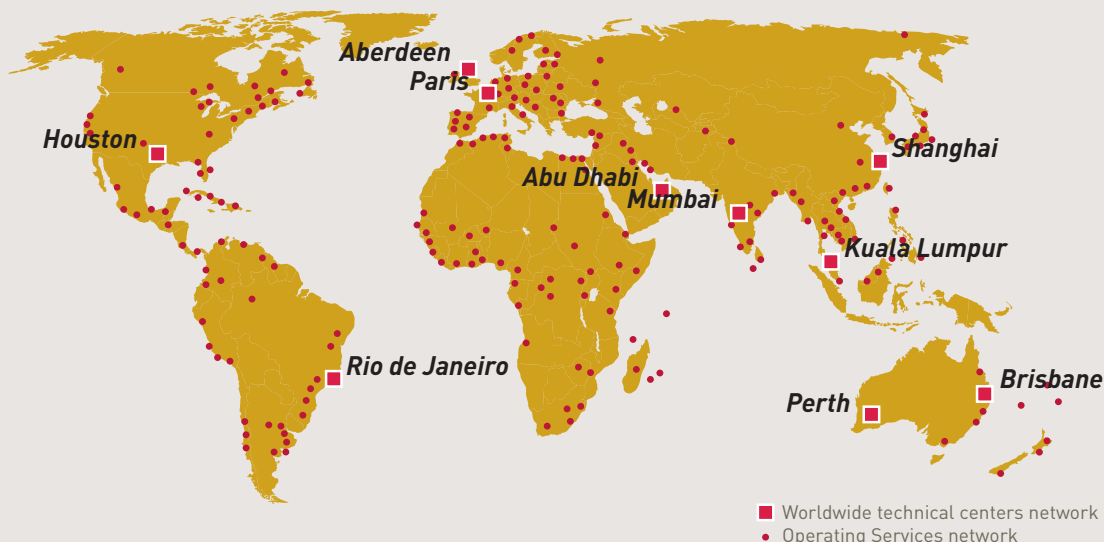
Technical Staffing

Large teams of inspectors, technicians and engineers are proposed to reinforce client resources under their management.

Technical Centers


Bureau Veritas technical centers' mission is to contribute to the safety of your installations, by verifying design compliance to standards, providing solid inspection engineering support, and helping you identify, quantify, reduce and manage the risks associated with operating the facilities.

Bureau Veritas Worldwide Technical Centers and Network



Focus on a Client Reference

Ensuring compliance with international standards through inspection and certification

 **The relationship between Eskom and Bureau Veritas** in South Africa has been well established for over several years. With safety performance among one of its top strategic areas, Eskom aims at maintaining an outstanding record in Quality, Health & Safety and Environment. This goal is met through inspection and certification which ensure its unit compliance with international standards.

Furthermore, in order to meet rising energy demands, Eskom is engaged in a massive development program in South Africa, with the construction of additional power stations and lines, and calls for an experienced body to provide supplier assessment, design review and inspection services. Bureau Veritas' international network and, in particular, its South African offices, take part in local development through the involvement of highly qualified and committed inspectors.

Other References

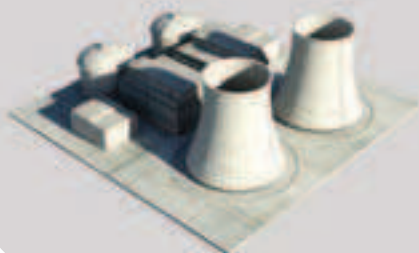
Nuclear Power

TVO **(Teollisuuden Voima Oy)**

- Third party inspection for EPR reactor pressure vessel
- Review and approval of construction plans and manufacturing inspections in Europe for various components (pumps, heat exchangers, piping, valves)

PPL, Indiana Michigan Power Susquehanna 1 & 2, Donald C. Cook 1 & 2

- ASME Code responsibilities during outages to witness in-service inspections and repairing/replacement activities



Fossil-Fired Power

Iberinco / Iberdrola

- Technical assistance and on-site quality control (pressure equipment directive certification, machinery inspections)
- Worldwide shop inspections of equipment

Scottish Power

- In-service inspections of pressure systems, cranes and lifting equipment
- Outage inspections, including Non-Destructive Testing services
- Verification of plant modifications and repairs

Kuwait MEW (Ministry of Electricity and Water)

- Quality assurance of welding and Non-Destructive Testing activities
- Worldwide shop inspections
- Quality assurance during maintenance



Renewable Power

Gamesa Eolica **Suzlon** **Nordex, Repower, Enercon** **GE Wind**

- Electrical and machinery conformity assessment; civil and structural engineering independent review
- Health and Safety coordination during site erection; site safety
- Expediting, inspections and technical assistance services; review of technical documents
- Torque verification; tower, nacelle, blades and gearbox manufacturing inspections
- Environmental impact assessment



Bureau Veritas, Your Compliance and Risk Mitigating Partner

Established in 1828, Bureau Veritas is a professional services company whose overriding aim is to provide its clients with all the necessary services required to achieve, maintain and demonstrate compliance with their Quality, Health & Safety, Environment and Social Accountability obligations. At the heart of our services, you will find an underlying law, regulation, standard, elected specification or similar criteria driving a client requirement.

Our services are then designed to respond to these requirements by advising clients of their risks and most appropriate course of action (consulting), assessing and monitoring the status of physical assets (inspection and testing services) or assessing the effectiveness of management systems (assurance/audit and certification services).

In this service portfolio dedicated to the power and renewable energy industries, we aim at providing you with an overview of our services range which can be grouped and led according to your specific needs.

An Extensive Geographic Footprint



Americas

- 200 offices
- 100 laboratories
- 10,800 employees



Europe, Middle East & Africa

- 520 offices
- 120 laboratories
- 20,500 employees



Asia-Pacific

- 210 offices
- 110 laboratories
- 16,700 employees



**BUREAU
VERITAS**

Move Forward with Confidence

For more information, contact Bureau Veritas:

67/71, boulevard du Château - 92571 Neuilly-sur-Seine Cedex - France

Tel: +33 (0)1 55 24 70 00

power@bureauveritas.com - <http://www.bureauveritas.com/your-industry/power-and-utilities>