



PASSENGER SHIPS

THE ULTIMATE
IN SAFETY AND COMFORT



**BUREAU
VERITAS**

Move Forward with Confidence

PRESERVING SAFETY PROTECTING REPUTATION



Safety and comfort are top priorities for owners and operators of ferries and cruise ships. A longstanding partner to the industry, Bureau Veritas works to preserve human life and assets, and provide a comfortable onboard experience while protecting the environment.



AN HISTORIC INDUSTRY PARTNER WITH SPECIALIST EXPERTISE

— Bureau Veritas has a long and proud history of safeguarding the reputation of passenger ship owners and operators. Our industry involvement goes back to 1935, when we classed the SS Normandie, the largest and fastest cruise liner of its time.

Today, we remain one of the leading classification societies for passenger ships, working with most major European cruise and ferry operators and shipyards. They value our emphasis on safety and comfort, our experience, and the continual support we provide via our network of experienced ship surveyors worldwide. We also offer value-added services and recognized expertise in areas such as hull optimization, vibration analysis and evacuation simulations.

As the industry evolves, developing vessels that are ever larger and more energy-efficient, Bureau Veritas is on hand to provide technical expertise and validate innovative solutions. We are involved in some of the industry's most exciting new projects, from the development of cruise ships intended for use in polar waters, to the certification and classification of new large passenger ships using clean LNG as fuel or hybrid electrical systems for propulsion. ●

The future is bright for the passenger shipping industry.

Cruise line passenger numbers worldwide have more than doubled in the last 10 years, boosted by a combination of new destinations, ageing populations in the US and Europe, and rising incomes in China. And while ferry dynamics have been more subdued, orders for new ships to replace ageing fleets are beginning to gain momentum.

Reputation is key to attracting and retaining customers for ship operators. This is first and foremost about safety: avoiding incidents and preserving the life of persons. With as many as 6,000 passengers and 2,000 crew on board a large cruiseliner, this poses logistical as well as technical challenges. Detailed evacuation plans and crew training are as vital as ship design.

Although destinations and onboard activities are of prime importance, comfort is the second major factor in building reputation. Passengers have low tolerance of noise and vibrations even on short ferry trips: expectations rise exponentially in the case of luxury vessels. Cruise ship guests also want privacy in their cabin. Specific measures can be adopted to minimize disturbance

to passengers, with more extensive measures available to meet the needs of demanding customers on luxury vacations.

Finally, sound environmental stewardship is rising up the customer agenda. If avoiding pollution remains the main reputational factor, improving ship energy efficiency and resource management on board ensure operators meet regulatory demands while potentially providing a point of difference for consumers. ●

WHY CHOOSE BUREAU VERITAS?

- Protect your ship, your crew and the environment
- Ensure reliable and efficient compliance with international rules & regulations
- Maximize comfort on board, and optimize customer experience
- One of the leading classification societies for passenger ships
- The Bureau Veritas brand: a mark of confidence
- Industry-leading research, knowledge and technical expertise
- Access to ship surveyors across an extensive geographical network

CLASSIFICATION AND CERTIFICATION SERVICES



A strong focus on safety makes Bureau Veritas a classification partner of choice for shipyards and for ferry or cruise ship operators.

— With safety and reputation central to success, ferry and cruise ship owners and operators need to be confident that their passengers, crew and vessel will remain safe. Classification with Bureau Veritas provides that reassurance.

Bureau Veritas is a leader in classification of ferries and cruise ships, with a significant market share worldwide. We build strong long-term relationships with our clients, who value our experience and technical expertise.

Safety is a central focus of our classification rules for passenger ships, which must take into account specific issues relating to fire protection and

lifesaving appliances. In compliance with international maritime regulations, all new BV-classed passenger ships over 120m long have the Safe Return to Port (SRTP) service feature, designed to improve their survivability. Ships with this notation should be able to return to port under their own power following a single fire or flooding casualty, or allow safe and orderly evacuation if fire or flooding spreads beyond pre-defined acceptable casualty thresholds.

Bureau Veritas also offers specific notations relating to environmental protection and energy efficiency, or for owners seeking enhanced

comfort on board. Separate notations with different grades for passengers and crew areas can be used: this is particularly useful for luxury cruise liners, where operators seek to keep to an absolute minimum the noise and vibration experienced by customers.

