



CONTENTS
MARCH 2018

2 PONANT charts new territory
Approvals for GTT membrane
technologies

3 Underwater lounges on PONANT Explorers
BOURBON-BV partnership
E-certificates go global

4 CMA CGM mega boxship delivered
Coral EnergICE - Biggest Rotortug® delivered
Enhanced cooperation between BV and KR

FOREWORD BY
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Global Market Leader,
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Having worked in passenger ship classification since 1989, I am very proud to be joining industry leader Bureau Veritas to manage this segment.

Bureau Veritas has long contributed its expertise to the success of the cruise industry, and this last year, which has seen numerous orders of technologically advanced ships, is no exception. Currently, we hold a market share of 17% for all new-builds on order.

In 2018, 16 ships will be delivered, including the first BV-classed ocean-going newbuildings for Scenic Cruises and Mystic Cruises. PONANT will take delivery of two ships from VARD, both featuring an industry first: underwater windows for passengers to view marine life. In China, Bureau Veritas will class Sunstone's four expedition cruise ships, along with six on option.

Bureau Veritas will be at Seatrade Cruise Global in Fort Lauderdale, USA, March 5-8 to discuss how we support owners, yards and designers through design, building and operation. Visit us at booth 1009!

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MSC MERAVIGLIA FIRST OF FOUR TO SET SAIL



Courtesy MSC

The latest cruise ship to join MSC Cruises' fleet has been named the *MSC Meraviglia*: the largest vessel ever built for a European owner and the fourth biggest in the world. The 171,500-GT vessel, which can sleep 5,714 passengers and more than 1,500 crew members, was delivered by STX France to MSC Cruises on May 31, 2017.

The vessel has several innovative features, including an interior promenade with a 96-meter long LED screen on its ceiling, a giant aqua park on the sun deck, and a lounge specially built to showcase performances by the *Cirque du Soleil*.

Other innovative features of the vessel will be less obvious to passengers but are equally impressive. It is fully equipped with high incineration capacities, advanced water-treatment systems, and the latest generation of oil-water separators. It also has vast storage capacities, allowing for two days full operation at sea without any discharge. For the first time for MSC Cruises, their newbuilding is equipped with scrubbers acting as an exhaust gas cleaning

system for sulphur oxides. This allows the vessel to comply with the strict limits imposed in Emission Control Areas.

Installation and testing of the system are covered by the new Bureau Veritas EGCS-Scrubber notation. Bureau Veritas has also given the vessel its Golden Pearls award, one of highest honors conferred to cruise ships, in recognition of specific voluntary attention paid to quality, health, safety and environmental concerns from design and building through to operations.

The *MSC Meraviglia*'s sister ship, *MSC Bellissima* will enter into service in June 2019, while two new *Meraviglia Plus* ships are due for delivery in October 2019 and September 2020. With a capacity of nearly 6,300 passengers and 1,700 crew members each, these ships will be a full 16m longer than the *MSC Meraviglia* and the *MSC Bellissima*. Fittingly, the first has been named *MSC Grandiosa*.

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CHARTING NEW TERRITORY



Mathieu Petiteau
Director Newbuilding, PONANT

Mathieu Petiteau knows cruise vessels inside out: he spent the first part of his career as engine officer on a series of cruise vessels before moving into ship construction. Today, he is heading the construction of the world's first icebreaker cruise vessel as Director Newbuilding at PONANT:

"The PONANT icebreaker is the culmination of our polar expedition concept. Thanks to our 20-plus years of experience in polar regions, we've been able to develop an offer that is completely unique."

Mathieu expresses clear pride in the luxury operator's new expedition vessel, to be built by VARD to BV class. It is not hard to see why. Not only will the 140m ship be the first passenger vessel to reach the geographic North Pole when it sets sail in 2021: it is also the first LNG-powered electric hybrid polar passenger vessel. "Every day at PONANT, we work to preserve the environments in which we navigate. Our aim is to not just reach, but go beyond current environmental standards, and raise the bar for the cruise industry as a whole."

The major innovation that will enable the vessel to take 270 cruise passengers to previously inaccessible areas in the Arctic and Antarctic such as Charcot Island and the Ross Sea, is her icebreaking capacity. It combines forward sailing modes through compact ice and reverse sailing in extreme ice conditions.

"We have more and more passengers keen to travel

on small vessels to discover unfamiliar and exceptional destinations that larger ships simply cannot reach. Zodiac trips with naturalists enable them to get close to nature: experts give talks onboard. It's the ultimate travel experience."

