



FOUNDED 1862

ABS

2013 ANNUAL REVIEW

MOVING FORWARD



DRIVING INNOVATION



ADVANCING SAFETY

The mission of ABS is to serve the public interest as well as the needs of our clients by promoting the security of life and property and preserving the natural environment.

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2013 ACTIVITY RECAP

ABS recorded a positive growth year, with activities across its numerous sectors reflecting pioneering advances in technology and innovation. Safety remained a driving force and research, performance and employee engagement coincided with the organization's highlights and achievements.

The traditional focus of ABS is to provide classification services to promote the common safety, environmental and regulatory interests of its members and clients, primarily the builders, owners and operators of ships and marine-related facilities. This core classification activity continued at a brisk pace throughout 2013, with the ABS-classed fleet achieving new record levels and the ABS organization expanding to meet the increased demand for its services.

ABS Group of Companies, Inc. (ABS Group), a wholly owned affiliate of ABS, provides technical solutions to support safe, reliable and high-performance operations for assets and operations. ABS Group offers clients a portfolio of comprehensive products and services to enhance life cycle management. In 2013, ABS Group secured a record volume of new contracts, placing it in a solid position for continued growth. >



UNLEASHING PIONEER THINKING

Unlike other companies that merely sell class services, classification is the foundation upon which ABS makes its contribution to the industry.

ABS continues to step up to industry challenges, providing services that improve efficiencies and allow for more productive operational time, without sacrificing the safety of personnel and assets, or jeopardizing the natural environment.

2013 was another stellar year for ABS and its affiliated companies. The global economy gained strength, and the optimism created by this recovery led to increasing investment in many areas of the world we serve. ABS capitalized on this buoyancy, gaining market share and with it, greater international visibility.

The future is never certain, but the path forward for ABS is clear. Our continuing goal is to set the standard for excellence, and we are doing that by listening to industry leaders to understand their concerns, investing in technology development to address their challenges, and providing solutions to the industry to help it move forward.

Our people continue to be the driving force behind ABS' growth. They have internalized the corporate mission and core values that make our organization unique. The Spirit of ABS is one of commitment, and that dedication is what inspires trust in the industries we serve.

CONTINUED GROWTH THROUGH INNOVATION

In 2013, ABS reached a significant milestone when our classed fleet surpassed the 200 million gross tons mark. ABS is only the second organization to reach this level. The new order-book remains strong, showing a clear path for future growth in all market sectors. I am confident that our ability to continue adding to the ABS-classed fleet is directly tied to the quality of our service delivery.

What has always sustained ABS is pioneer thinking – never being satisfied with the status quo. One cannot get ahead by standing on the sidelines. That is why ABS is in the thick of development, working with industry to identify the roadblocks that stand in the way of progress and identifying ways to remove them. Our goal is to lead by example and to move with industry into new frontiers.



Key investments in research and development are the foundation for success at ABS. Through the Technology headquarters in Houston, and our international network of research centers in Singapore, China, Korea, Canada and Brazil, our global ecosystem of innovation, ABS is involved in more than 200 innovative projects in partnership with industry and leading academic institutions around the world. These investments place ABS in the vanguard of technology development in areas as diverse as nanotechnology, renewable energy, alternative fuels, next generation safety systems, subsea mining, harsh environment operations, fleet management and environmental compliance.

In 2013, ABS also invested heavily in delivering the solutions needed by our members and clients in key operational areas. The ABS Global Gas Solutions team is leveraging our global experience in all facets of liquefied natural gas (LNG) to assist industry in developing the next generation of gas carriers, tackling the challenges of floating LNG operations, and maximizing the potential for LNG as marine fuel. The Asset Performance Management group is promoting innovations in energy efficiency, and operational performance, in order to maximize asset life cycle management.

Increased global attention on conserving energy and protecting the environment has created a need for shipping companies to have a tool-set to help them manage new regulations. The NS5 Enterprise Energy & Environmental Manager includes automated system integration for the collection of key operational data, while tracking and recording voyage-related events, including fuel consumption, cargo data and ballast activities. Captured data can be shared from ship-to-shore, giving owners and operators the ability to quantify savings and achieve optimization across an entire fleet, while simultaneously meeting their audit and regulatory recordkeeping requirements.

SUPPORTING NEXT GENERATION SAFETY SYSTEMS

The focus on innovation is paying dividends in the offshore sector. ABS continues to hold the leading position in classification services for drilling and floating production units and is making significant strides in forward-leaning offshore safety concepts, such as the ABS notations for integrated software quality management (ISQM) and drilling systems.

The move toward automation on offshore facilities has allowed drilling and production operations to perform more efficiently. However, the introduction of complex integrated control systems is creating challenges as highly advanced new software accelerates rapidly. ISQM addresses the rapid pace of change by mitigating software errors that can affect the safety of a unit and its crew. By identifying shortcomings within software systems, owners and operators can reduce the potential for lost time.

ABS GROUP EXPANDS SERVICE OFFERINGS

ABS Group also had a successful year in 2013, assisting clients around the globe with a portfolio of technical services to improve the safety, reliability and performance of their assets and operations. ABS Group's strong performance was due to market success in the marine, offshore, onshore oil and gas, and power and government sectors, as well as several operational improvement initiatives. In 2013, ABS Group also secured a record volume of new contracts, laying the groundwork for continued growth.

ABS Group continues to provide services that complement class services in the marine and offshore industries. ABS Group assisted clients worldwide, managing the safety, risk and reliability of assets at all phases of their life cycle. Operations ranged from the ultra-deepwater, to harsh environments such as the Arctic, working on all types of assets including first-of-its-kind floating LNG facilities. ABS Group continued to strengthen its offshore service portfolio throughout the year, introducing a facility dedicated to offshore emergency preparedness training.

In conjunction with strengthening service offerings in the offshore market, ABS Quality Evaluations (ABS QE) was accredited by the Center for Offshore Safety to conduct safety and environmental systems audits. As an accredited audit provider, ABS QE led the charge in promoting and protecting the environment in deepwater activities.

In order to meet the needs of integrated power customers, ABS Group combined its successful nuclear and renewable energy divisions and added talent to serve the broader power generation, transmission and distribution markets. As growing demand drives new projects for both conventional and non-conventional power generation, this new division is positioned to deliver ABS Group's services, including technical inspection; safety, risk, and compliance; asset performance optimization; and advanced engineering, to all segments of this important industry.

Throughout 2013, ABS Group continued to assist clients in protecting against industrial threats and vulnerabilities by helping them to safeguard reliable, secure and quality operations. The longevity and reputation of businesses depends on how they react to the ever-changing threat landscape, which includes mitigating risks, establishing and enforcing safety procedures, and upholding the integrity of their products and services. ABS Group continues to provide the services to assist clients with adapting to change far into the future.

THE ABS TEAM

People are at the heart of our success, and continued investment in our employees is as important to us as recruiting the next generation of ABS professionals. 2013 saw the beginning of a multi-year commitment to improve our employee development processes. Many of those who will make up the next generation of technical and business leaders at ABS are already part of our workforce. By investing in their development, we are putting in place succession planning that will keep ABS in a global leadership position.

Throughout the year, ABS continued the Always Be Safe initiative to encourage and nurture a healthy and safe workplace. While our track record as a global leader in safety is well documented, improvement is one of our primary goals. I am pleased to report that 2013 saw the fourth consecutive year of decline in lost-time injuries at ABS, while ABS Group completed more than a year of incident-free performance.

As I conclude my first year, I am optimistic about the future. The challenges before us today present opportunities for ABS to take the next step forward.

We have built a strong foundation for the continued success of ABS and ABS Group. By committing to the core values at the heart of our work, we will remain at the forefront of the industries we serve – a global leader in classification, risk management, and technical consulting services. We are proud of the fact that every day we help make the world a safer place. Nothing is more important.



Christopher J. Wiernicki
Chairman, President & CEO, ABS

ABS SIGNIFICANT ACTIVITIES



JANUARY 2013: Japan authorizes ABS as Recognized Organization



© US Coast Guard

FEBRUARY 2013: MOU signed with USCG to support design and construction of next-generation offshore patrol cutters to ABS class



© TOTE

MARCH 2013: TOTE selects ABS to class world's first LNG-powered containerships



APRIL 2013: ABS launches the Global Performance Center and Singapore Innovation and Research Center



© Seajacks/Gusto MSC

MAY 2013: Seajacks selects ABS to class world's largest and most advanced wind farm installation vessel



© Maersk

JUNE 2013: ABS classes world's largest containership, the *Maersk Mc-Kinney Møller*



© Sea Lion Marine & Trading Ltd.

JULY 2013: ABS surpasses 200 million gross tons



© AET Tankers

AUGUST 2013: NS5 Enterprise Energy & Environmental Manager module rolls out on vessels



© Rowan

OCTOBER 2013: Rowan Companies' new drillship is first newbuild with ABS ISQM notation



© Keppel

DECEMBER 2013: ABS approves novel drillship design with dual well control systems for Keppel



DECEMBER 2013: ABS receives certification to OHSAS 18001



JANUARY 2013:
ABS QE earns ISO 50001 accreditation

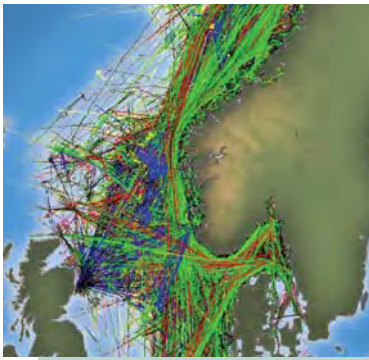


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FEBRUARY 2013: ABS Group releases inland helicopter operations safety study for Norwegian Ministry of Transport and Communication



JULY 2013:
ABS Group completes offshore BOP maintenance and reliability study for BSEE



SEPTEMBER 2013:
ABS Group completes new COAST/COLLIDE model for ship traffic and collision analysis



SEPTEMBER 2013:
ABS Group establishes new operation in Tromsø, Norway to focus on Arctic offshore safety



OCTOBER 2013: ABS QE is the first to receive accreditation from Center for Offshore Safety for SEMS audit services



© Shell

OCTOBER 2013: ABS Group develops risk-based inspection program for first floating LNG facility



NOVEMBER 2013:
ABS Group unveils new Offshore Emergency Preparedness Training Center in Bergen, Norway



DECEMBER 2013:
ABS Group completes Level 2 probabilistic risk assessment – the second such study performed worldwide – for a European nuclear power plant



EVOLVING TO MEET DEMAND



ABS saw another year of positive growth driven by our focused best-in-class service to the marine, offshore and government sectors in 2013. At the center of every accomplishment stood ABS' commitment to delivering traditional class services, while assisting clients with meeting asset life cycle needs.

Thanks to increased activity in the marine and offshore industries, ABS' share of the global orderbook continued to expand. On the marine side, needs in energy efficiency, environmental compliance, and vessel performance led to growth in class-related offerings. With the discovery of new gas resources and the potential for wide-scale use of LNG for marine fuel, 2013 saw the forming of an ABS Global Gas Solutions initiative to bolster this dynamic environment.

In the offshore industry, expansion into new frontiers pushed ABS to develop innovative solutions. Cutting-edge projects focused on harsh environment operations and assisting operators in reducing downtime and decreasing time to production. Additionally, key investments in ABS Nautical Systems laid the foundation for an even stronger suite of asset management software.

Governments faced budgetary challenges, but also saw an increase in demand for maritime assets. ABS continues to support new construction for government vessels, and has developed a number of programs to help maximize service life for existing ones. Moving forward, the investments made in 2013 will drive the future of ABS to meet the evolving needs of our members and clients, and the industries we serve.

Tony Nassif
Executive Vice President & COO, ABS



CELEBRATING SUCCESSSES



In 2013, ABS Group continued on its positive trajectory of supporting safety, reliability and performance for its client base around the world.

In doing so, ABS Group achieved a significant benchmark in the safety of our own employees. In June, we achieved zero lost-time incidents for an entire year, and finished 2013 by accumulating 466 days without a lost-time incident. This exemplary performance sets the bar as we project an ambitious year ahead in 2014.

With a steady influx of activity from the marine, offshore, government, and industrial sectors – including power, oil and gas, and chemical – ABS Group rolled out a new organizational structure to better align its services to meet the changing demands from industry. These new service lines include technical inspection; safety, risk and compliance; asset performance optimization; advanced engineering; and management systems certification. ABS Group continues to maintain and extend its prominent role in delivering these services to support life cycle management and regulatory compliance.

Looking ahead, ABS Group will further reinforce its role as a provider of innovative services as we prepare to introduce a host of new offerings in the coming months aimed at providing superior value to our clients. Building a foundation to support and enhance safety and performance efficiency is driving ABS Group forward in 2014.

David Weinstein
President & CEO, ABS Group of Companies, Inc.



MAINTAINING A LEADING SHARE

In 2013, the continued recovery of the global economy, coupled with attractive pricing from shipyards in Asia, led to a resurgence in ship ordering to accompany the robust offshore market.

The net result was a further increase in the ABS-classed fleet, expanding by 12.1m gross tons (6.5 percent) to close out the year at 205.6m gt. The 200m gt barrier was breached in mid-year with ABS being only the second class society to reach this milestone. With the merger of two major societies, ABS closed the year as third among all class societies in terms of total fleet size.

Another indication of the recovery was the positive growth in the total ABS orderbook, which increased from 37.1m gt to 38.8m gt. Owners of all vessel types sought ABS for new construction classification, with an overall orderbook share of 21.9 percent. ABS increased its presence from a year earlier and cemented its position as one of the leaders in the newbuild market.



