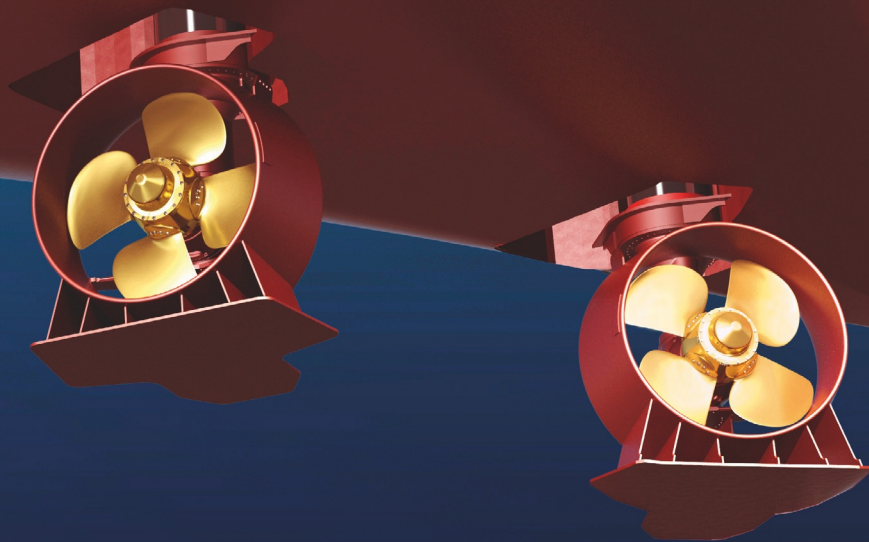


OFFSHORE



Trusted world wide
for reliability and
high performance
in any offshore application



OFFS

Brunvoll – trusted offshore in

Experience and expertise you can count



HOORE

any application – for 40 years

on in search of your competitive edge



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SYST

Quality components seamlessly

Interface to
other ship
systems



integrated in single-source Systems

Advanced ships

- hostile environments
- vulnerable ecosystems
- higher risks

The need for operational reliability has never been greater

Highly sophisticated offshore vessels involving colossal investment are challenging the frontiers of oil and gas exploration in ever deeper water and extreme climatic conditions. Safety and environmental issues are critical.

Quality solutions and systems – a reputation for reliability

We design our thruster solutions to generous specifications that ensure high endurance and maximum component life. When so much is at stake, trusted Brunvoll technology provides peace of mind for dependable manoeuvring.

Complete thruster systems from a single-source supplier

Brunvoll offers a consistent range from 100 kW to 3,500 kW – including tunnel thrusters, LowNoise thrusters, retractable azimuth thrusters, combined retractable azimuth/tunnel thrusters and rim-driven thrusters (RDTs).

Brunvoll provides fully integrated thruster solutions complete with drive, control, alarm and monitoring systems, electronic cabinets, and hydraulic power units.

BruCon from Bridge to Blade

BruCon is Brunvoll's modular control, monitoring and alarm system for manoeuvring, positioning and propulsion – enabling:

- Precise control of manoeuvring, positioning and propulsion
- Optimized performance
- Reduced wear
- Smarter preventive maintenance
- Reliable service
- Access to Brunvoll support 24/7