The vessel will carry Bureau Veritas class notations Icebreaker 3, POLAR CLASS 2 and POLAR CAT-A, as well as Safe Return to Port. For Mathieu, Bureau Veritas is a natural choice to class such an innovative ship:

"We first worked with Bureau Veritas 20 years ago, on *Le Levant*. Since then, Bureau Veritas has supported and advised PONANT on all our innovative projects, from the initial design stages, with in-depth review of our plans."

"The PONANT icebreaker project is so innovative that it's taking Bureau Veritas into new territory. And given the number of new features, we are also working with TECNITAS, Bureau Veritas' engineering and expertise services company. They provided us with valuable support in another recent groundbreaking project: the Blue Eye underwater lounge onboard our new PONANT Explorer series."

Mathieu values Bureau Veritas' involvement: "They have always listened to us and we appreciate the quality of their work. They provide real guidance, helping us develop projects that meet international standards and launch tender offers with yards."

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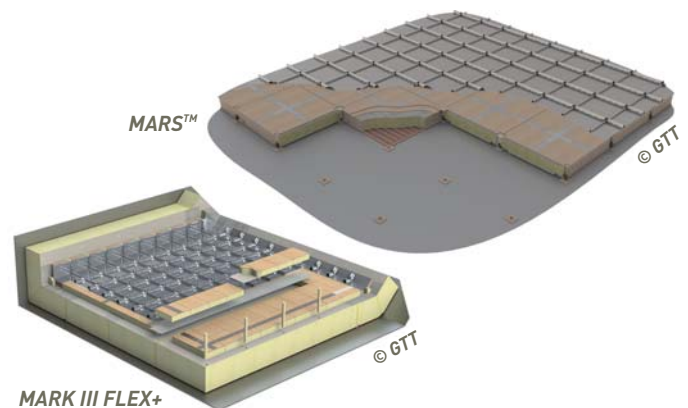
LATEST APPROVALS FOR GTT MEMBRANE TECHNOLOGIES

Bureau Veritas has long been involved in approving a wide range of liquefied gas containment systems. Among these new technologies, it recently assessed two new GTT systems.

The GTT MARSTTM containment system was specifically developed for liquefied petroleum gases (LPG). These have higher densities than liquefied natural gas (LNG) and are transported onboard mid-sized to large LPG carriers at higher temperatures and greater atmospheric pressures. The solution is based on a single-membrane concept made of corrugated stainless steel. The insulation is fitted on the inner hull of the vessel, which acts as the secondary barrier of the tank, supporting the primary barrier.

In 2017, Bureau Veritas also approved the Mark III Flex +, the latest variant of the sea-proven Mark III technology, an LNG containment system that allows for a daily boil-off rate of 0.07%/day.

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BUREAU VERITAS PARTNERSHIP: RELIABLE OPERATIONS AT OPTIMIZED COSTS



Bourbon Explorer 504 - Courtesy Bourbon

Bureau Veritas has formed a strategic partnership with BOURBON to help digitize vessel operations. Smart Ship technologies enable owners to achieve better performance, reduce costs, and operate more sustainably.

As well as providing classification notations and Certification, Bureau Veritas is supporting BOURBON upstream to ensure risks are identified and mitigated. A pilot system of advanced automation of dynamic positioning (DP) has already been implemented on the Bourbon Explorer 508. Bureau Veritas provided risk analysis, design review, and onboard verification of the installation. It also assessed cybersecurity risks and certified that they have been managed as required by class.

Bureau Veritas is now working on procedures that enable continuous verification and reduce the need for DP onboard operational and verification tasks.

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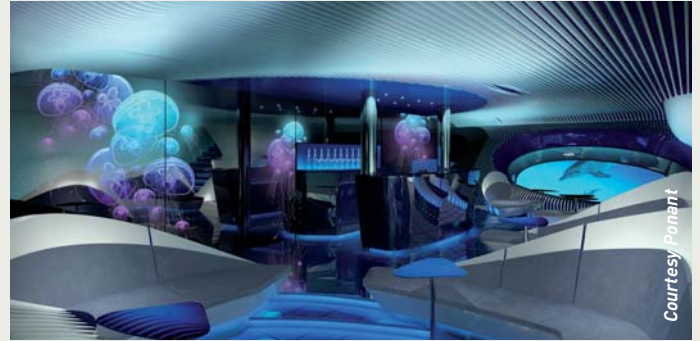
E-CERTIFICATES GET GREEN LIGHT TO GO GLOBAL

Global roll-out of Bureau Veritas' class and statutory e-certificates has begun! Bureau Veritas has successfully issued and endorsed over 50 e-certificates in pilot projects; those first e-certificates were used in ports in Europe, Asia and the Americas. As Bureau Veritas e-certificates are now accepted by most Flag State Administrations, Bureau Veritas Marine Centers and Surveyors will be trained from February 26 to March 31 so as to be able to offer this new digital solution. Shipowners and managers will enjoy a simple, quick and cost efficient experience with Bureau Veritas e-certificates.

