



OIL & CHEMICAL **TANKERS**

MAXIMIZING SAFETY AND ENVIRONMENTAL PROTECTION



Move Forward with Confidence

**BUREAU
VERITAS**



RELIABLE SOLUTIONS FOR A HIGH-RISK INDUSTRY

Hazardous and high pollutant cargo carried by oil and chemical tankers makes safety and environmental protection top priorities for shipowners and charterers. Bureau Veritas provides longstanding experience and expertise to preserve human life, vessels and the marine environment.

Sea transportation of oil and chemicals is a high-stakes business. Hazardous cargo means that charterers and shipowners must target a zero-incident approach, and avoid polluting spills and other environmental risks. Failure to do so can result in loss of life, vessels, cargo and reputation.

Against this backdrop, choice of classification partner is crucial, both for newbuildings and ships in service. Shipowners and shipyards seek a reliable partner, with the experience, network and tools to provide them with confidence – and reassure charterers – that their vessels will operate safely and efficiently.

A LONG-TERM PARTNER WITH SPECIALIST EXPERTISE

Bureau Veritas is one of the most experienced classification societies in the industry: we classified the first ever oil tanker in 1886, the “Glückauf”. In the intervening 130 years, we have been involved in every industry evolution, from the classification of ultra-large crude carriers (ULCCs) in the late 1970s, to the first asphalt tankers to be powered by LNG fuel, (delivery: 2016).

Today, over 1,200 vessels operate to Bureau Veritas class and over 115 are currently under construction. Our technical expertise and the continuous support we provide to clients make us a natural choice for owners seeking safety and reliability. Our global network of experienced ship surveyors ensures convenience for owners, who can request an inspection anywhere in the world.

We are also able to provide reliable and efficient services to ships that are not classified with us, including structural assessments and Condition Assessment Programs to ensure vessels remain seaworthy and meet charterers’ requirements.

SUPPORTING COMPLIANCE FOR NEWBUILDINGS

Many of the tankers used around the world today have been in service for many years. While the overall market for new tankers remains flat, some of these doyennes of the sea are now being replaced.

This trend poses new challenges for shipowners and yards. First, oil tankers over 150 meters in length must meet the requirements of the harmonized Common Structural Rules (CSR-H) for tankers, (implementation: July 1st, 2015). Second, tough regulations on low sulfur fuels and NOx emissions for ships operating in seas around the US, Canada and Europe is leading owners and yards to adopt clean fuels such as natural gas or abatement technologies for newbuildings and conversions. With in-depth knowledge built on IACS working groups on CSR-H, and proven expertise in delivering vessels that comply with these recent regulations, Bureau Veritas is well-placed to advise owners on compliance and help them make the right decision.

WHY CHOOSE BUREAU VERITAS?

- Protect your ship, your crew and the environment
- One of the oldest classification societies (established 1828)
- The Bureau Veritas brand: a mark of confidence
- Industry-leading research, knowledge and technical expertise
- In-depth knowledge of regulations
- Closely involved in the development of CSR-H
- Extensive geographical network

CLASSIFICATION SERVICES

Bureau Veritas' efficient tools and services, and the major role we play within international maritime bodies, ensure we remain at the forefront of oil and chemical tanker classification.

Classification of oil and chemical tankers goes beyond compliance with regulations. It provides ship owners with confidence that their vessel, crew and equipment will remain safe, and that they have taken appropriate measures to safeguard against spills and other environmental risks. Bureau Veritas is a leader in classification of oil and chemical tankers. Our rules have dedicated class notations covering all types of oil and chemical tanker, including sophisticated asphalt tankers. We also offer specific notations for owners seeking greater energy efficiency, or compliance with regional environmental regulations. We offer a sophisticated range of classification tools covering, for example, structure and fatigue (Veristar Hull and MARS) on-board equipment (Veristar Machinery); and cargo safety (Veristar Chemicals, revised to meet recent amendments to the IBC Code).

HELPING THE INDUSTRY MEET THE CHALLENGE OF RECENT REGULATIONS

Closely involved in the development of the new harmonized Common Structural Rules (see box opposite), Bureau Veritas' experts around the world provide guidance on CSR-H interpretation and application, and are able to assess compliance of new tanker designs. We are also helping ship owners and designers meet regulatory requirements covering ballast water treatment and ballast water exchange. In addition to developing class notations, we are working with ship designers to improve hull designs, ensuring technical compliance while reducing the cost impact of ballast water regulations.