THRU

One consistent high-quality Brunvoll

Tunnel

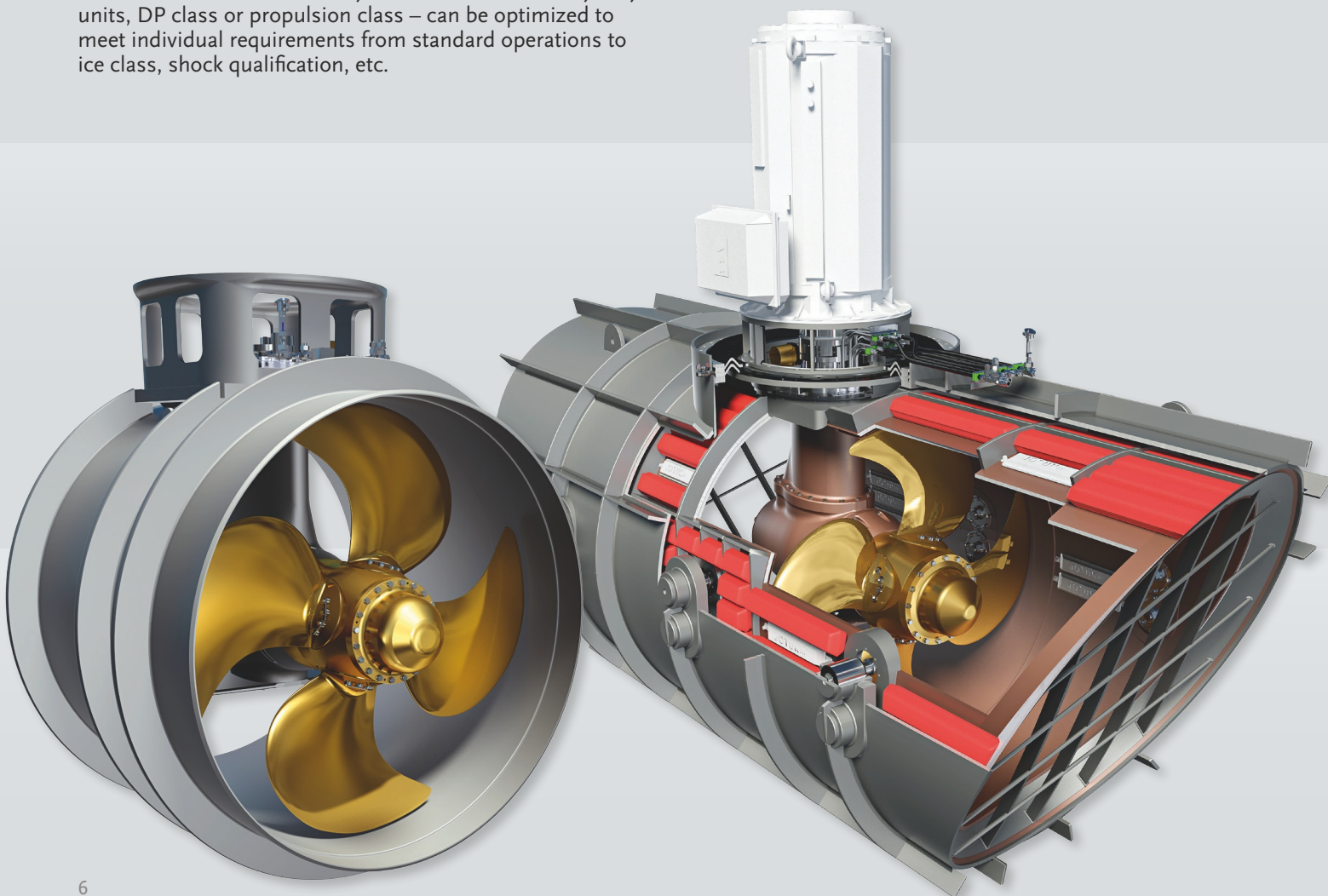
Tunnel thrusters from 100 to 3,500 kW

Brunvoll tunnel thrusters have been a success throughout the maritime sector. In the extreme challenges presented by the offshore oil and gas sector, they have proved their reliability with 1000s of operating hours each year in dynamic positioning. Our thrusters have undergone constant refinement since the first unit was delivered in 1965, and are now state of the art in the market. Each thruster system – whether auxiliary duty units, DP class or propulsion class – can be optimized to meet individual requirements from standard operations to ice class, shock qualification, etc.

Tunnel LowNoise

Brunvoll – masters in LowNoise thrusters

Brunvoll's LowNoise solutions cut noise levels by up to 15 dB(A) compared with conventional tunnel thrusters, making life easier and reducing crew fatigue when thrusters run continuously. A contented crew means improved performance, safety, loyalty and staff retention. Brunvoll has been delivering LowNoise thrusters to the offshore sector since 1984.