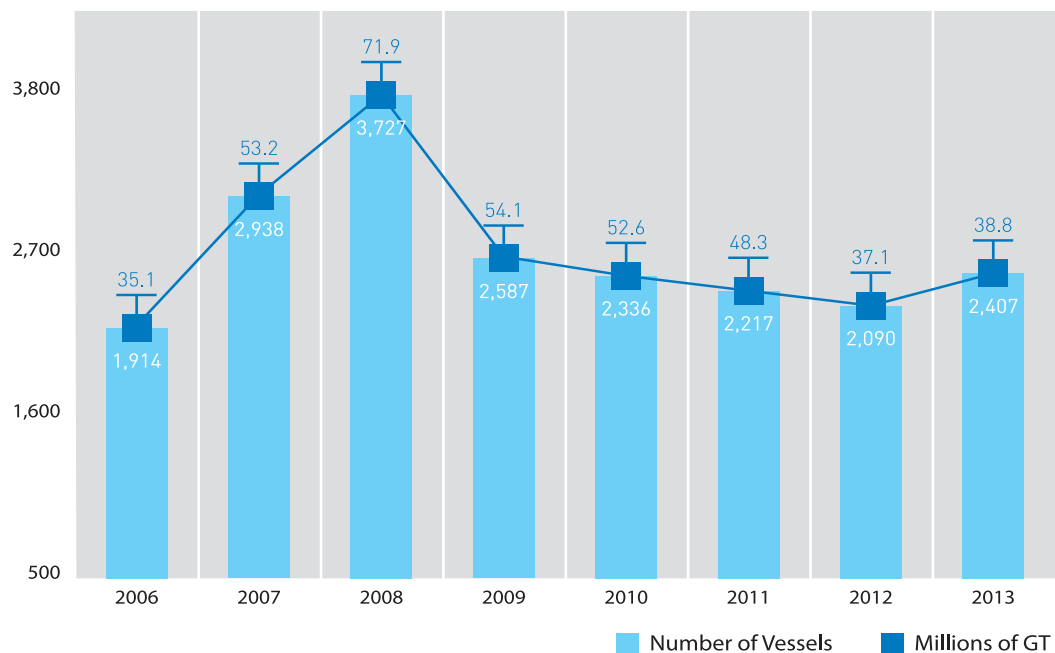
SUSTAINABLE FOR THE FUTURE

ABS ranked second in order-book share in Japan (where it remained the preferred non-national society of choice for new construction), China and Korea. China, with more than 1,000 vessels of all types, aggregating 15.6m gt on order from Chinese yards to ABS class, and Korea, with a smaller number of more sophisticated ships and offshore units aggregating 13.1m gt remained the two focal points of ABS' new construction activity.



The society maintained its preeminent position in the Singapore, Brazil, India, United Arab Emirates (UAE) and US ship and offshore unit building sectors with shares ranging from 57 percent (India and UAE) to 69 percent (Singapore and Brazil) to 92 percent (US).

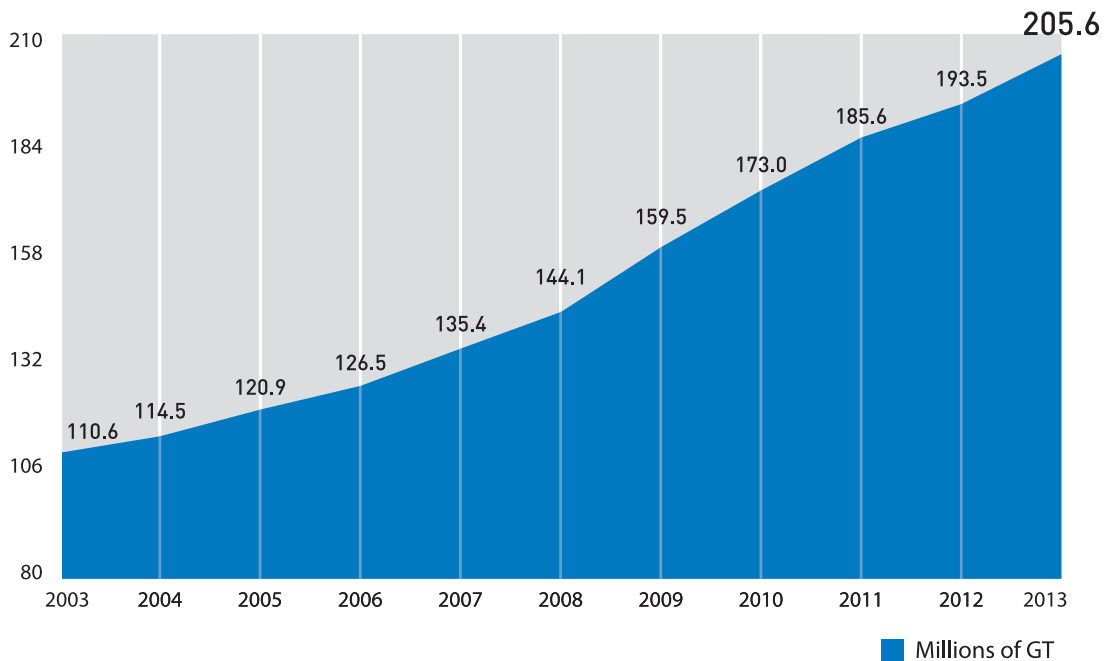
VESSELS ON ORDER 2013



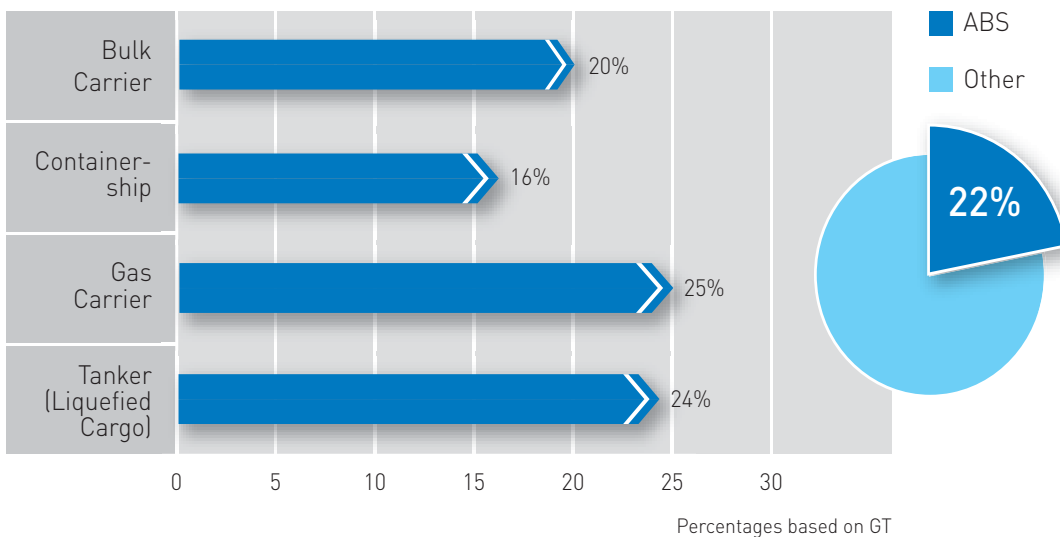
MARINE ACTIVITY

Ultra large containerships were the focus of continued interest from owners during the year and with 23 of these ships contracted to ABS, the society held a 22 percent share of the orderbook. Similarly, liquefied natural gas (LNG) carriers attracted strong contracting, with ABS gaining a 27 percent share of the orderbook while also increasing its presence in the liquefied petroleum gas (LPG) sector.

EXISTING FLEET 2013



ORDERBOOK SHARE 2013



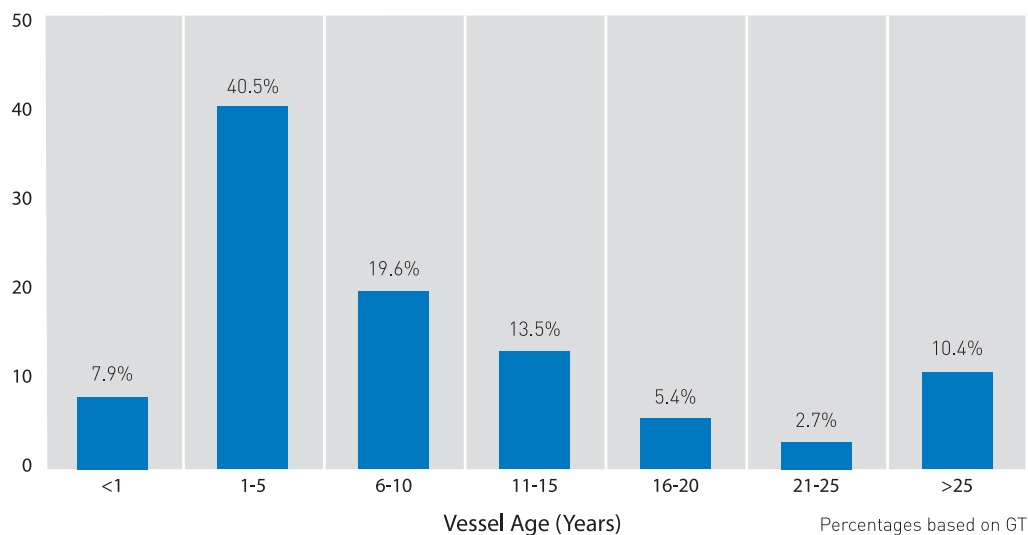
Oil tankers continue to comprise the largest tonnage within the ABS fleet, growing from 70.2m gt to 73.8m gt over the course of the year, with orders for a further 139 vessels aggregating 6.2m gt. The ABS presence remained strong across all size ranges, but the recent increased ordering activity for product tankers was reflected in ABS securing a 46 percent share of the medium-range product tanker orderbook.



The ABS-classed bulk carrier fleet also grew by some 2m gt, with orders for 74 very large ore carriers (VLOCs) and capesize bulk carriers aggregating 7.2m gt on the books at year's end, representing a 35 percent share of all orders.

The relatively young ABS fleet age profile also portends long-term strength. Nearly 50 percent of all vessels in ABS class are five years of age or younger. Nearly 70 percent of the vessels have ten years or less of operational activity. This profile provides a strong foundation for the future success of ABS.

EXISTING FLEET AGE PROFILE 2013

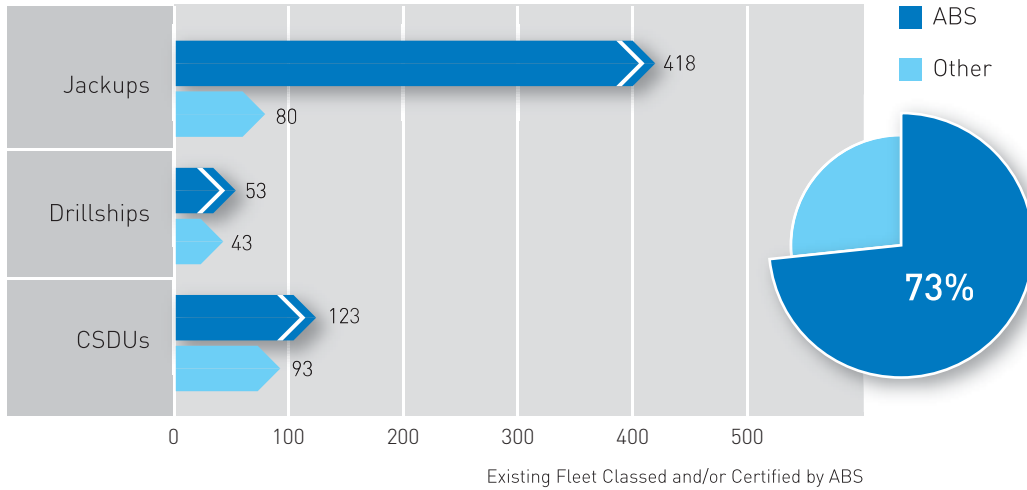




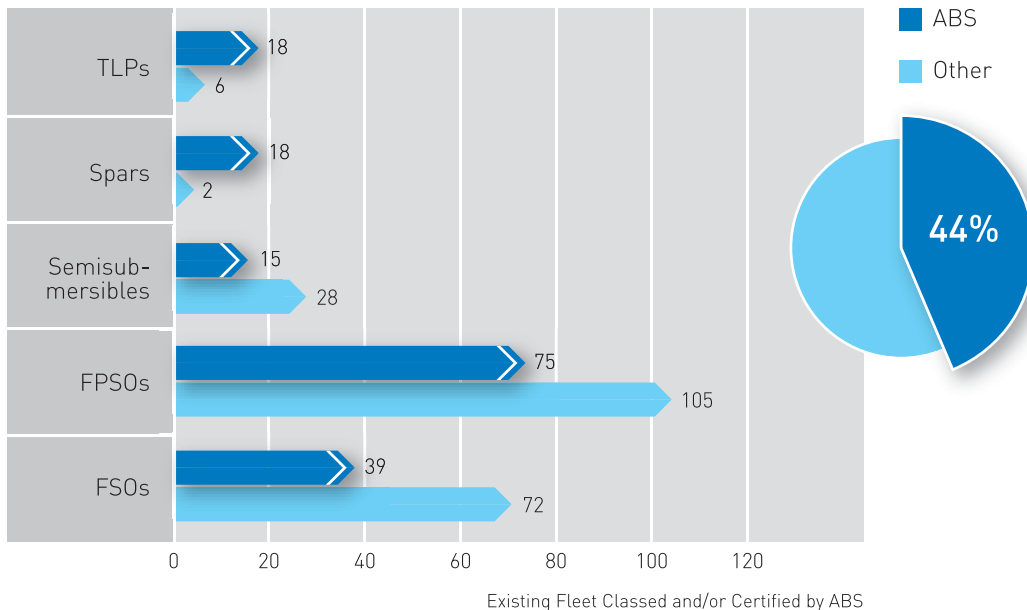
OFFSHORE ACTIVITY

ABS began 2013 with a strong position in the offshore market, maintaining its leading class share for mobile offshore drilling units (MODUs) and floating production installations. The jackup market, where ABS continues to have the majority share, remained robust in 2013, with 109 ABS-classed jackups delivered out of 121 new orders. Much of the year's activity centered on drillships, which will carry out deepwater drilling around the world. There were 72 new orders in 2013, with 54 awarded to ABS class, including a large number of units that will work in Brazil's presalt fields. This equated to 75 percent of the new construction drillship market.

OFFSHORE EXPLORATION UNITS 2013



OFFSHORE PRODUCTION UNITS 2013



The floating, production, storage, and offloading (FPSO) vessel market also continued to expand, and industry analysts predict that trend will hold for the near term. ABS continues to thrive in this sector, and closed out 2013 with 42 percent of the existing FPSOs and 39 percent of newbuilds. While the semisubmersible market was not as busy as in earlier years, ABS was selected to class three of the year's newbuilds.



With more sophisticated drilling and production units entering service, many operating in deepwater far from the coast, the need for specialized, larger support craft continued to grow. ABS maintained its leading position within this sector with more than 350 offshore support craft, including anchor handling tug supply, and platform support vessels on its orderbook.