Finally, for vessels operating in US waters, Bureau Veritas provides support to yards and owners in obtaining certificates of conformity according to US Coast Guard requirements. ●

MAIN CLASSIFICATION NOTATIONS ISSUED TO PASSENGER SHIPS BY BUREAU VERITAS

BV-classed passenger ships mainly have the highest marks I ⚡ HULL ⚡ MACH, supplemented with additional service feature SRTP (Safe Return to Port) and/or POLAR CAT A/B or C when applicable.

Passenger vessels classed with Bureau Veritas commonly adopt the following additional notations:

- POLAR Class 1 to 7 for navigation in ice-infested polar waters
- SYS-NEQ or SYS-NEQ-1 denoting a centralized navigation control system
- COMFORT and COMFORT+ limiting noise and vibration
- CLEANSHIP or CLEANSHIP SUPER demonstrating protection of the environment
- AUT-UMS or AUT-CCS indicating automation of machinery systems

Other notations focused on environmental protection include AWT, indicating a ship fitted with a plant to treat grey and black water, DUALFUEL or GASFUEL for ships using gas as fuel and ELECTRIC HYBRID for ships provided with an energy storage system used to supply the electric propulsion. The new URN notation is used for ships that meet underwater radiated noise limits, thereby minimizing impacts on sensitive marine life.

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

→ SAFETY

Anticipate emergencies

— Bureau Veritas offers a suite of services to maximize survivability in case of a flood or fire.

A key challenge in managing safety on ferries and cruise ships is the sheer number of passengers – and how they are likely to behave in a crisis. Bureau Veritas uses proprietary technology to assess escape routes and simulate passenger and crew escapes in a range of emergency situations. As passengers take their lead from the crew, we provide comprehensive services related to your safety operation. These include verifying pertinence of crew fire and evacuation drills, and reviewing implementation of safety procedures to follow in case of an accident.

Finally, our Emergency Response Service (ERS), available within two hours for vessels enrolled in the service, provides technical assistance 24/7. It brings you confidence that, in the case of an accident at sea, you can rely on a fast response and precise advice from an experienced team. ●

VALUE-ADDED SERVICES

Bureau Veritas provides a range of services to promote safety and comfort at sea, and to improve performance.

→ ENERGY EFFICIENCY

Improve energy performance

— Energy efficiency is rising up the agenda of ship owners. The International Maritime Organization is pushing the industry to reduce CO₂ emissions and EEDIs are now required for passenger ships. At the same time, ship owners and operators need to manage operating costs. Bureau Veritas can support you at both design stage and during a passenger ship's operation. We can prepare, or verify, EEDI technical files, assessing all documentation relating to energy calculations, planning and management. We attend sea trials, assess new technologies for energy efficiency, test fuel quality and measure air emissions. Our powerful software tool, SEECAT, models your ferry or cruise ship, captures energy flows and usage, predicts emissions and allows you to predict the cost and effectiveness of different fuel use mitigation measures. The result enables you to go beyond regulatory requirements, increasing energy efficiency and managing costs. ●

→ COMFORT

Ensure an enjoyable onboard experience

— Customers on passenger ships have high expectations of comfort, including minimal noise and vibration. Bureau Veritas is involved at the design stage to review proposed arrangement and to perform prediction studies to identify any potential issues. We are also able to carry out measurements and calculations on board existing ships and provide guidance on avoiding excessive disturbance from vibration. We are able to tailor recommendations to operator needs, taking into account both cost and your passengers' expectations. As a leader in QHSE certification, Bureau Veritas also works with leading cruise operators to certify quality, energy efficiency, environmental and food safety management systems to the ISO series of international standards. We have also developed the "8 Golden Pearls Award", a voluntary scheme highlighting compliance with the most stringent standards and notations. The objective: to provide your final customers with a safe and enjoyable onboard experience. ●

SUPPORTING CLIENT INNOVATION

Larger vessels; more energy-efficient systems; navigation in harsh climates: Bureau Veritas helps the passenger shipping industry innovate with confidence.

SUPPORTING CONSTRUCTION OF LARGE VESSELS MSC Cruises

— Bureau Veritas is a longstanding classification partner to MSC Cruises, the world's largest privately-owned cruise company. Today, 11 ships in the group's fleet are classed to BV Rules with three others on firm order.

In the past decade, we have worked with MSC Cruises to deliver four ultra-large luxury cruise ships: the MSC Fantasia, MSC

Splendida, MSC Divina and MSC Preziosa. We are now classing four even larger ships, to be delivered from 2017 to 2020. Accommodating more than 5,500 passengers and 1,700 crew, the MSC Meraviglia, the first of the Vista Class vessels, has set new standards in comfort, luxury, environmental protection and safety. Compliant with SRTF requirements, they will also be fitted with advanced pollution prevention and energy efficiency systems.