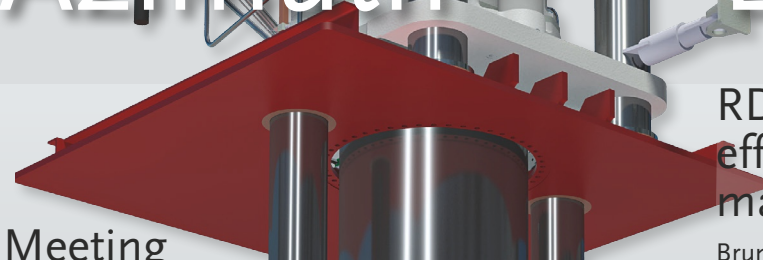


STARRS

range – rewarding in the long run

Retractable
Azimuth

Rim
Driven

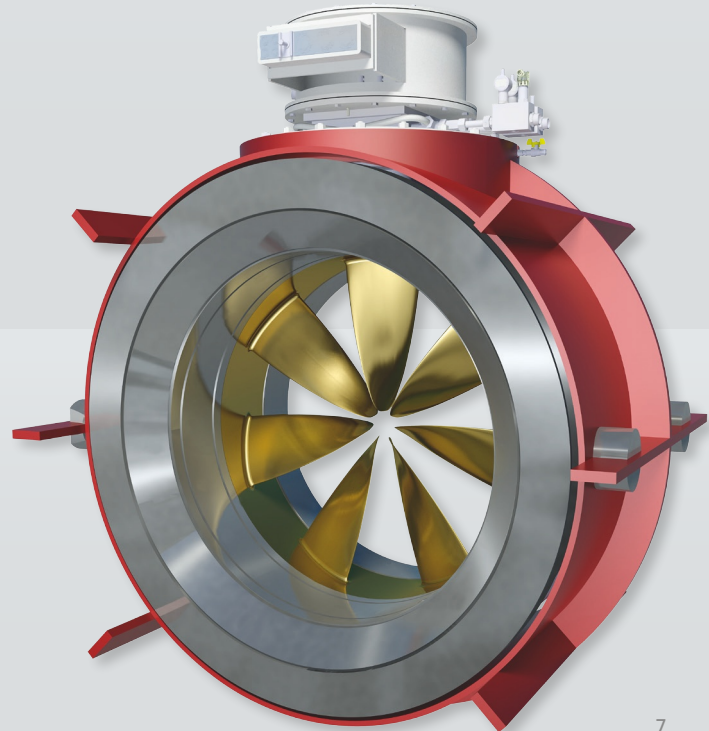
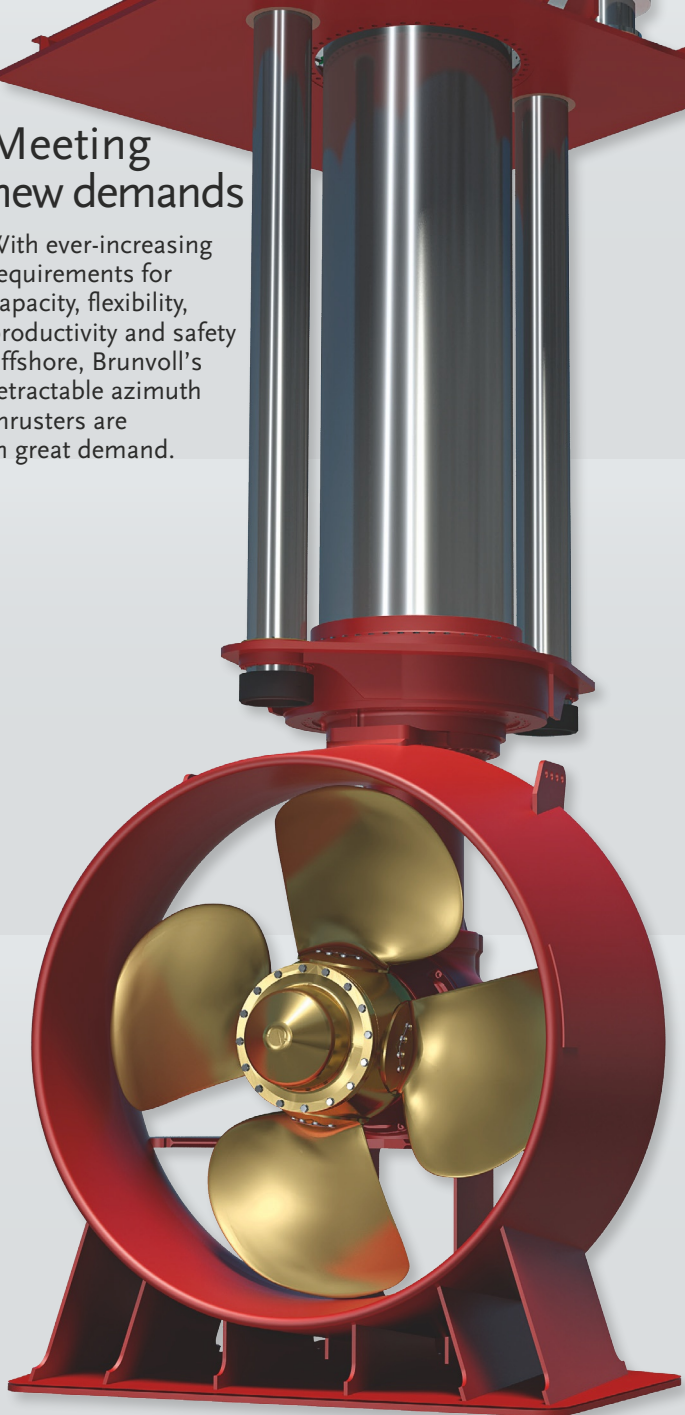