CLASS PERFORMANCE

A key element in ABS winning new orders and growing its client base is its ability to consistently demonstrate the quality of services it provides. The clearest independent accounting of its in-service survey capabilities is the annual Port State Control statistics, issued by the leading MOU Administrations and the US Coast Guard. In 2013, these bodies continued to rate ABS among the elite tier of classification societies. In July, the Paris MOU identified ABS as the best performing Recognized Organization for the rolling three-year period 2010-2012.

A further indication of ABS' performance can be found in the overall safety record of ABS-classed vessels compared to industry averages. Although such a measure goes beyond purely class-related incidents, it provides an indication of the quality of the ABS fleet, the effectiveness of its standards, the capabilities of its staff, and the quality of the owners and operators of

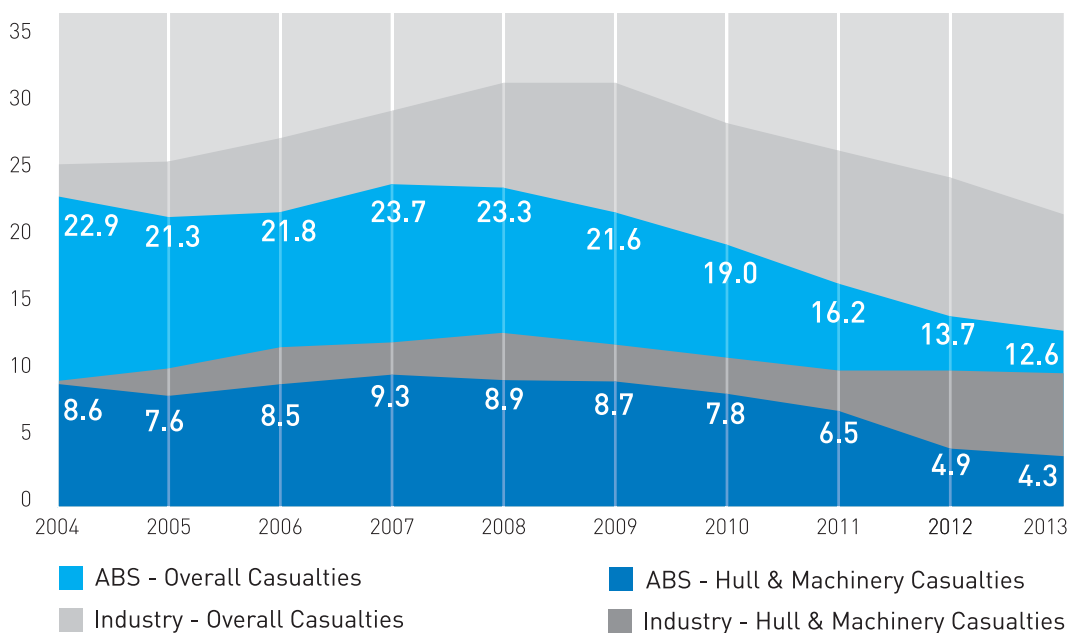


© Scorpion Offshore Ltd.

ABS-classed vessels. In 2013, ABS recorded its sixth straight year of improved performance in terms of overall casualties, and hull and machinery losses, recording figures that were 55 percent and 45 percent better, respectively, than the industry average. >

SERIOUS CASUALTIES PER 1,000 VESSELS

Three-year rolling average
Seagoing vessels > 500 gt



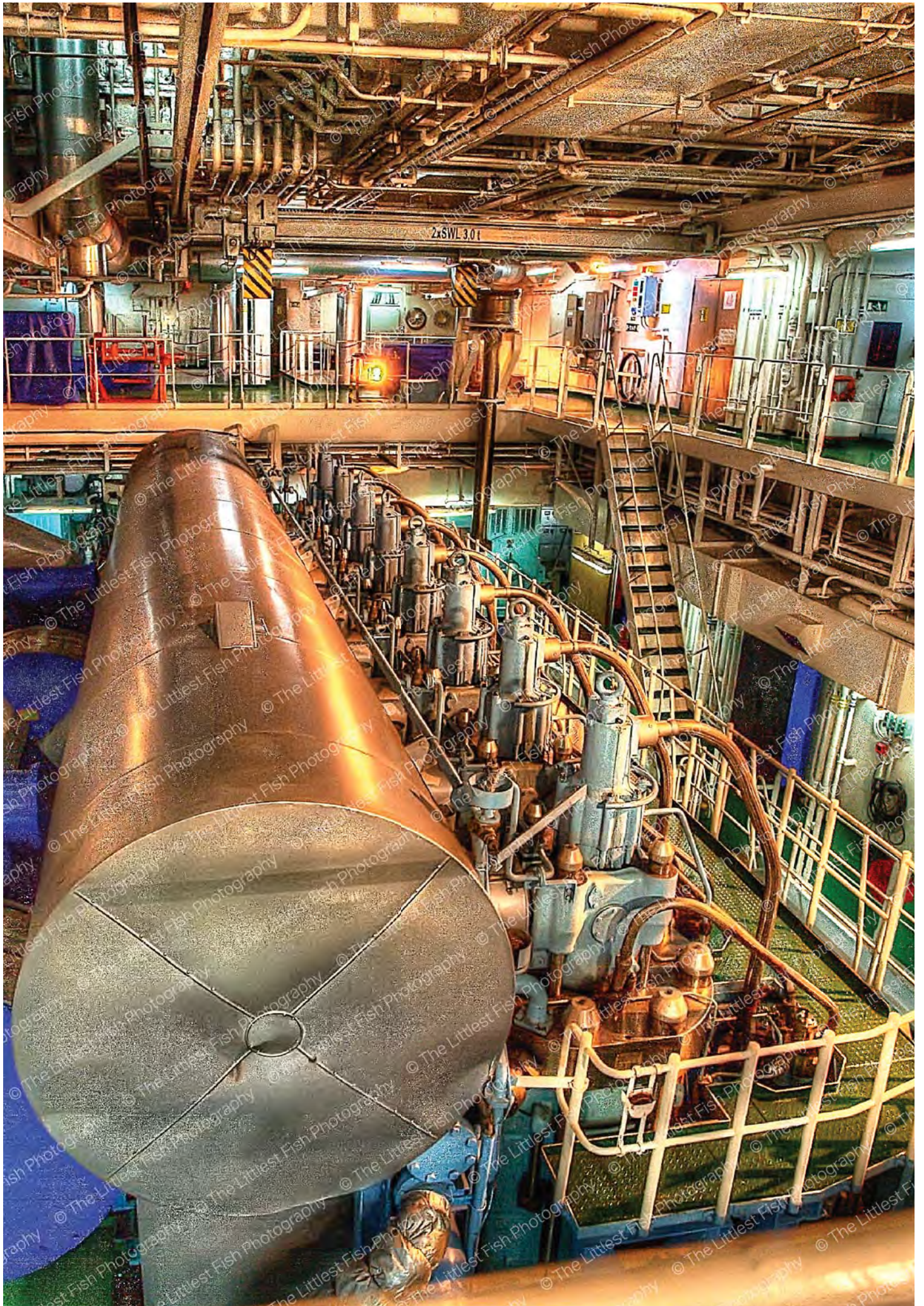


MEETING MARINE CHALLENGES

Emerging from a downturn in 2013, owners confronted new regulations, rising costs and the need to maintain quality at a time of fragile profitability. ABS provided the knowledge and experience required to face these challenges.

As recovery took hold, newbuilding orders increased, while the delivery of ships ordered before and during the downturn commenced. With newbuilds, the trend was toward energy-efficient 'eco-ship' tonnage with hull and machinery configurations designed for maximum fuel efficiency. Owners taking new deliveries, as well as those operating older vessels, sought similar fuel optimization for energy savings.

Owners also considered new environmental regulatory standards. The International Maritime Organization's (IMO's) revision to Annex VI of the MARPOL Convention has placed stringent demands in terms of air emissions. Meanwhile, the pending IMO Ballast Water Management Convention, as well as US Coast Guard and US Environmental Protection Agency requirements on permitted standards for invasive species in ballast water continued to present compliance challenges for owners and operators.



LNG AS FUEL

The move towards stricter controls on air emissions from ships, first in local emission control areas and from 2020 onwards on a global basis, has spurred owners to consider alternative sources of fuel. In 2013, the potential of liquefied natural gas (LNG) as fuel achieved critical mass, with several LNG-only and LNG-ready orders placed. ABS continued to provide assistance to owners with technical and operational decisions they had to consider when weighing the move to LNG power.



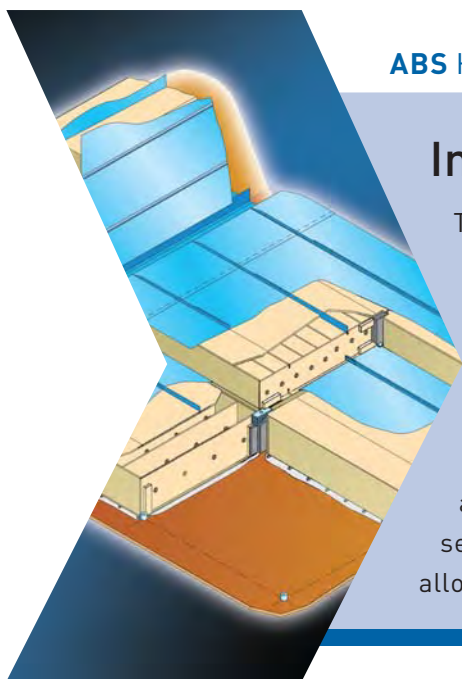
© Harvey Gulf

ABS HIGHLIGHT

Innovation Brings Gas to New Markets

The changing landscape of gas is creating potential for new markets in locations previously thought unreachable by LNG carriers.

Gaztransport & Technigaz (GTT) is developing small to mid-scale membrane-type LNG carriers with a compact, efficient design that provides the best ratio between cargo volume and gross tonnage and can be designed for any capacity. Utilizing existing Rules and Guides, ABS was able to work with GTT to provide an approval in principle for the innovative concept. In all sectors, ABS seeks to help the industry develop and employ technologies that will allow access to new markets.



© GTT



To further support this trend, ABS formed the Global Gas Solutions group, a team of experienced gas professionals dedicated to working alongside owners, shipyards and equipment manufacturers to provide information and guidance on gas transport and its increasing application as fuel. This includes the ongoing delivery of a series of dual fuel offshore support vessels for Harvey Gulf, new construction and conversion projects for TOTE, and a conversion project for Horizon Lines.

ABS HIGHLIGHT

Facilitating Trade with LNG Powered Ships

The North American Emissions Control Area (ECA) places tight restrictions on vessels, affecting companies trading in North American waters. Looking for a cost-effective way to meet ECA requirements, TOTE, Inc. has launched a program to fuel its fleet using LNG. TOTE has ordered two 3,100 TEU natural gas-powered containerships from the General Dynamics National Steel and Shipbuilding Company (NASSCO), and announced the conversion of two existing trailerships to LNG as well. Leveraging its experience as a leading classification society for LNG-powered vessels, ABS is working alongside the project team to help make these cutting-edge projects a success.

© TOTE

NOTABLE MILESTONE

ABS marked a significant achievement in 2013 when its classed fleet exceeded 200m gt. This milestone reflects ABS' leadership position in the new vessel orderbook, backed by strategic investments in research and technology, workforce development, and training designed to meet the needs of its clients worldwide.

Since 2000, ABS has doubled the tonnage of its registered fleet and today nearly 22 percent of new vessels on order are set for ABS class. In addition, an excess of 12,000 vessels representing more than 120 flag States currently are registered with ABS.

With core classification services and specialized support and advice, owners have come to rely on ABS to help them navigate the challenging and changing marine environment.



ABS HIGHLIGHT

Efficiency Drives World's Largest Ship

The containership market is pushing the boundaries of design and operation through the development of ultra large containership (ULCS) projects. One result is the Maersk Triple-E class, launching the largest containership in operation, with a total capacity of 18,000 TEUs, including capacity for 600 refrigerated containers. The Maersk Triple-E class lowers CO₂ emissions by nearly 50 percent per container. ABS assisted with the design by providing plan review that included full ship analyses, as well as facilitating hazard identification workshops. ABS stands prepared to help owners and operators develop the next generation of energy-conscious vessels.

© Maersk



ENERGY EFFICIENCY

For owners of conventionally powered tonnage, asset optimization continued to be the priority. The need for flexible operations, combining slow-steaming with the ability to operate at full speed when required, posed a technical conundrum. At the same time, the industry began to recognize that greater use of operational data and a life cycle approach to maintenance could play a key role in providing a holistic solution to operational efficiency.

ABS made the decision to combine three key teams into the Asset Performance Management (APM) group, specifically to provide a portfolio service to owners looking for advice, support, and practical tools to improve operational performance and achieve compliance with environmental standards.



ABS GROUP HIGHLIGHT

Addressing Environmental Issues

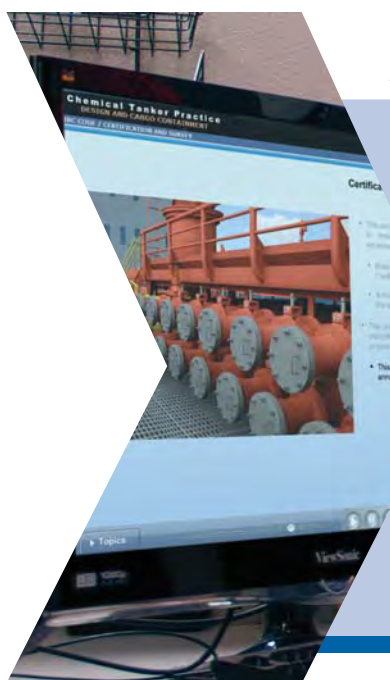
In order to comply with the environmental standards of the *International Convention for the Prevention of Pollution from Ships* (MARPOL), many companies turn to ABS Group's comprehensive audit program. The program provides an evaluation of a client's application of the policies, procedures and requirements that relate to environmental issues. Shipboard audits cover a wide range of protocols and systems, including pollution prevention equipment, shipboard recordkeeping, and pollution prevention training. Upon completion of the audits, ABS Group develops a review that allows clients to resolve operational issues and adhere to environmental policies.