Projects involve five Bureau Veritas technical teams working together: safety, electrical, stability, structural and machinery. Experts consider every aspect of the vessels during

construction including testing all safety systems, verifying the structural fire protection and checking the efficiency of machinery, such as the propulsion system. Due to the size of some new vessels, and their innovative design, alternative design studies focusing on the large main vertical zones and oversized lifeboats have been performed by Bureau Veritas and its subsidiary. Our aim is to verify that safety levels are as high as prescriptive SOLAS requirements. Comprehensive studies using sophisticated simulation software have also been performed to assess efficiency of escape routes, and the impact of different potential incidents. ●

PAVING THE WAY FOR CRUISES IN POLAR WATERS

— Polar water cruises are growing in popularity, as people seek new and exciting experiences and destinations. Complementing the IMO's new Polar Code in force since January 2017, Bureau Veritas offers specific class notations for passenger ships (ICE CLASS, COLD, POLAR CLASS 1 to 7) and expertise to support design, construction and operation of vessels destined for use in the Arctic and Antarctic. In the last two years Bureau Veritas has been appointed to class several innovative concepts of new luxury expedition cruise vessels. These include a luxury vessel accommodating

400 passengers and crew under construction at Croatia's Uljanik shipyard for Australia's Scenic group (delivery: 2018); and four innovative expedition ships for PONANT at VARD shipyard (delivery: 2018 and 2019). These expedition cruise vessels are designed to meet the requirements of the newly adopted Polar Code allowing operation for a certain period of the year in polar waters.

For such projects, particular attention has to be paid to safety, generally meeting the Safe Return to Port criteria, and to comfort. Pollution prevention is also a key focus. Therefore the vessels are generally granted additional class notations such as advanced waste water treatment system, ballast water management system, waste holding capacity and Green Passport. ●



SWITCHING TO CLEAN FUEL Tallink & Brittany Ferries

— Ships navigating in seas around North America and Europe face tough regulations on low sulphur fuels and NOx 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 is considered a cost-effective solution in the long-term.

Bureau Veritas offers a range of classification and advisory services specific to LNG and dual-fuel, including tailor-made solutions to convert existing vessels to LNG fuel. Following the delivery in January 2017

of the BV-classed 2,850-passenger gas-powered shuttle ferry MEGASTAR for Tallink operating in the Baltic Sea, Bureau Veritas has been selected to class the newly ordered ferry for Brittany Ferries at Flensburger shipyard in Germany. The HONFLEUR (delivery: 2019), will also be certified according to the new International Code of Safety for ships using gases or other low flashpoint fuels (IGF Code).

Bureau Veritas has developed the new GAS-PREPARED notation for owners who want to prepare their ship at the new building stage for a possible conversion to gas fuel operation after construction. This notation allows a later smooth conversion to gas fuel operation with a set of clear requirements and guidance to comply with relevant rules and regulations. ●



in choosing a scrubber system. We also advise owners on maintaining class following a retrofit, and have developed a new, dedicated class notation EGCS-SCRUBBER.

COMPLIANCE USING SCRUBBERS

— An alternative route to compliance with SOx and NOx emissions regulations is to fit an exhaust gas cleaning system. Bureau Veritas can carry out analysis of whether a scrubber is an appropriate choice for a specific ship, and provide support

Since mid 2015, major ferry and cruise operators have started the installation of latest-generation scrubbers on their fleet under Bureau Veritas' special survey. For example, Brittany Ferries has completed the retrofit of their whole fleet with scrubbers during 2017 and MSC Cruises is proceeding with an ambitious upgrading plan with an objective to equip more than half of the fleet by June 2018. ●



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.

WE ARE 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 IS 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. ●

WE 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. ●

WE WORK 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 community: designers, yards, equipment manufacturers, contractors, shipowners and administrations around the world. ●

WE ARE 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. ●

WE ARE DEEPLY INVOLVED IN THE MARINE INDUSTRY.

— 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 130 delegations of authority on behalf of national maritime authorities.

EXPERTISE IN UNDERLYING BUSINESSES

Our testing, inspection and certification services go beyond shipping. Bureau Veritas offers comprehensive QHSE certification services for the tourism and services industries. These cover quality, environmental, energy efficiency and food safety management, and have already been applied as an integrated voluntary scheme for cruise companies.



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Bureau Veritas - Marine & Offshore

Le Triangle de l'Arche - 8 Cours du Triangle
CS 50101 - 92937 Paris La Défense Cedex

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

Client portal: <http://www.veristar.com>