Meeting new demands

With ever-increasing requirements for capacity, flexibility, productivity and safety offshore, Brunvoll's retractable azimuth thrusters are in great demand.

RDT is a new and more efficient concept combining manoeuvring and propulsion

Brunvoll installed the first large RDT for an offshore vessel in 2007. Now these thrusters have run for thousands of hours in demanding North Sea operation. The RDT offers greater propeller efficiency, more payload space, and exceptionally low levels of noise and vibration.



Brunvoll expertise and experience from hund

Why does Brunvoll have such a strong position in the heavy-duty offshore service vessels market?

Brunvoll consistency

We do not outsource jobs: we take the full responsibility ourselves. Brunvoll has built up a unique portfolio of practical knowledge and experience of thrusters for offshore applications. It takes generations to create an organization where the whole staff knows so much about the product.

In-house quality and efficiency

We keep our business in-house so we can invest all our resources in developing and manufacturing top-quality thruster systems. We can make continuous improvements in our products and processes based on feedback from our customers.

Our flexibility cuts delivery time. If we don't have a part in stock, we can machine it ourselves. We take full responsibility for quality control to make sure you can rely on every product that bears Brunvoll's name. We have direct supervision over every process. We are free to make the technological decisions that keep us in the forefront of our field. Highly automated in-house production saves time and costs.

Reliability and trust

Our reputation for quality is based on a vast storehouse of in-house expertise in hydraulics, hydrodynamics, electronics and production – as well as continual improvement of our solutions.

Extensive expertise

We have a highly professional, loyal and close-knit staff focused on making the best thrusters in the business. Sales staff are tightly integrated with engineering teams. Our portfolio of in-house knowledge and experience is a unique asset for Brunvoll.

Multidisciplinary

Over the generations, we have developed a vast storehouse of expertise in hydraulics, hydrodynamics, mechanical and electrical engineering, and production – a complete technological environment dedicated to thruster systems.

Not generalists but specialists – at Brunvoll, all our skills match our mission:

Making top-quality thruster systems. With our insight into propeller design and performance as well as the interaction between thrusters, we can provide optimized solutions with better thrust, lower energy consumption, more economical installation and improved lifetime performance compared with “one-size-fits-all” designs. Brunvoll systems can be tailored to specific propulsion and manoeuvring requirements for optimal performance and efficiency.

reds of heavy duty installations at your disposal

In-depth expertise for any offshore application area

Brunvoll is a trusted supplier of retractable azimuth thrusters and tunnel thrusters for shuttle tankers, as well as thrusters for vessels for diving support, seismic, supply and standby functions.

Draw on Brunvoll's extensive expertise, experience, and continuity – since the dawn of the offshore era.

Based on its years of experience, Brunvoll has made continual improvements to its thruster designs to lengthen the life of the components, reduce life cycle costs and increase safety at sea.

Brunvoll is a part of an offshore innovation cluster

From the early 1970s, the offshore oil industry has developed on the Norwegian continental shelf, facing the west coast of Norway. Today, this cluster is the most technically advanced in the global oil industry. The collaboration between ship owners, ship consultants, shipyards, ship equipment manufacturers and other parties here is unique.

This knowledge community is constantly generating new questions, ideas, and challenges.

It's a priceless resource for Brunvoll.