The APM group consists of the Operational and Environmental Performance team, the Asset Integrity Management team, and Nautical Systems. The goal is a one-stop approach to environmental compliance, asset integrity management, operational performance, techno-economic modeling and energy efficiency. APM's members work across newbuilding and existing vessels, developing the innovative concepts, tools and practices needed by clients to improve their assets' operational efficiency, simplify regulatory compliance, and improve safety.



BIG DATA AND CLASS OF THE FUTURE

The formation of the APM group enabled ABS to focus its vision on the Class of the Future and, in particular, the impact of 'big data'. In this context, big data represents the ability of regulators, class, owners and other stakeholders to leverage operational and class data. This will ultimately lead to enhanced decision-making, and increased process optimization to foster a safer and more efficient industry.



ABS HIGHLIGHT

Web Training Promotes Crew Safety

New technology and improved communications offer advanced learning opportunities for tanker crews. ABS is helping MISC Berhad and its group of companies operate safely and remain compliant through a web-based program, the Chem-eL eLearning package. Chem-eL has proven valuable in training personnel in remote locations by providing a program that can be utilized across the MISC company fleet, as well as by students at MISC's training facilities. ABS courses blend theoretical knowledge with real-world experience to help participants develop practical solutions for safe and compliant operations.



© The Littlest Fish Photography

The key element in realizing the potential of big data is the need for greater collaboration between all of the parties in the safety regime. Classification is already moving to embrace a generation of safety and environmental systems which places greater emphasis on not just certification, but on risk assessment and performance verification.

ABS is developing tools and techniques, and building a data architecture to take advantage of its existing data and link it in new ways with other information, such as operational data and marine fuel indices. This allows ABS to provide enhanced insights to clients in a timely fashion to assist with critical decision-making.



ABS HIGHLIGHT

Enhancing Reliability Through Reporting

Companies are depending on business intelligence tools to retrieve, analyze and report data. Recognizing the need for more customized information for data analyses, inventory and budget tracking, Great Lakes Dredge and Dock Company (GLDD) utilized the On Demand Reporting tool in NS5 Enterprise to generate more than 100 reports run by or delivered on a schedule to end users. As a result, GLDD can write simpler SQL inquiries to track critical spares, maintain warehouse inventories and values, analyze procurement processes, and examine pricing data in the procurement process. This tool provides critical business information for GLDD to run its business more efficiently.

© GLDD

20 YEARS OF INNOVATION

2013 provided an opportunity to reflect on the heritage of innovation at ABS. When ABS SafeHull was released to the marine industry in 1993, it precipitated a revolution in thinking about vessel design, engineering, and the development of standards. This milestone continues to be felt throughout the maritime industry 20 years later.

Before SafeHull, both the classification and vessel design sectors were, to a large extent, chained to past experience in terms of what they could do to advance hull structures. Structural design and strength evaluation were based primarily on traditional empirical or semi-empirical formulations for load and strength, which were modified according to service experience.

SafeHull was developed as an innovative new tool that designers could use to assess the strength of a structure, relative to the necessary class acceptance criteria, throughout the evolution of the design. With the success of SafeHull, innovation was encouraged throughout the maritime world and a fundamental change occurred in the way the industry approaches hull structural design.





LIFE CYCLE MANAGEMENT FOR FLEETS

ABS Group continued to provide engineering, verification and certification services to its global client base. One focus was fleet assessment guidance to help identify how to maintain existing assets and effectively operate in optimal condition over time. This led to an upturn in the review of older tankers under the Condition Assessment Program (CAP), which was buoyed this past year. In addition to optimizing the lives of their vessels, owners were developing life extension-related projects primarily consisting of tanker conversions.

Owner's representation services were a significant highlight for ABS Group, with a number of projects underway in the US, UAE and Singapore, including several addressing the containment of oil spills. ABS Group supported its clients with project quality management, inspection, maintenance management, and project certification related to the design and construction of assets. In 2013, ABS Group expanded its global presence by adding staff in Dubai to support clients in the Middle East. >

ABS GROUP HIGHLIGHT

New Approach to LNG Tank Construction

ABS Group completed design review services for an approval in principle of the Hyundai Heavy Industries' (HHI) modular LNG storage tanks. The system design and construction, with onsite assembly, was reviewed against applicable regulations and standards. HHI's methodology was confirmed to be technically equivalent to standard onshore LNG storage tanks. The tanks apply technology and concepts from LNG shipping to onshore storage for the construction and assembly of the modular units. With demand for energy storage increasing, especially in remote and harsh environments, innovative approaches create new possibilities for various industries.

© HHI

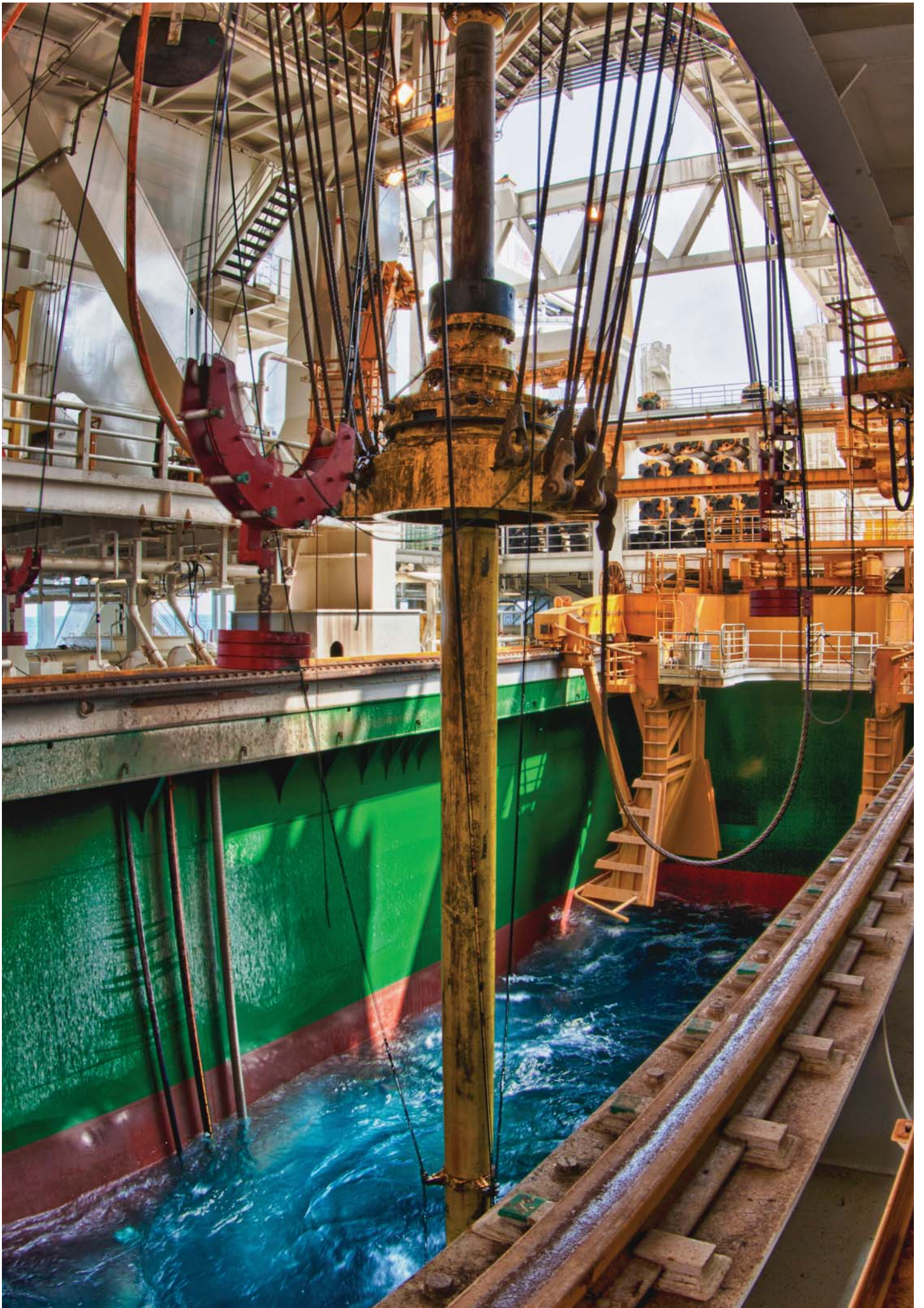


PIONEERING OFFSHORE ADVANCES

The world of offshore exploration and production is changing, and ABS spent 2013 working with industry to develop strategic solutions for the challenges introduced by more demanding environments.

ABS continued to break new ground, working closely with oil and gas industry partners in developing the technologies needed to take on the unknown. While operations are moving into new regions, the areas that historically have produced the bulk of the world's hydrocarbons continued to be active.

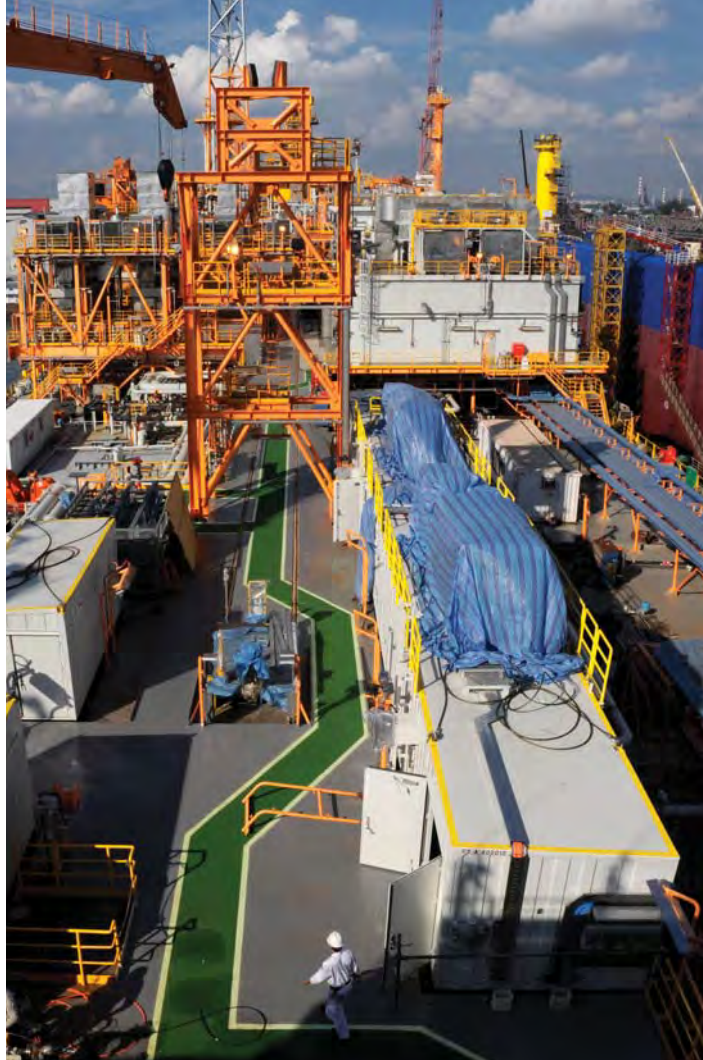
The contribution of shallow-water fields to global production was significant last year. Fleet investment that began in 2010 resulted in increased jackup deliveries in 2013. A large number of these newbuilds are on order in the Middle East and in Mexico, where a changing operating environment is encouraging increased activity. ABS has been working closely with Mexican yards, where higher-specification jackups are being built for the first time.



FLOATING PRODUCTION

The push toward deeper water continued to drive growth in the floating production unit (FPU) market last year, and the organization maintained its leading role in classing these units. Analysts forecast that between 2013 and 2017 \$91 billion will be spent on FPUs. This constitutes an increase of 100 percent over the preceding five-year period.

As in decades past, ABS is breaking new ground with the oil and gas industry, classing one of only two approved FPSOs that will operate in deep water in the US Gulf of Mexico and classing the first tension leg platform (TLP) to be built in Brazil. Within the floating production sector, FPSOs account for the majority of the newbuilds on order — and that number is considerable.



ABS HIGHLIGHT

Harsh Environment Rig for Azerbaijan

Responding to the State Oil Company of Azerbaijan Republic's plans to expand its offshore drilling program, Caspian Drilling Company awarded a contract to Keppel Offshore & Marine to build a semisubmersible drilling rig for the harsh environment of the Caspian Sea. Scheduled for delivery in the fourth quarter 2016, the rig will be capable of drilling to 40,000 ft in 1,000 m water depth, with pontoons designed for transit in channels with shallow draft of less than 7 m. It will be outfitted with an 800 m self-contained eight-point mooring system designed to meet high wind speeds, further enhancing its performance in rough weather.

© Keppel O&M



Continued growth in the FPSO segment, which makes up 80 percent of the anticipated capex to 2017, is being driven by factors such as the push in Brazil for more units that can be built in local yards. According to analysts, 29 percent of the forecast installations in the five-year period will be in Latin America. Among the units on the long list of active ABS-classed FPU's and newbuilds are many of the FPSOs in the Petrobras fleet that will produce from Brazil's presalt fields.



ABS GROUP HIGHLIGHT

Solutions for Enterprise Asset Integrity

Risk assessment can be broadly characterized as modeling what can go wrong. With the GIEN program, ABS Group assists Petrobras with minimizing business interruptions, while protecting system integrity.