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WORLD'S FIRST CRUISE SHIP UNDERWATER LOUNGES ON PONANT EXPLORERS

A year ago, PONANT announced the construction of the world's first "Blue Eye" underwater cruise ship lounges. They will offer passengers a unique view of the subaquatic world through two glass windows, each more than 3 meters long.



Courtesy Ponant

Bureau Veritas has supported this ambitious program over the last two years, providing thorough analysis and verification of the design for resilience and safety. The project involved a multi-disciplinary team-based risk analysis led by Tecnicas, as well as advanced structural calculations, laboratory tests, and ship safety management provided by PONANT.

The windows are currently under Bureau Veritas inspection and will be installed on four vessels in PONANT's Explorer fleet. *Le Lapérouse* and *Le Champlain* will be delivered this year, followed by *Le Bougainville* and *Le Dumont-d'Urville* in 2019.

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NEWS IN BRIEF...

■ On December 6, 2017, **Bureau Veritas sponsored the third Liquefied Gas Senior Executive Forum in Houston**, Texas. Facilitated by the Society of International Gas Tanker and Terminal Operators in coordination with the United States Coast Guard, the Society for Gas as a Marine Fuel, and Riviera Maritime Media, the forum assembled a large cross-section of stakeholders from the industry.

■ **The United States Coast Guard has authorized Bureau Veritas** to conduct plan review and approval, initial and subsequent surveys, and periodic re-inspections and examinations to issue a variety of

certificates for US-flagged ships. These range from certificates for tonnage and load lines to SOLAS Cargo Ship Safety, IOPP and IAPP and certificates of compliance with the IGC Code.

■ In January, Bureau Veritas published the **new NI 640 guidance note for the structural assessment of passenger ships and roll-on/roll-off passenger ships**. Drawing on the company's extensive experience with these sophisticated vessels, it details hull-related items to be considered during structural assessment as well as procedures for special structural calculation.



Courtesy CMA CGM

ENTERING THE ERA OF THE MEGA-BOXSHIP

January saw the delivery of the *CMA CGM Antoine De Saint Exupery* by Hanjin Heavy Industries and Construction (HHIC). The 400-meter long, 59-meter wide Bureau Veritas-classed vessel is the first in a series of three mammoth 20,600 TEU ships being built in the Filipino shipyard. The second of the series was launched in December 2017. Each vessel is fitted with a number of technological features that enhance operational efficiency while maintaining high environmental credentials.

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CORAL EnergICE SET TO MAKE WAVES IN THE BALTIC SEA



Courtesy Anthony Veder

The 18,000-cubic meter *Coral EnergICE* is the latest small-scale liquefied natural gas carrier to enter into service. Bureau Veritas classed the ship with, among others, ICE CLASS IA SUPER and COLD notations. Owned by Anthony Veder and chartered by Scandinavian company Skangas, it was designed and constructed to operate in the Baltic Sea. Bureau Veritas is the benchmark among classification societies for this vessel segment, with a 36% market share.

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DELIVERY OF WORLD'S BIGGEST ROTORTUG® RT RAVEN



Courtesy Damen

The world's largest Rotortug®, the *RT Raven*, was delivered to KT-Maritime Services Australia by the Albwady Damen shipyard (UAE). The 46m-long ART 100-46 class infield support vessel (ISV), designed by Robert Allan Ltd, engineered by Damen Shipyards Hardinxveld and built by Albwady-DAMEN(UAE), will provide towage and offshore support services - including personnel transfer and standby duties - at ConocoPhillips' Bayu Undan field in the Timor Sea. The Bureau Veritas classed *RT Raven* is the first Rotortug® to have Dynamic Positioning class 2 (DP2) capability and an anchor handling notation.

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BUREAU VERITAS AND KOREAN REGISTER SIGN MoU TO ENHANCE COOPERATION

At a special ceremony held in Busan on 31st January 2018, Bureau Veritas and Korean Register signed a Memorandum of Understanding (MoU) to intensify the technical cooperation between the two classification societies. The ceremony was attended by Mr. Philippe Donche-Gay, president of Bureau Veritas Marine & Offshore, and Mr. JK Lee, chairman of Korean Register. Through (UAE) sharing of technologies, information and experience, the objective is to significantly improve the level of safety of strategic ships built in Korea, such as ultra-large container ships and very large ore carriers.

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