CLASSIFICATION NOTATIONS ISSUED TO OIL AND CHEMICAL TANKERS BY BUREAU VERITAS

Some of the classification notations commonly used for new-build oil and chemical tankers:

• Class symbol and construction marks:	I HULL MACH
• Service notations:	Oil tanker, Chemical tanker, Asphalt carrier
• Additional service features:	ESP, CSR, CPS (WBT)
• Environmental management:	VCS-TRANSFER, CLEANSHIP, GREEN PASSPORT
• Ballast water management:	BWE, BWT
• Other notations:	unrestricted navigation, AUT-UMS, MON-SHAFT, INWATERSURVEY, EWCT

Visit the Bureau Veritas client portal www.veristar.com for a full list and detail of classification notations and statutory certificates.



HARMONIZED COMMON STRUCTURAL RULES IN FORCE FROM 2015



The harmonized Common Structural Rules (CSR-H) replace the former CSR Oil Tanker and CSR Bulk Carrier rules, and cover all new oil tankers over 150m in length. They were developed via ten specialist project teams covering issues ranging from wave load to corrosion, fatigue and hull girder strength. As a key member of these working groups, Bureau Veritas has in-depth knowledge of the background to CSR-H and offers a fully updated set of tools to meet the new requirements, notably the increased scope of the direct strength analysis. In the run-up to implementation of CSR-H, we worked with the major shipbuilders to provide consequence analysis on their designs, and to train the yards on our updated software Veristar Hull and MARS.



VALUE-ADDED SERVICES

Bureau Veritas provides a range of services to promote safety at sea, and efficient operation of oil and chemical tankers.

Veristar Project Management **SPEED UP APPROVALS**

Efficient ship design assessment and construction surveys depend on effective communication between numerous stakeholders. A web-based collaborative platform, Veristar Project Management enables designers, shipbuilders and, increasingly, owners, to review and exchange information. Used from design review through to construction, it improves communication and speeds up approvals.

Condition Assessment Program (CAP) **DEMONSTRATE YOUR VESSEL IS READY TO TRADE**

Owners are frequently requested by charterers to provide condition assessment surveys in addition to a class certificate. Bureau Veritas is an internationally recognized and trusted provider of CAP surveys. Our CAP reports are clear, detailed and transparent, and can be provided anywhere in the world thanks to our global network of specialist surveyors.

Emergency Response Services **BE PREPARED FOR AN INCIDENT**

At sea, an emergency situation can strike at any time, with high risk of loss of life, and damage to your ship and the environment. The first few hours following an incident are critical. Bureau Veritas' Emergency Response Service (ERS), available within 2 hours for vessels enrolled in the service, provides technical assistance 365 days per year. It brings owners and operators confidence that, in the case of an accident at sea, they can rely on a fast response and precise advice from an experienced team. ERS notation can be assigned to BV-classed vessels, providing reassurance to charterers.

Volatile Organic Compounds **CONTROL HAZARDOUS VAPORS**

A key challenge for crude oil tankers is managing potentially hazardous Volatile Organic Compounds (VOCs), via a ship-specific VOC Management Plan. We support shipowners by providing advice on how to control VOCs, from ship design to operational procedures, and assign a specialist notation (VCS) to vessels equipped with cargo vapor control systems that comply with our rules.

HAZID and HAZOP **IDENTIFY RISKS AND UNCERTAINTIES**

Failure to spot safety and environmental issues before starting construction can result in project delays or costly design changes. HAZID and HAZOP studies enable shipbuilders to make design improvements and safety recommendations early in the design phase.

Ship-to-ship oil transfer plans **COMPLY WITH REGULATIONS**

Any oil tanker involved in oil cargo ship-to-ship (STS) operations, must carry on board an STS Plan approved by the Flag Administration. Bureau Veritas provides support in preparing and reviewing a compliant Plan. We also hold delegations to approve STS plans on behalf of Flags.

Energy efficiency services **CONTROL OPERATIONAL COSTS**

Energy efficiency is rising up the agenda of ship owners. The International Maritime Organization is pushing the industry to reduce CO₂ emissions: at the same time, ship owners and charterers seek to manage operating costs. Bureau Veritas assesses all documentation relating to energy efficiency calculations, planning and management, and provides the necessary advice, validations and certification covering Energy Efficiency Design Index (EEDI) and Ship Energy Efficiency Management Plan (SEEMP).