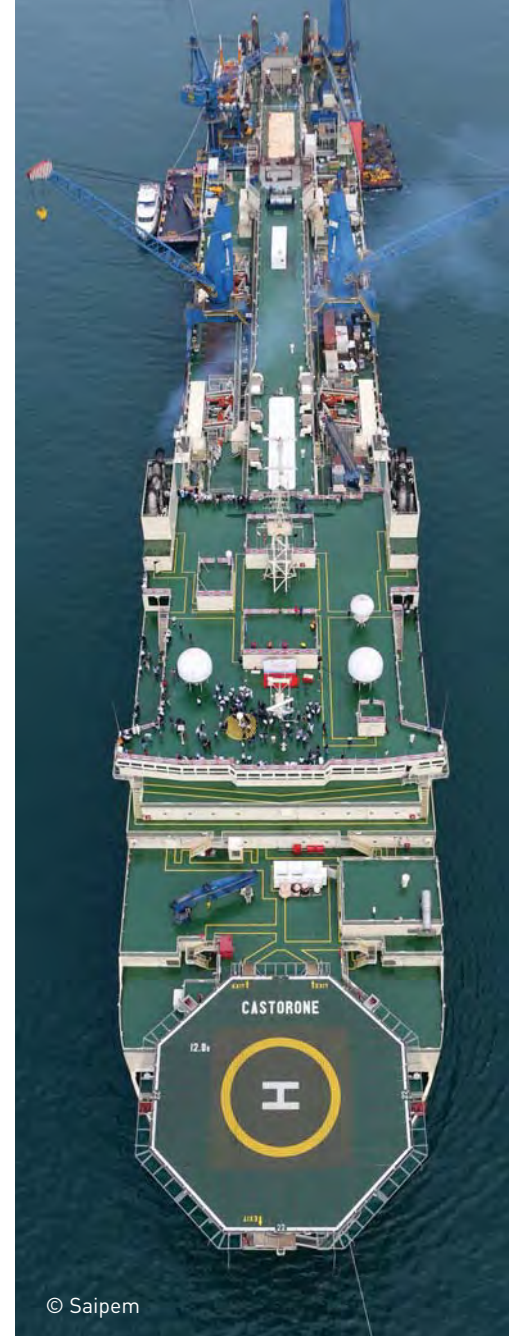
GIEN is the acronym for the Portuguese translation of 'integrated naval engineering management'. The multi-year program involves 20 of Petrobras' offshore assets: seven FPSOs, eight semisubmersibles and five jackups. Engineering support, including risk-based inspection and verification of asset conditions, is integrated with management-of-change and asset integrity management. Petrobras, aligned with ABS Group, utilizes a system that provides 24/7 emergency management support.

© Petrobras

DEMAND FOR OFFSHORE SUPPORT VESSELS

Offshore support vessels (OSVs) have become increasingly sophisticated and technically advanced, in great part in response to demands from deep-water drilling, production and subsea operations. Today, many OSVs are multipurpose vessels that have capabilities that far exceed those of the fleet only ten years ago. ABS has been part of this evolution, being selected to class some of the industry's most innovative vessels in 2013, including the Vroon X-BOW platform supply vessel and the Seajacks offshore wind installation vessel, which will be the largest in the world when it is completed.

ABS continues to anticipate developments in vessel design, equipment and systems and is updating and expanding its criteria to address changes in offshore oil and gas exploration and development. The organization raised its profile in the OSV segment in 2013, positioning itself as a leader that the industry can confidently look to for guidance.



© Saipem

ABS HIGHLIGHT

Supporting the Next Generation of OSVs

In January 2013, Vroon Offshore Services signed contracts with COSCO (Guangdong) Shipyard Co. Ltd. for the construction of two PX121 platform supply vessels (PSVs), with an option for two additional units. The PSVs feature the Ulstein X-BOW, an advanced design that improves handling and fuel efficiency. Vroon exercised the option in September, bringing its total number of PSVs under construction to ten, including six units being built at the Fujian Southeast Shipyard. Vroon expects the platform supply vessels, which are scheduled for delivery in 2015, to work offshore Europe and in the North Sea.



© Vroon Offshore Services



THE ARCTIC FRONTIER

While many facets of offshore operations can be considered frontiers, there is one geographic area that remained a focus area for ABS. The Arctic, which has been a subject of study for ABS for some time, continued to receive attention in 2013. In the course of the year, ABS hosted an invitational workshop series to encourage a dialogue on Arctic challenges. The workshops, which included not only experts from the oil and gas industry, but some of the best minds in

academia, provided a forum for discussion on winterization, logistics, ice management, and human factors. Addressing these concerns fosters safe operations in some of the most exacting operating environments in the world. ABS made significant strides last year toward finding answers by facilitating collaboration.



ABS HIGHLIGHT

Crew Accountability Through Software

After the 2010 Macondo incident, the focus on tracking licenses, training and certifications for offshore personnel increased. Helix Energy Solutions employed the NS5 Crew Manager module as part of its personnel tracking solution. By utilizing the software, Helix was able to electronically store and categorize required personnel documentation onshore and replicate the same information across assets, regardless of their location. This affords immediate access to crew information, enhancing safety and security under unexpected circumstances. Built-in alerts notify Helix of upcoming issues, allowing for quicker resolutions with increased operational efficiencies.

© Helix Energy Solutions

TECHNOLOGY DRIVERS

Across the board, newbuild designs are reflecting technology advancements that will allow offshore units to work in some of the most challenging areas in the world. These designs also incorporate many software components that have to communicate seamlessly in order for operations to be carried out safely. ABS developed and introduced its ISQM program to address software development concerns. The ISQM system was put to work for a US-based drilling contractor in a newbuild drillship program in a Korean yard, where construction was nearly completed on the first unit at year-end.

Decreasing time to production is unarguably one of the primary drivers for technology development. Another is the desire to commercialize a larger percentage of the reservoir, and subsea technology – one of the game changers for industry – has that potential. It has not only proven effective at



© Young Petro



© Rowan

ABS HIGHLIGHT

Installing the Wind Farm

The harnessing of offshore wind is one of the fastest growing maritime market sectors. ABS is classing the world's largest and most advanced offshore wind farm installation vessel, being built by Samsung Heavy Industries in Korea. The *Seajacks Scylla* will have more than 8,000 metric tons of available variable deck load, over 5,000 square meters of usable deck space, and will be equipped with a 1,500-metric-ton leg-encircling crane. It will be capable of speeds greater than 12 knots and able to meet the installation needs of jumbo-monopiles, jackets, and turbines of future wind farms in deeper waters and further from shore.



© Seajacks



increasing production volumes but in improving production rates. The industry has seen a steady increase in subsea development in recent years that has been accompanied by an upward trend in subsea technology investment. In 2013, ABS research included studying electrification and communication options for subsea applications.

With the rate of expansion of offshore development, it is not surprising that the industry has begun to look more closely at aging offshore units with an eye toward extending their field life. Clearly, safety is a primary concern, and ABS has stepped up to assist industry with asset integrity management. From evaluating hull conditions and studying corrosion effects on FPU's to contributing to the body of knowledge on cybersecurity, ABS worked with industry over the course of the last year to address safety and reliability challenges for offshore units.



© Greater Gabbard

ABS GROUP HIGHLIGHT

Supporting the Greater Gabbard Wind Farm

ABS Group provided independent structural integrity monitoring services for the Greater Gabbard Offshore Wind Farm, located off the coast of Suffolk in England. The wind farm is an operating asset that contributes a significant amount of electricity to help meet consumer demand and further diversify the UK energy portfolio with a carbon-free electricity source. ABS Group developed a technique to analyze the data gathered in a way that enables asset owners to implement preventive maintenance, saving valuable time and money, as well as improving the safety aspects of the offshore structures.

IMPROVING ASSET DOWNTIME

ABS Group continued to build strong relationships with major global customers, particularly those in the oil and gas sector. In 2013, ABS Group bolstered its regional focus in West Africa with the award by Cabinda Gulf Oil Company (CABGOC)/Chevron to supply project quality management services for the development of the Mafumeira Sul oil and gas project, located offshore Angola.

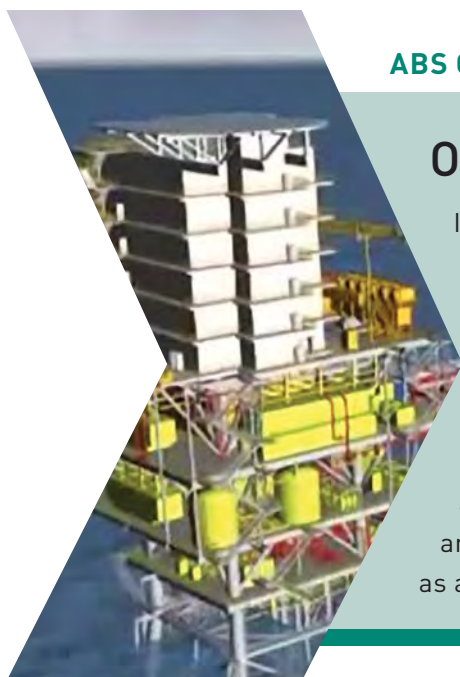
ABS Group also built on its software verification services, supporting oil majors by verifying that new construction drilling units planned for the Gulf of Mexico and West Africa had control systems that would deliver optimal uptime. These services nearly doubled from the previous year. Additionally, the asset performance optimization services developed by ABS Group made strong inroads in the



ABS GROUP HIGHLIGHT

Offshore Project Fuels Growth in Africa

In Africa, fuel resources will be a driver in creating and powering infrastructure. Cabinda Gulf Oil Company (CABGOC)/Chevron selected ABS Group to supply project quality management services for the development of the Mafumeira Sul oil and gas project, located offshore Angola. This engagement involves design, fabrication and installation of five platforms, and a subsea pipeline to Malongo Terminal. ABS Group will provide coordination, assessments, reviews, archiving embedded personnel, and source and site inspection. This effort is supporting Angola domestically, and as a global energy player in an increasingly connected world.



© Chevron



offshore sector, supporting maintenance planning on a number of floating platforms for large oil majors in Europe.

ABS Group continued to strengthen its offshore portfolio, developing a set of services to assist drilling clients with control system cybersecurity. Moving forward, ABS Group continues to focus on this key global market sector and is developing service lines and seeking new ways to help clients manage risk, sustain safety, optimize asset integrity and deliver operational and business performance excellence. >



ABS GROUP HIGHLIGHT

Risk-based Approach for New FLNG

ABS Group is developing an inspection program for the *Prelude FLNG*, Shell's first-of-its-kind floating liquefied natural gas (FLNG) project. This risk-based inspection program meets the requirements of Australia's National Offshore Petroleum Safety and Environmental Authority regulations. The risk techniques and structural analysis enhance the overall understanding of the vessel's structural condition, deterioration mechanisms, and critical regions. ABS Group's approach goes beyond simple certification and verification by assisting in the development of systems and processes to help clients meet or exceed expectations at every stage of a project, and minimize downtime.

© Shell

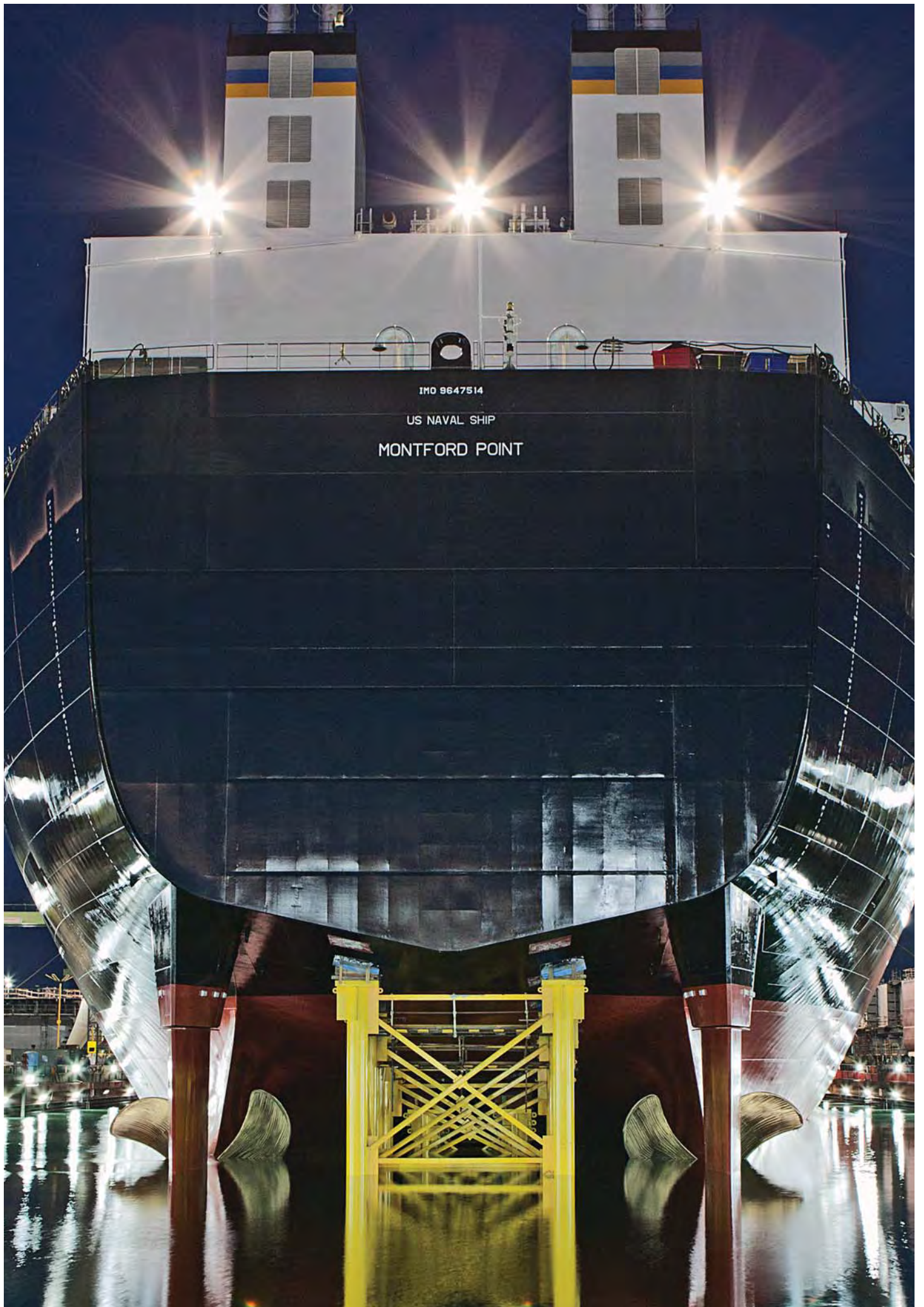


SUPPORTING GOVERNMENT ENTITIES

2013 proved to be a challenging year for government agencies dealing with the realities of the new economy and ever-tightening budgets. This environment demonstrated the strategic value that a trusted partner like ABS can provide.

To maximize resources, government stakeholders took advantage of ABS' experience in reviewing design and construction plans. Furthermore, periodic surveys and continued attention to fleet conditions provided a cost-effective means for verifying that vessels are maintained to original baseline safety standards.