Experience

Our commitment to thruster development and production over the decades has won Brunvoll a reputation for trouble-free operation, low life-cycle costs and long-term profitability. Brunvoll has been in business since 1912. Since then, the world has seen the most exciting technological development in history.

With Brunvoll innovations such as improved sealing technology, new-generation LowNoise thrusters, and rim-driven thrusters (RDT), we are proud to have been a part of this progress.

Brunvoll has a reputation for low life cycle cost

The demanding offshore market insists on superb thruster quality, in the knowledge that it will pay for itself in lower installation and life-cycle costs.

Trusted for first-class service

Brunvoll's highly trained service technicians with multidisciplinary experience in all aspects of thrusters provide cost-effective help.

Spare parts

Brunvoll's lifetime commitment to our thrusters includes skilled and responsive after-sales service all over the world. We keep large stocks of spare parts, even for our oldest thruster models.

In case of emergency and repair

When every minute counts, it's reassuring to know that you can count on Brunvoll's service teams – knowledgeable and available.

Extensive expertise in upgrades

Brunvoll has been chosen to supply thrusters for exciting upgrades that add advanced capabilities to existing vessels for more challenging offshore operations.

A turbulent world brings new opportunities.

Various vessels are being converted to multipurpose vessels to make the most of high-investment assets.

Brunvoll has the specialized expertise and experience that help to turn inspired ideas into practical solutions.

4 decades of experience in hundreds of Off

While performing highly complex operations close to rigs in heavy seas, Platform Supply Vessels and Anchor Handling Tug Supply Vessels must be able to hold precise positions. In these extreme operating conditions, there is no margin for error.



2006 "Bourbon Mistral" PSV



2007 "Volstad Viking" PSV



2006 "SBS Tempest" PSV
2013 Design: "Salt 100 PSV"



2003 "Skandi Giant" AHTS



2006 "E.R. Arendal" (ex "Aeolus") PSV



AHTS

shore Service Vessels – the toughest workhorses

Crew safety and vessel performance are critical factors.
The manoeuvrability provided by Brunvoll thrusters is vital.
That's why Brunvoll has delivered thruster systems to most of
the world's leading shipping companies in the offshore sector.



2002 "Suvarna" AHTS



2009 "Troms Castor" PSV



2007 "Normand Ferking" AHTS



2009 "Campos Contender" AHTS



2010 "Saeborg" PSV

Maersk with Brunvoll for their T-series of 10 AHTS

Maersk Supply Service operates in all the world's major deepwater regions. "Maersk Trader" is one in a series of 10 vessels from Vard in Norway to Maersk Supply Service.

2008 "Maersk Trader"