Shaft alignment studies and ESA notation **BOOST SAFETY**

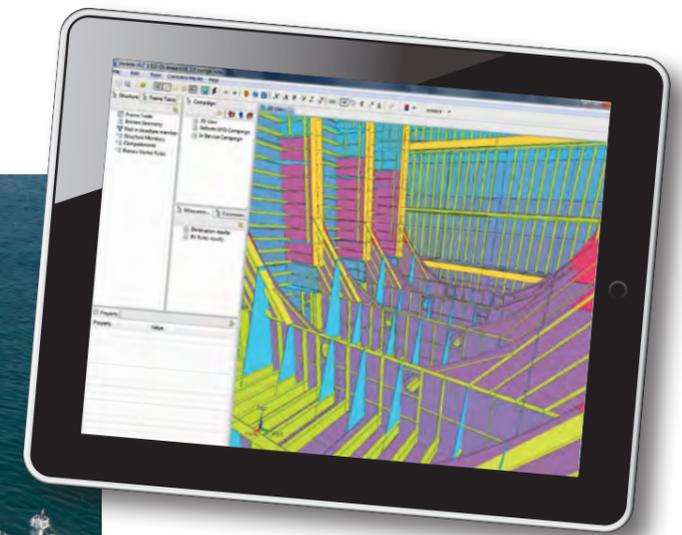
Incorrect shaft alignment can result in bearing failure or loss of propulsion, with possible catastrophic human and environmental consequences. Bureau Veritas' specialist software helps increase safety by identifying the cause of the problem, analyzing the most suitable repair method and procedure and providing a permanent solution. Our Elastic Shaft Alignment (ESA) notation meets the needs of owners of large vessels with propulsion power per shaft line of up to 30 MW.

Noise and vibration services **IMPROVE COMFORT ON BOARD**

Shipboard vibration and noise can affect the safety, functionality and comfort of ships. Bureau Veritas carries out measurements and calculations and provides guidance on avoiding excessive noise and vibration.

TECHNICAL EXPERTISE TO MEET INDUSTRY NEEDS

As the industry faces new developments and challenges, from tighter regulation to new types of vessel and areas of operation, Bureau Veritas is on-hand with advanced tools and services.



LNG AS FUEL

Ships navigating in seas around the US and Europe face tough regulations on exhaust gas emissions. The most attractive long-term solution to comply with these regulations is to use natural gas as fuel. It is clean, anticipates future legislation by reducing greenhouse gas emissions, and considered the most cost-effective solution in the long-term. Bureau Veritas offers a range of classification and advisory services specific to LNG and dual-fuel carriers, including tailor-made solutions to convert existing vessels to LNG fuel. We are classifying the world's first four chemical tanker newbuildings to operate using LNG fuel with low-pressure two-stroke dual fuel engines.



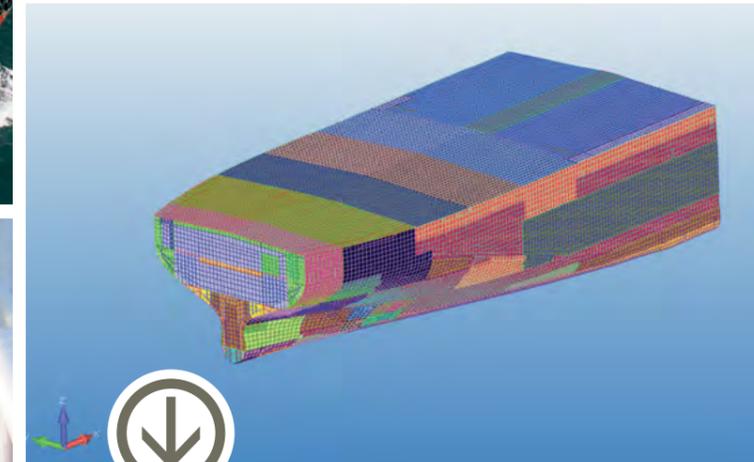
ASPHALT TANKERS

Asphalt tankers are highly sophisticated and need special care due to the high temperatures involved. The specialist nature of asphalt tankers has made Bureau Veritas the classification partner of choice for shipbuilders and owners in recent years. 2014 saw delivery of the world's largest asphalt tanker, classed by Bureau Veritas. More than a dozen BV-classed asphalt tankers are on order or under construction, including two asphalt / product tankers with LNG fuel.



ARCTIC CAPABILITY

With increased demand from oil majors for operation in Arctic waters, and the IMO's new Polar Code expected to come into force in 2017, Arctic capability is growing in importance. Bureau Veritas offers specific class notations (ICE CLASS, POLAR CLASS, Icebreaker 1-7, COLD and MON-ICE) and expertise to support design, construction and operation of vessels destined for use in the Arctic. This experience includes our classification of over 1000 vessels for use in icy waters, including 15 icebreaker LNG carriers to serve the Yamal Arctic project and 2 MR oil product tankers.



SOPHISTICATED TOOLS

Bureau Veritas offers industry-leading software to support compliance with classification rules and create value for clients.