ABS values its relationship as a Recognized Organization that works with and on behalf of governments around the world. It provides steadfast support of their safety regimes, while adhering to its core mission of promoting the security of life and property, and preserving the natural environment.



MAINTAINING FLEETS

Throughout 2013, the Military Sealift Command (MSC) continued to rely on ABS services in the development and maintenance of its fleet. Newly delivered vessels like the *USNS Choctaw County* (JHSV 2) and the *USNS Montford Point* (MLP 1) served to enhance the fleet's capability and reinforce the US Navy's commitment to expanding its strategic sealift and global logistics capabilities. Through the incorporation of ABS class Rules into its design, construction and maintenance processes, MSC has recognized the importance and value of having a trusted, independent third party involved throughout the entire life cycle of its vessels.

In addition to traditional class services, ABS continued to support the US Navy through its Achieving Service Life Program (ASLP), which adopts and adapts ABS engineering and survey activities conducted on commercial vessels for tailored applications on existing US Navy vessels. This takes advantage of ABS' years of commercial experience in helping the Navy identify and prioritize maintenance needs for its combatant fleet.



© Austal USA

ABS HIGHLIGHT

Expediting International Security

In 2013, upon an agreement to disarm chemical weapons in Syria, the challenging effort of disposal began. The *MV Cape Ray*, an ABS-classed ro/ro vessel owned by the US Maritime Administration and operated by the US Navy's Military Sealift Command, was called into service. The vessel was expedited from layup and equipped with two US Army Field Deployable Hydrolysis Systems to perform its mission. Since the days of World War I, ABS has a proud tradition of working alongside the US government in fulfilling the classification requirements of its vessels. That tradition has expanded globally as ABS supports programs in India, Egypt, Kuwait and many other nations.



© US Maritime Administration



MODERNIZING CAPABILITIES

Beyond the US Navy, the US Coast Guard (USCG) relied on ABS class services for its national security cutter (NSC), fast response cutter (FRC) and offshore patrol cutter (OPC) acquisition programs.

These new classes of cutters are intended to enhance and modernize the USCG's current mission capabilities. ABS worked with the USCG to identify appropriate safety certification criteria for the NSC and has been providing certifications of select systems and equipment since construction began in 2004. Of the eight vessels in the NSC class, three have been delivered and three more are currently under construction.



ABS HIGHLIGHT

Promoting Safety in Future Fleets

Building on the success of NSC and FRC, ABS and the USCG developed a Memorandum of Understanding (MOU) identifying the interaction and integration of activities related to classing the offshore patrol cutter (OPC). The OPC project spans 20 years for design and construction of up to 25 vessels. Recognizing the significant investment of this effort and broad coverage that classification provides toward certification, the USCG engaged ABS to identify expectations and map out the interfaces with respect to requirements, processes, change control, coordination and communication amongst ABS, the USCG, and other certification authorities.

© US Coast Guard

For the FRC and the OPC, the USCG required full ABS classification. By the end of 2013, all seven FRCs were delivered to ABS class. ABS and the USCG also jointly developed and signed a Memorandum of Understanding (MOU) to document the coordination for the OPC acquisition project scheduled to commence in 2014.

Other agencies implementing ABS services include the US Army Corps of Engineers, US Maritime Administration, National Oceanographic and Atmospheric Agency, and allied foreign navies and coast guards. These organizations rely on the capabilities and global reach of ABS to help develop and maintain their respective fleets.



ABS GROUP HIGHLIGHT

Sharing Management Capital

ABS Group provided support to the US Bureau of Safety and Environmental Enforcement (BSEE) on a plan to align business processes with an enterprise risk management (ERM) system to determine the suitability of current risk management system components. ABS Group's Global Government, Marine, and Oil and Gas sectors conducted a comparison and analysis of the domestic oil and gas standards that BSEE incorporates by reference into federal regulations on international oil and gas standards. This partnership is founded upon the shared strategic goals of promoting safety, protecting the environment and conserving resources offshore.





© Port of Houston

INNOVATIVE SOLUTIONS

As governments deal with the new global economic environment, federal agencies are tasked with managing operating expenses and reducing delivery costs, while remaining responsible for achieving regulatory goals. The end result for clients is limited discretionary spending that calls for a drive toward efficiency.

In 2013, ABS Group continued to provide services to government agencies that directly related to core capabilities in maritime, homeland security, offshore and risk management. It supported the US Coast Guard Research and Development Center and Surface Forces Logistics Center, and the Department of Homeland Security's implementation of the Chemical Facility Antiterrorism Standards program. ABS Group also extended support in new areas, including the US Department of Interior's Bureau of Safety and Environmental Enforcement, as well as municipal water authorities. >



MANAGING SAFETY, RISK & INTEGRITY

Safety, risk and integrity management are at the core of everything ABS Group does. By increasing awareness, ABS Group helps its clients enhance productivity and mitigate challenges while upholding reputations.

As industry evolves, potential hazards, and human and environmental consequences that may threaten the product or service being provided, increase. In today's marketplace, a dedicated focus on safety, risk, and integrity management is paramount. Experience and reliable advice can make the difference between success and failure.

ABS Group has provided clients with relevant and practical solutions, developed through decades of experience assisting customers across multiple industries. Based on sector-specific concerns, ABS Group uses engineering-based and field-proven methods to help establish, manage and monitor activities that improve safety performance. Its services go beyond certification and verification, offering a holistic risk management approach. Systems and processes are developed to help meet or exceed established standards at every stage of operation.



INCREASED REGULATIONS

In 2013, growth in the energy marketplace was driven by crude oil production. Natural gas also experienced a strong increase due to unusually cold temperatures dominating the Midwest and Eastern half of the US. Globally, supply and production of both commodities increased as well, creating a lucrative year for owners,

operators and all parties involved in production and distribution. In the US, shale gas drilling and production is driving capital expenditure and potentially turning the US into a net energy exporter.

Amidst this growth and expansion, the industry has been challenged by an inconsistent process safety performance and rising calls for increased regulation. Notable accidents have sparked concerns within regulatory agencies and public interest groups, leading to an Executive Order on Improving Chemical Facility Safety and Security in August 2013.



ABS GROUP HIGHLIGHT

Incident Investigations Promote Safety

In 2013, ABS Group investigated incidents involving explosions, riser failures, equipment collapses and electrocutions. Investigators secured sites and collected evidence. Accident situations were reconstructed using state-of-the-art modeling to evaluate root causes, suggest corrective actions, and monitor changes to allow for safe recovery and restart of the facilities. ABS Group has written industry guidelines on how to conduct investigations and trained more than 7,000 individuals from over 50 countries. It employs professional support software to provide global reporting, notification, analysis, workflow and recommendation management solutions.





Industry and government regulators are challenged to improve performance through better information sharing, targeting and enhanced resources that will lead to more effective enforcement of requirements. The industry must place greater emphasis on learning from accidents, and applying the lessons to avoid future losses. ABS Group has been an effective partner with both industry and government to improve performance and reduce safety, environmental and security risks.

ABS GROUP HIGHLIGHT

First Accredited Provider for SEMS Audits

With the Macondo incident front of mind, and offshore technology growing increasingly complex, the Bureau of Safety and Environmental Enforcement (BSEE) and the Center for Offshore Safety (COS), forged an agreement requiring implementation of safety and environmental management systems (SEMS) for offshore operations. The regulation also calls for third-party auditors to be accredited to conduct the audits. In 2013, ABS Quality Evaluations (ABS QE), an ABS Group company, became the first accredited audit provider to evaluate the implementation and maintenance of the COS Member Companies' SEMS program for assets operating in the Gulf of Mexico.



ADVANCING INITIATIVES

Demand for renewable energy continued to rise, with the *International Energy Outlook 2013* estimating that by 2040 world energy consumption will increase by 56 percent. Renewable energy has become the fastest growing at a rate of 2.5 percent per year. Offshore wind energy is growing at a rate of 30 percent per year.

Online, remote condition monitoring for offshore wind farms continued to be a key service delivery in 2013. Manufacturing, installation and commissioning inspections for Nordsee Ost Offshore Wind Farm were performed and ABS Group will now be involved with the in-service phase of this project.



LEGACY OPERATIONS

In 2013, ABS Group's contribution to nuclear legacy plants and utilities continued with post-Fukushima stress test analyses, seismic support, and electrical control and instrumentation (EC&I) support. US and European regulators initiated new requirements and regulations for risk analyses. However, the demand for new nuclear reactors remains strong in parts of Asia and the Middle East. Services in countries that have suspended new reactors, such as Switzerland, are focused on long-term operations.

ABS Group key projects are associated with regulatory requirements for operators to reevaluate and upgrade, as necessary, the design-basis external event protection of structures, systems and components for each operating reactor. These programs provide valuable insight to make risk-informed decisions on plant operations and enhancements.



IMPROVED STANDARDIZATION

Since its creation in 1947, the International Organization for Standardization (ISO) has published 19,977 standards, covering most aspects of technology and business designed to make industries more efficient and effective. In 2013 alone, 1,103 new standards were developed, such as ISO 50001 which focuses on energy management, providing international specifications for products, services and practices.

Since 1991, ABS Quality Evaluations (ABS QE) has been offering certification services to assist clients in meeting their everyday goals and objectives. In 2013, ABS QE became accredited to offer ISO 50001 audits as well as Safety and Environmental Systems (SEMS) audits for the US Center for Offshore Safety. Both programs are centered around the markets in which ABS QE operates, particularly the marine, oil and gas, and chemical sectors. >

ABS GROUP HIGHLIGHT

ISO 50001 Means Good Energy Business

Energy conservation is of paramount importance today, however, changing the way an organization utilizes energy presents challenges. ISO 50001 addresses this by creating a framework to manage and improve an organization's energy consumption. ABS QE received accreditation of its ISO 50001 Energy Management System program in 2013 from the ANSI-ASQ National Accreditation Board. So far, nearly 2,000 organizations have adopted ISO 50001, including more than 1,750 in Europe, which is leading the worldwide initiative. Organizations are implementing ISO 50001 to cut costs, drive innovation and differentiate from competitors, thus improving their company's reputation and brand.





INNOVATING FOR THE FUTURE

Powered by drive, commitment and intellectual curiosity, ABS engineers are expanding the horizon of offshore oil and gas, and marine operations through more than 200 research projects.

The belief that innovation is vital to future operations has led to considerable investment in technology development. For ABS, innovation is not a buzzword. It is a vision and a mandate. Innovation unleashes creative thinking that will allow the application of nanotechnology, ocean renewable energy generation, and the safe development of new processes such as subsea mining. The projects in progress at ABS will carry industry forward.

Technology will continue to be a strong driver in the evolution of class. ABS is focused on meeting today's needs while anticipating future challenges that push the limits of technology. This approach will provide value to ABS members and clients as they break new ground in the marine and offshore industries.



FOUNDATION FOR SUCCESS

ABS is integral to global operations in the shipping and offshore energy industries. While its varied and talented network of employees takes on challenges in areas as diverse as energy efficiency and subsea operations, there is a unified goal – to promote the security of life and property and to encourage environmentally responsible operations.

The nucleus of ABS innovation is research. From the ABS Technology headquarters in Houston, to its technology centers in Canada, Brazil, Singapore, Korea and China, teams of researchers are looking for solutions to long-term challenges.



ABS HIGHLIGHT

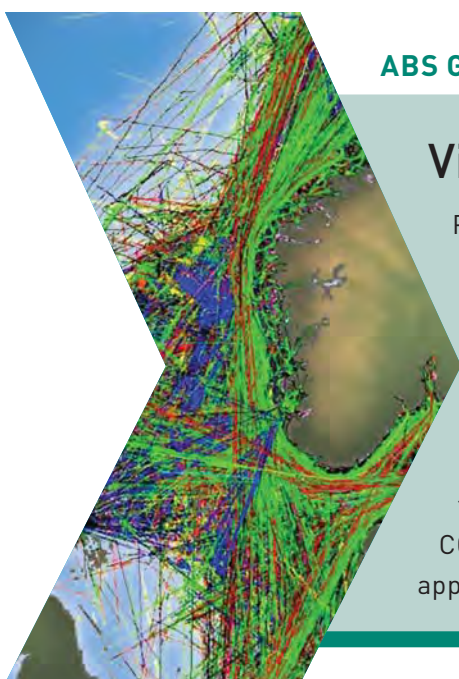
Helping Operators Identify Efficiencies

As regulatory and economic pressures mount, owners and operators are challenged with determining the value of maintaining current assets or seeking new vessels with design efficiencies. Through the Operational and Environmental Performance team, ABS conducts analyses to assist owners in making decisions on technology and design by identifying opportunities to improve energy efficiency. ABS' techno-economic modeling simulates newbuild and retrofit technology using regulatory compliance, payback time, net present value, and return on investment as decision criteria.



© Cris Dewitt

In 2013, ABS christened the Singapore Innovation and Research Center, where joint initiatives with the National University of Singapore and the University of Western Australia got under way to develop Rules and standards for jackup performance in rigorous operating conditions. ABS also established a Global Performance Center in Singapore. The Center, inaugurated in April, has been involved in addressing performance and energy efficiency issues, as well as solving operational challenges that occur throughout the life cycle of a vessel or offshore rig.



ABS GROUP HIGHLIGHT

Visualizing Offshore Collision Risk

Planning offshore exploration projects, developers must mitigate the risk of any ship collision. ABS Group created two software tools: the COAST (computer-assisted shipping traffic) database and the COLLIDE analysis program, which calculates collision frequencies and energies. Together, COAST and COLLIDE generate risk studies for offshore and marine operations. In the Sverdrup oilfield in the North Sea, ABS Group completed a study for Norway's Statoil, examining how traffic patterns could affect future fixed installations. COAST and COLLIDE provide expansion opportunities with their multidisciplinary approach to offshore-marine risk management.

APPLIED INNOVATION

Among the challenges being addressed through ABS' joint industry research projects and partnerships with academia is automation.

Researchers are looking into automated equipment development with the goal of reducing the number of people involved in operations so that the risk of injury can be lowered.

Another area of research is robotics, particularly remotely operated vehicles that can be used for inspection and operations, that otherwise would place human lives in potentially dangerous work environments.