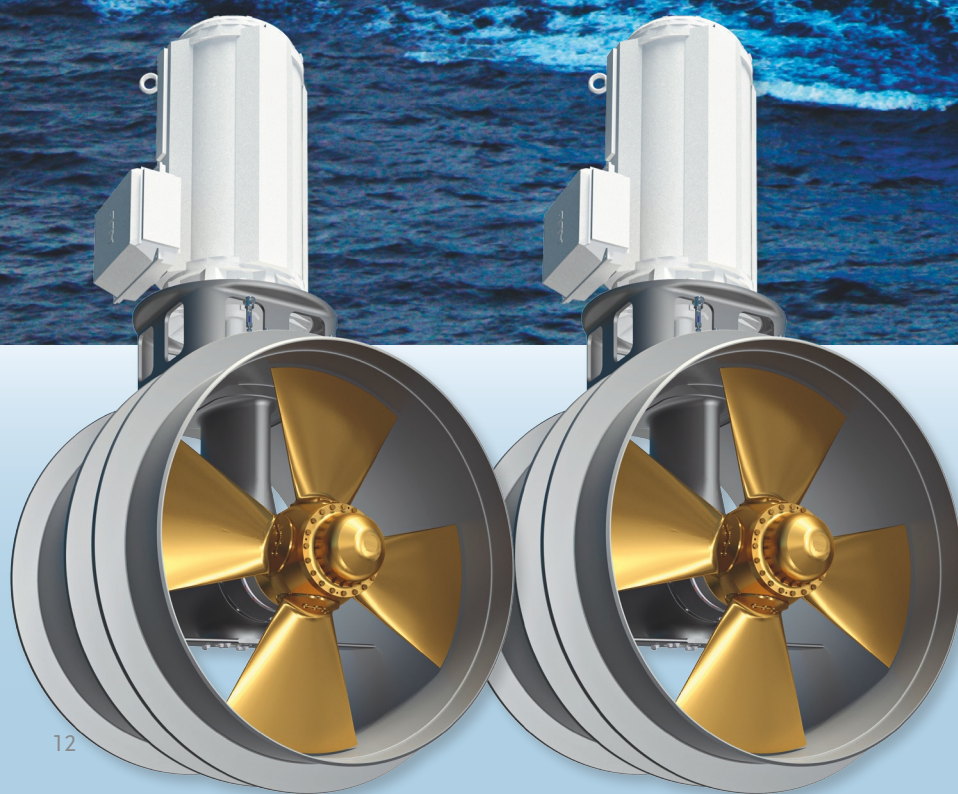
Owner: Maersk Supply

Design: VS 472

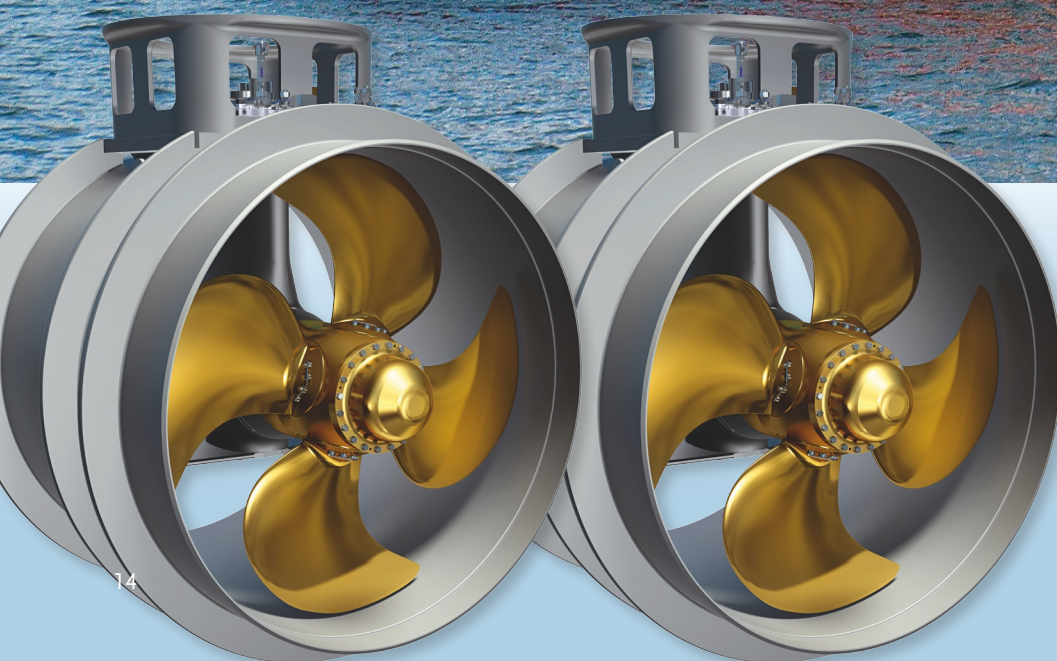
Yard: Vard Langsten

Bow: 2 x LowNoise Tunnel Thrusters FU80 LRC 2250 880 kW

Stern: 2 x Tunnel Thrusters FU63 LTC 1550 500 kW







12 Siem Offshore vessels from Kleven Maritime with Brunvoll Thruster Systems

Siem Offshore Inc. owns and operates a fleet that includes large AHTS vessels, PSVs, and other support vessels.

2009 "Siem Emerald"

Owner: Siem Offshore

Design: VS 491 CD

Yard: Kleven Verft

Bow: 2 x Tunnel Thrusters FU80 LTC 2250 1,000 kW

Bow: 1 x Retractable Azimuth Thruster AR63 LNC 1650 830 kW

Stern: 2 x Tunnel Thrusters FU74 LTC 2000 880 kW



Swire Pacific Offshore with Brunvoll thrusters in more than 35 vessels

Swire Pacific Offshore is a Brunvoll customer for different kinds of vessels. Brunvoll thrusters were chosen for all of SPO's offshore service vessels being built in Singapore, Japan and Brazil.