Our structural assessment tools, Veristar Hull and MARS, have been updated to meet the needs of new CSR-H rules. Veristar Hull is a proven and powerful finite element software tool used for the design and condition assessment of any structure against relevant class requirements, including fatigue. With MARS, owners can check the scantling of any transverse sections or bulkheads all along the ship length, and calculate hull girder strength. It is designed to highlight fatigue issues at the earliest stage possible.

Veristar HLC meanwhile, is a tool based on 3D modeling that gives the ship manager the ability to see instant results of inspections and the hull condition. The tool provides all the information needed by ship's superintendents for preparing inspections, dry-docks and repairs.

190 YEARS OF CLIENT CONFIDENCE

We are driven by a single commitment: to keep our clients' crew and assets safe, every day.

Bureau Veritas is a leading classification society and a trusted partner to the shipping industry since the early 19th century. What makes us different? The technical expertise we offer, and our deep commitment to the marine and offshore sectors.

OVER 2,600 EXPERTS IN MARINE & OFFSHORE

We are experts in our chosen fields with a common thread: our thorough knowledge of Marine and Offshore industries. We continually develop and reinforce our expertise through training, the experience we gain by working with our clients and our leading-edge research projects.

OUR MISSION: TO KEEP OUR CLIENTS' CREW AND ASSETS SAFE, EVERY DAY

Protecting our clients' people, ships and offshore structures from accident drives every decision and action we take. This deep sense of purpose makes us go beyond the scope of individual projects to find new ways to anticipate and manage risk, promote health & safety, and protect the marine environment.

PROVIDE OUR CLIENTS WITH THE SUPPORT AND KNOWLEDGE THEY NEED

Our teams apply their knowledge and expertise every day to help our clients solve complex technical problems, meet regulatory requirements and optimize safety and performance. We develop advanced technology and tools, which we share with our clients.

HAND-IN-HAND WITH OUR CLIENTS

Our relationships are built on years of service, transparency and trust: we work alongside our clients, providing the advice and calculations they need, and sharing our knowledge through training and technology. We work closely with the entire marine and offshore community: designers, yards, equipment manufacturers, contractors, shipowners, oil majors and administrations around the world.



CLOSE TO OUR CLIENTS, WHEREVER THEY ARE

We operate as a global network, following global standards, but able to react to our clients' needs locally. With 16 regional plan offices, five offshore technology centers, three research centers and 180 survey offices, we are always within reach. Information-sharing platforms across our network and with our clients, combined with our open, transparent way of working, mean we are set up to manage projects internationally.

DEEPLY INVOLVED IN THE MARINE AND OFFSHORE INDUSTRIES

We seek to share our knowledge widely, and use our extensive work with clients, industry bodies and authorities to bring about positive change. Our people are proud of the role they play in creating long-term value for our clients, supporting innovation and helping the industry move forward safely. In return, our clients recognize and value our commitment to service and technical excellence.

A GLOBAL LEADER IN TESTING, INSPECTION AND CERTIFICATION, BUREAU VERITAS SERVES CLIENTS' NEEDS IN QUALITY, HEALTH, SAFETY, ENVIRONMENTAL PROTECTION AND SOCIAL RESPONSIBILITY.

For 190 years, our clients across all industries have looked to us to provide technical support, verify compliance, or obtain certification. Our network of over 1,400 offices and laboratories ensures we meet their needs, wherever they are in the world.

HISTORICAL PARTNER TO THE MARINE INDUSTRY

Bureau Veritas was founded in 1828 for the initial purpose of collecting, verifying and providing maritime insurance companies with precise and up-to-date information about the condition of ships and their equipment around the world.

OVER 1,000 ACCREDITATIONS AND AUTHORIZATIONS

Our wide range of accreditations and authorizations across a range of industry sectors prove that we operate professionally and that our reports and certifications are recognized and respected.

We hold 150 delegations of authority on behalf of national maritime authorities.

EXPERTISE IN UNDERLYING OIL AND CHEMICAL INDUSTRIES

Our testing, inspection and certification services go beyond shipping. A leader in the classification of offshore structures, we carry out tests and inspections at all stages of oil and gas production, from extraction and processing to distribution. We also provide services to the chemicals and petrochemicals industries.



AMERICAS
19,050 EMPLOYEES
350 LOCATIONS

**MIDDLE EAST,
AFRICA AND EUROPE**
23,650 EMPLOYEES
580 LOCATIONS

ASIA-PACIFIC
26,300 EMPLOYEES
470 LOCATIONS



Move Forward with Confidence

Bureau Veritas - Marine & Offshore

Le Triangle de l'Arche - 8 Cours du Triangle
CS50101 - 92937 Paris La Défense Cedex

Corporate website: www.bureauveritas.com/marine-and-offshore
Client portal: www.veristar.com