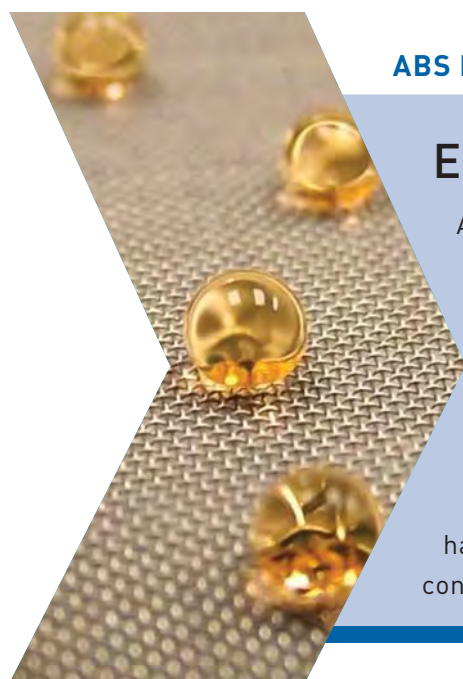
ABS is also investigating coatings through its Coatings Resources Center. This group is not only looking into coatings used on structures in operation and their suitability to different climates, but is also evaluating composites that could potentially replace steel. Another group is trying to find ways to use composites for pipeline and structure repair offshore.



ABS HIGHLIGHT

Embracing Emerging Technologies

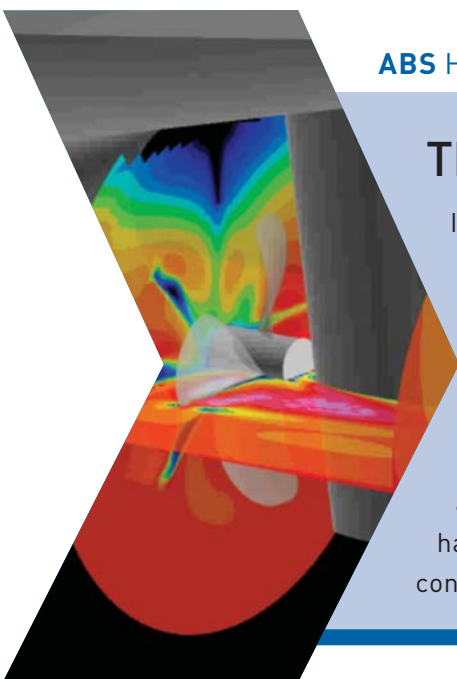
As the marine and offshore industries push into increasingly harsher environments, a major concern is the threat of ice. New technologies will need to be developed to protect assets. One promising solution is the use of nanotechnology to develop icephobic coatings. ABS is at the forefront of this research, developing a testing standard to evaluate icephobic coating performance that includes ice adhesion, abrasion resistance, durability and ultraviolet (UV) resistance. Nanotechnology has the potential to expand the window of harsh environment operations and improve safety, helping industries conquer new frontiers.





NEW SOLUTIONS

While multiple teams of engineers study ways to streamline operations by applying new methodologies of working, other research groups are utilizing established approaches to problem solving and taking them to the next level. One example is the computational fluid dynamics (CFD) projects that are under way. While ABS has had CFD capabilities for years, advancements in solvers and computing power, coupled with analysis demands ranging from eco-hull forms to deepwater risers and offshore wind, have brought this technology to the forefront.



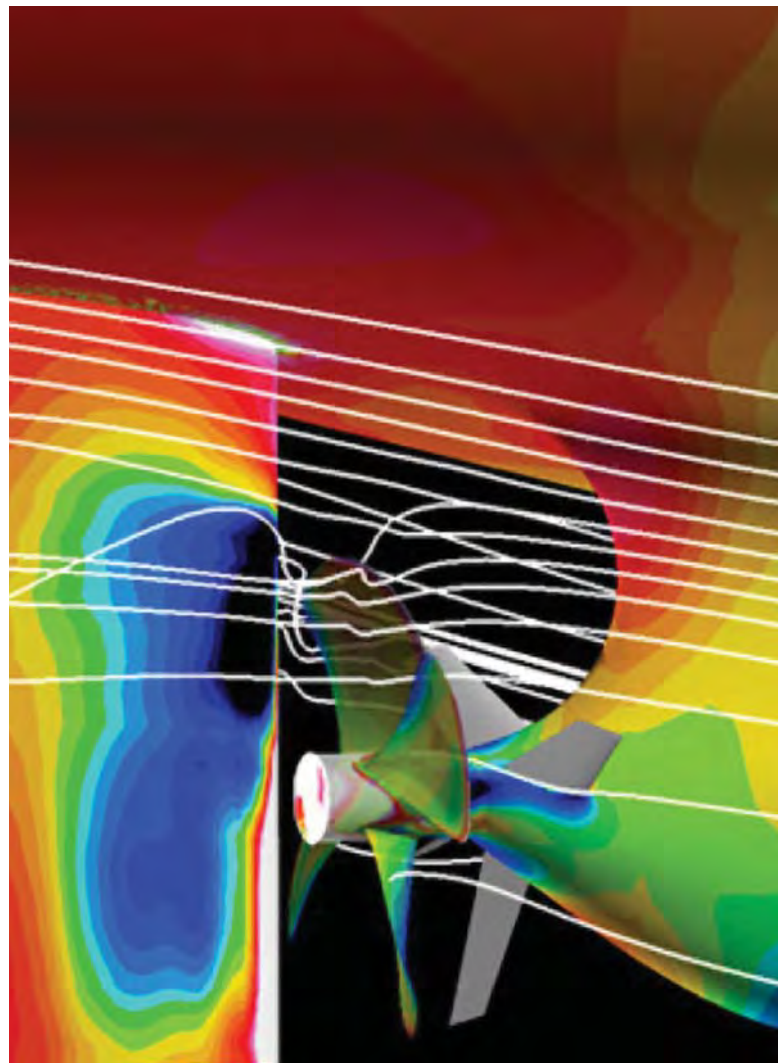
ABS HIGHLIGHT

The Next Generation of CFD

In 2013, ABS announced the launching of an in-depth program to leverage computational fluid dynamics (CFD) as part of its performance optimization services for both the marine and offshore industries.

Led by the newly created position of Chief Scientist for CFD, ABS Technology has been actively growing CFD into a practical engineering tool to aid the creation of classification Rules, analyze energy efficiency measures for new construction and existing assets, and help to establish safety parameters for operations in the world's harshest environments. CFD is making it possible for scientists to simulate conditions and analyze loads.

A move by ABS in 2013 to intensify focus on CFD led to the creation of a Chief Scientist position, that will allow these advances to grow and develop solutions to meet industry demands. The Chief Scientist is the corporate technical authority on CFD applications for marine and offshore, and is overseeing CFD policies and procedures, long-range planning, tools, capabilities and services. This new position will allow ABS to continue to play a vital role in providing cutting-edge technology solutions to support the industry.



ABS HIGHLIGHT

Supporting Efficient & Sound Operations

Maritime operators are seeking ways to lower fuel consumption and improve energy operations. The Energy & Environmental Manager module in NS5 Enterprise is a comprehensive solution that collects operational data, and tracks and records voyage-related events.

Data can be shared from ship-to-shore, giving owners and operators the ability to track safety initiatives, quantify savings and achieve optimization across its fleet. As part of a pilot program, AET Tankers is testing the module on four vessels to address software and configuration issues, and documentation dataflow from onboard entry to onshore performance analysis.

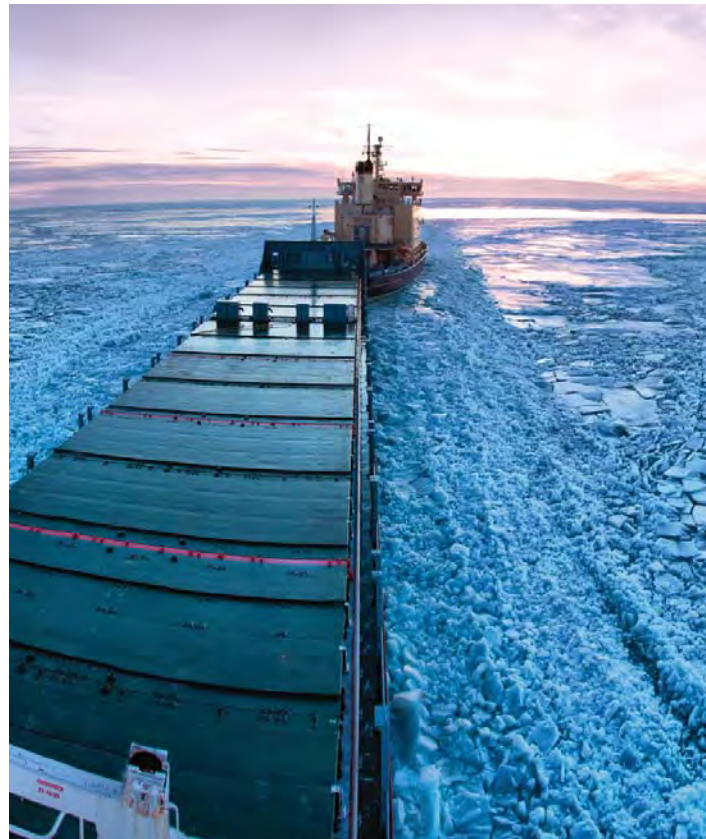
© AET Tankers



Historically, traditional class services took the form of surveys of structures and machinery against published Rules, but the purview of class is expanding. Industry demands more value and service from classification societies, and new approaches that can be employed without interruption of operations. ABS has stepped up to provide enhanced class services that allow for more uptime without sacrificing safety. One example of this is the development of integrated software quality management (ISQM), a tool that minimizes software control system issues as the systems are being developed and provides for system upgrading that does not jeopardize operations. ISQM improves reliability and helps reduce the time and cost of commissioning and implementing critical systems.

ADDRESSING TECHNICAL CHALLENGES

Asset management solutions help to streamline operations and in some applications, allow units to remain safely in service well beyond their designed field life. ABS has focused its efforts on reliability-centered maintenance as a tool for risk management. This approach incorporates failure mode, effects and criticality analyses (FMECAs), risk matrices, maintenance applications and spare parts programs. Another ABS study last year focused on condition monitoring on an Arctic tanker and a trans-Pacific containership. Over a span of several years, 150 strain gauges installed in the bow and stern quarters of the vessels will detect changes in the hull. The real-time data generated from this study is being used to validate Rules for large vessels traversing ice-infested regions, which is likely to escalate as use of the Northern Sea Route increases.



ABS HIGHLIGHT

Advancing Arctic Research

Receding summer ice, IMO regulatory changes, and accelerating interest in Arctic oil, gas and mineral resource exploration are driving the outcomes of ABS' research supporting harsh environments. Engineers in ABS' Technology headquarters, and at the ABS Harsh Environment Technology Center are conducting large scale ice/structure interaction physical testing, ice management simulation, and ice load simulation on structures, all in an effort to advance state-of-the-art Arctic science. ABS is leading efforts in regulation updates and enhancements, and contributing to the development of the IMO Polar Code.





The next step forward will focus on performance management that allows maintenance inspection using the operational data stream from a working asset. Harnessing data and using real-time information to improve performance will deliver huge returns to ABS clients. And future initiatives will take ABS even further down the road to optimal performance – a vital deliverable for owners looking for ways to manage asset integrity. The building blocks ABS has developed will pave the way for the industry to continue to evolve. >



EMBRACING THE SPIRIT OF ABS

The Spirit of ABS is defined by the people of ABS and ABS Group. At the center of every effort is a steadfast commitment to the ABS mission: to protect life, property and the environment.

Employees understand that their work has a long-ranging impact on each of the industries ABS serves. 2013 was a year highlighted by investing in the people of ABS through development initiatives and emphasizing the values that define the organization.

With a keen focus on equipping employees with the skills and tools needed to meet the demands of its members and clients, ABS began several key initiatives. Harnessing the potential of web-based, on-demand training, the new iAchieve program allows individuals to take ownership of their career advancement. By delivering relevant and up-to-date topics in a convenient manner and minimizing the amount of time needed for classroom instruction, the total time to achieve competency can be reduced.



EMPLOYEE DEVELOPMENT

The new learning platform complements two programs led by the ABS Human Resources department. The Performance Navigator system allows ABS to ascertain the skills and goals of employees and align their development with the needs of its members and clients. This better prepares ABS to assist industries with current issues and also prepares it to tackle the challenges of tomorrow.



ABS is also actively identifying and fostering the next generation of leaders. With the new Aspire program, it is seeking to harness the promise and resourcefulness of top engineering students from around the world by placing them in a rotational program that encompasses the core sectors of ABS. The ultimate goal of Aspire is to help participants choose a career path, while developing future leaders for the organization.



ABS HIGHLIGHT

Recognized for Exemplary Safety Focus

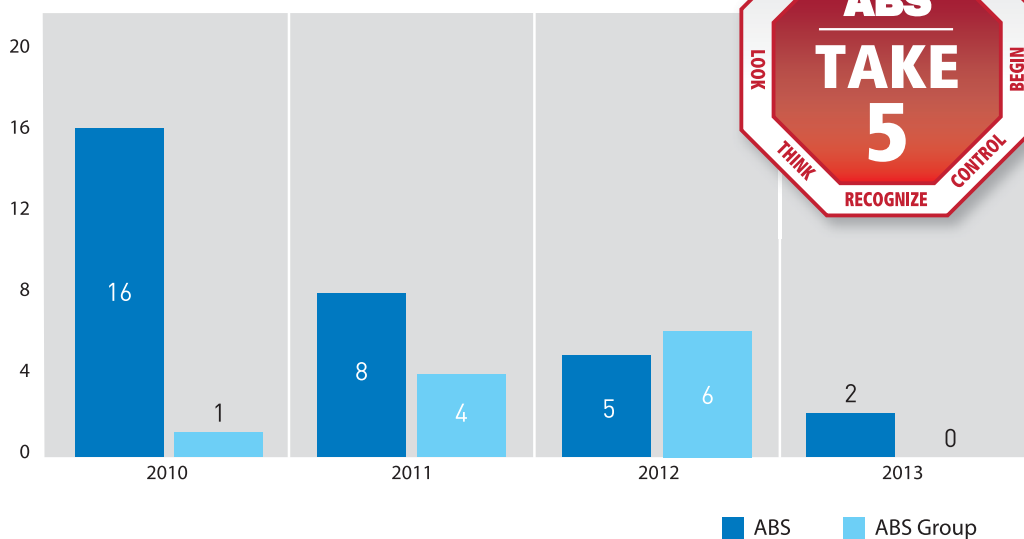
Workplace health and safety are as important to ABS as the safety services it provides to clients. A 2012 independent survey showed ABS' health and safety management system was well established. Still, ABS embarked on an effort to improve its global safety culture, reduce safety-related and lost-time incidents, and enhance reporting and benchmarking processes. This led to the certifying of the ABS health and safety program under the international standard OHSAS 18001. Even with accreditation, however, the ABS overarching goal is not complete until a zero-injury workplace is achieved.