2012 "Pacific Defiance"

Owner: Swire Pacific Offshore

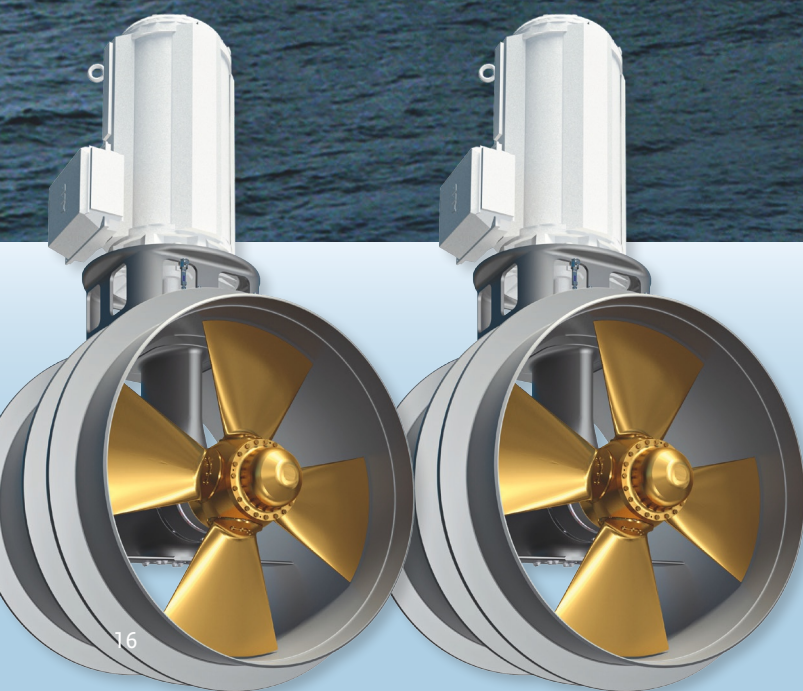
Yard: Drydocks World and ST Marine Shipyard

Design: Havyard 844 XL

Bow: 2 x Tunnel Thrusters FU80 LTC 2000 880 kW

Bow: 1 x Retractable Azimuth Thruster AR63 LNC 1650 880 kW

Stern: 2 x Tunnel Thrusters FU80 LTC 2000 880 kW





“Stril Orion” with Vard design

Simon Møkster Shipping AS has offshore support vessels designed for operations in harsh weather conditions. The fleet includes vessels for platform supply, anchor handling, emergency services and subsea operations. Simon Møkster Shipping has been a Brunvoll customer for three decades.



2011 “Stril Orion”