ALWAYS BE SAFE

While ABS has built a reputation as an industry leader in maritime safety, it is equally committed to developing a strong safety culture for its workforce. Through the Always Be Safe initiative, ABS empowers employees with the knowledge, tools and authority to maintain a safe workplace. This is reinforced with efforts such as the annual Health and Safety Day, the Take 5 campaign, and improved processes for obtaining safety equipment for surveyors in the field.

LOST-TIME INCIDENTS (Work-related)



The commitment to safety has delivered results. For the past three years, ABS has reduced lost-time incidents by 50 percent each year. However, zero incidents remains the ultimate goal. In 2013, ABS also achieved certification to OHSAS 18001, the international standard for health and safety management systems. Workplace safety remains paramount at ABS.

COMPLIANCE COUNTS

Integrity is another core value to the ABS mission. ABS has built a solid foundation by serving as an independent and trusted voice to its members, clients and regulators. Continued success is reliant upon maintaining that reputation. 2013 saw the launch of ABS' Compliance Counts program to reinforce its already strong commitment to ethics and integrity. This program included the first annual Global Compliance Day – a company-wide event that provided training opportunities and recognized employees who have gone the extra mile with compliance.



ABS HIGHLIGHT

Strong Commitment to Ethics

ABS upholds its mission by providing independent, impartial, and credible technical solutions to its members and clients. Each employee is responsible for maintaining the integrity of the organization, and building on the trust and loyalty it has cultivated over the years. To this end, ABS launched a worldwide Compliance Day in 2013. Employees participated in group events, training seminars, and discussions on the importance of being committed to the organization's ethics and compliance program. The success of the event capped off the first year of the ABS internal campaign – **Compliance Counts**.



THE PEOPLE OF ABS

Looking to the future, the people of ABS and ABS Group are committed to upholding the values that have defined the organization for more than 151 years: Safety, Innovation, Integrity, Quality, Reliability, Teamwork and People. At ABS, these words are not merely a written charter, but a defining characteristic of every person who comes to work, on land and at sea. ABS is dedicated to making its workplace, and the world its people serve, a safe, sustainable and productive environment. >

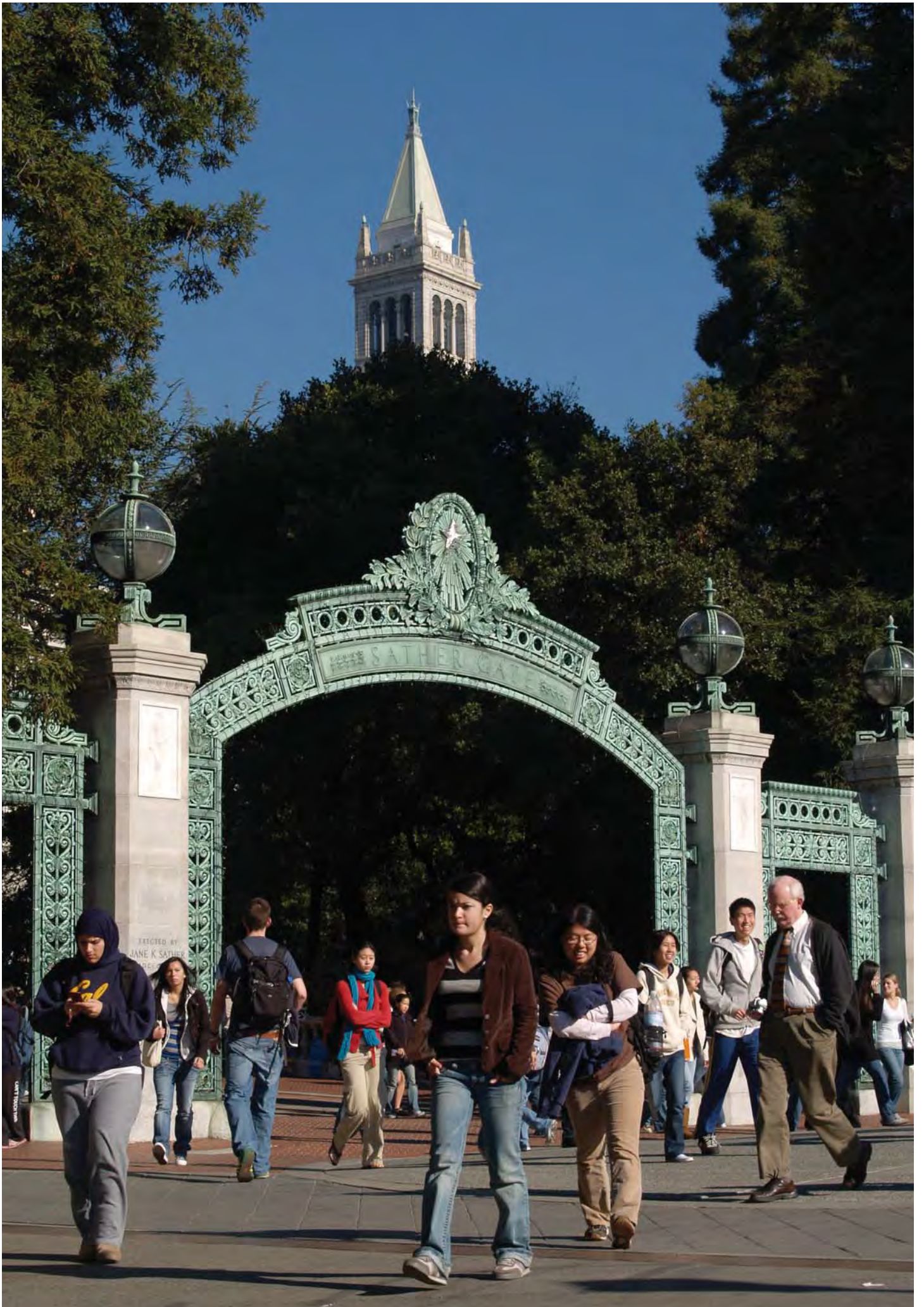


EMPOWERING THE NEXT GENERATION

The value of education cannot be understated. Through philanthropic giving, ABS supports academic institutions around the world to develop the next generation of marine and offshore professionals.

The maritime industry is rapidly changing and the challenges continue to grow. From sustaining commercial viability in an uncertain economy to answering environmental challenges, the industry needs innovative leaders to rise to the occasion. ABS is engaged in the development of skilled engineers and surveyors who will contribute to the safe and responsible advancements that drive industry and protect the environment.

2013 saw ABS' commitment to funding education programs continue with new and existing support of chair endowments, infrastructure campaigns and student scholarships. By enhancing prestigious universities through the ABS Scholarship and Education Funding Program, the world will benefit from the lasting contributions made to the marine and offshore industries.



SUPPORTING RESEARCH, SHARING KNOWLEDGE

The key to developing the next generation of leaders begins by identifying and supporting the best academic instructors in their respective fields. In 2013, ABS placed a significant focus on endowing professorships and academic chairs around the world.

The ABS Chair in Naval Engineering at the Massachusetts Institute of Technology (MIT) was established to support research in naval ship performance and the systems integration of large oceangoing vessels. This endowment furthers a long-standing relationship between MIT and ABS. A similar effort at the University of Michigan endows a faculty chair in the College of Engineering's Naval Architecture and Marine Engineering department, sparking research efforts in the critical areas of marine and offshore asset performance.

ABS partnered with the Maritime and Port Authority of Singapore (MPA) to fund the ABS-MPA Maritime Technology Professorship program at the Singapore University of Technology and Design (SUTD). This will endow the ABS-MPA Maritime Technology Chaired Professor, as well as several additional professorships created to lead efforts in maritime education, research and development.



© SUTD

ABS HIGHLIGHT

Supporting the Next Generation

ABS contributes significant resources to support faculty chairs, professorships, and educational infrastructure at universities around the world. In 2013, ABS partnered with the Maritime and Port Authority of Singapore (MPA) and the Singapore University of Technology and Design (SUTD) to launch a program aimed at developing future engineers. The ABS-MPA Maritime Technology Professorship program initiates marine and offshore-related R&D activities, as well as funding the ABS-MPA Maritime Technology Chaired Professor. ABS is dedicated to educating the next generation of marine and offshore leaders.



© University of Michigan

In other programs, at the University of California, Berkeley, the ABS Endowed Chair in Ocean Engineering continues to take a leading role in energy and environmental issues. At the State University of New York-Maritime College, the ABS Chair of Naval Architecture and Marine Engineering and the ABS Chair of Marine Transportation support research efforts on key shipping topics. The Webb Institute, a leader in undergraduate naval architecture and marine engineering education, continues to receive support through the ABS Chair in Naval Architecture and Marine Engineering.

ABS has made it part of its fabric to contribute towards endowments for the recruitment and retention of leading scholars and researchers in engineering and naval architecture. Through this global effort, it is helping foster a vibrant academic community that both teaches the next generation of leaders and supports cutting-edge research.

DEVELOPING WORLD CLASS FACILITIES

To harness the full potential of students, academic institutions require world-class facilities and technologies. Recognizing the need to help create a truly modern learning experience, ABS supports several long-term capital projects. Last year saw the completion of the ABS School of Maritime Management and Policy, a center of excellence in issues of international business and management, global maritime policy, and social responsibility, at the California Maritime Academy.

The program also saw the completion of a bridge simulator at the Urban Assembly New York Harbor School, a college-preparatory program that focuses on educating students through maritime skills and environmental stewardship.

2013 also realized the initiation of a multi-year grant to the Stevens Institute of Technology for the construction of the ABS Civil, Mechanical and Naval Engineering Laboratory Complex. When the new facility opens, it is expected to serve some 800 students annually in the areas of robotics, underwater systems, land and water-based vehicles, and ocean and weather sensors.



© Stevens Institute

Each of these efforts joins similar commitments for facility development at the Maine Maritime Academy and the Massachusetts Maritime Academy. ABS has also provided continued funding for Master's level courses at the Cass Business School Costas Grammenos International Centre for Shipping, Trade, and Finance.

PROVIDING EDUCATION SUPPORT

The third pillar of the ABS Scholarship and Educational Funding Program is the direct support of individual learning. In 2013, students at more than 70 institutions around the world received funding from ABS to help defray education costs. ABS invited a number of scholarship recipients to participate in internships and apply for the new Aspire program. Aspire is an on-the-job training rotation covering survey, engineering and technology for high-achieving, newly graduated engineers. These educational opportunities allow for students to gain real-world experience and develop skills to better inform their continued pursuit of professional success. The end result is a well-rounded, highly educated engineer or naval architect ready for a bright future in the marine and offshore industry. >

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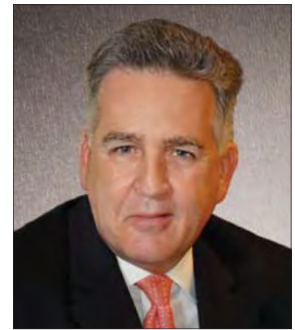
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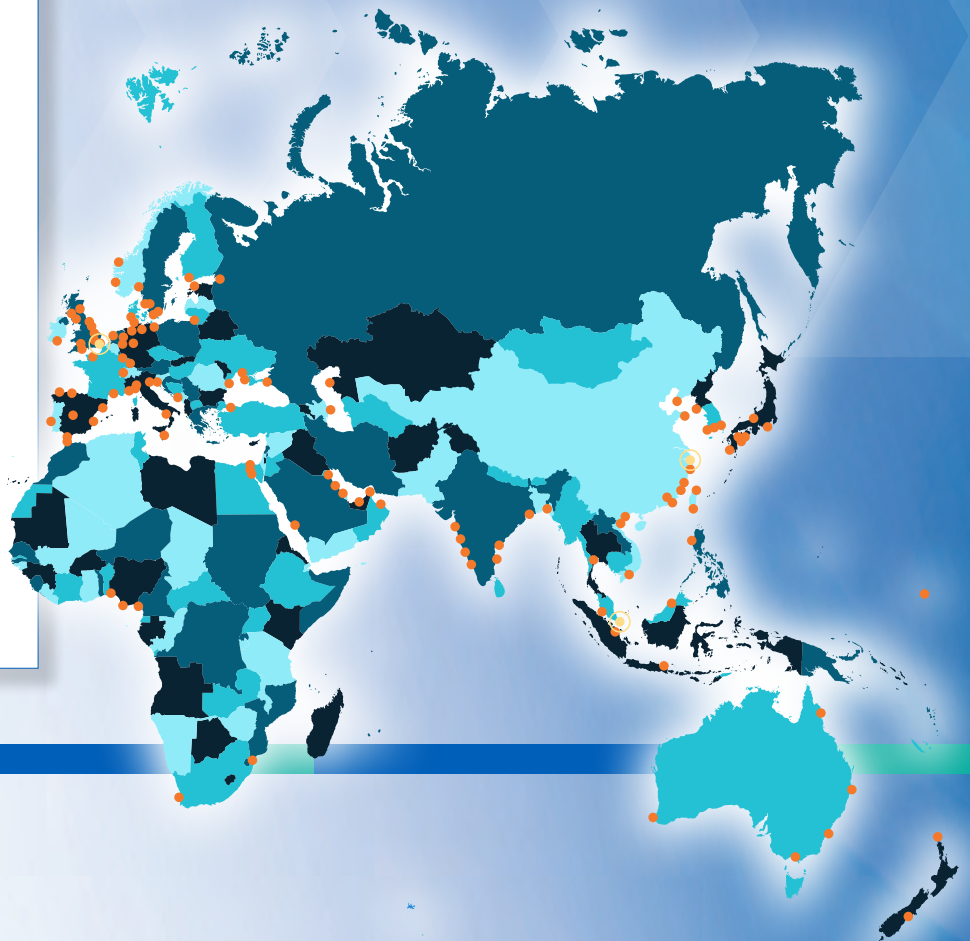
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