Design: Vard PSV 09 L CD design

Yard: Vard Søviknes

Bow: 2 x LowNoise Tunnel Thrusters FU80 LRC 2250 1,170 kW

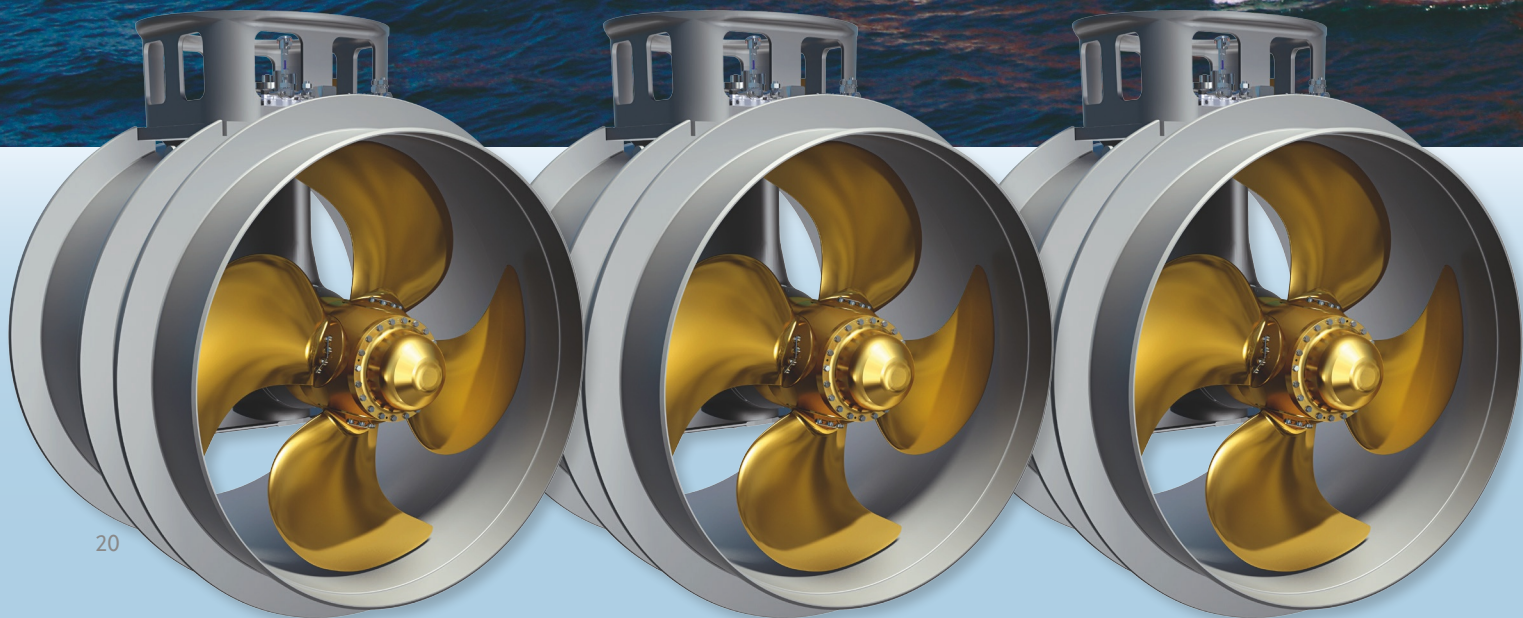
Bow: 1 x Retractable Azimuth Thruster AR63 LNC 1650 880 kW





5 Farstad PSVs with Brunvoll Thruster Systems

Brunvoll thrusters were chosen for five Vard PSV 08 CD vessels with delivery to the major operator Farstad Shipping from 2012. The newly developed PSV 08 CD has a deck area of about 800 m².





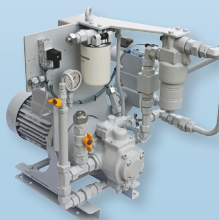
2012 "Far Scotsman" – 2012 "Far Skimmer" – 2013 "Far Sitella" – 2013 "Far Spica" – 2013 "Far Starling"

Owner: Farstad Shipping

Design: Vard PSV 08 CD

Yard: Vard Langsten and Vard Vung Tau

Bow: 3 x Tunnel Thrusters FU74 LTC 2000 800 kW



“Vikings” put thrusters to the test in icy waters



2000 “Tor Viking II”

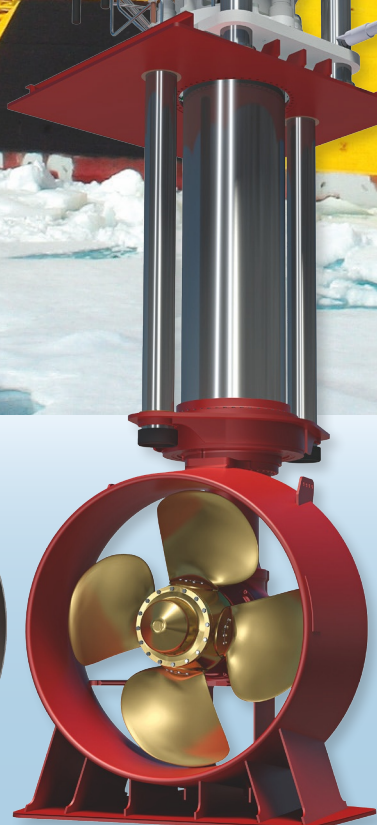
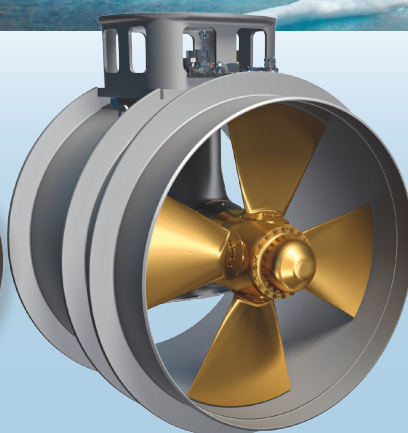
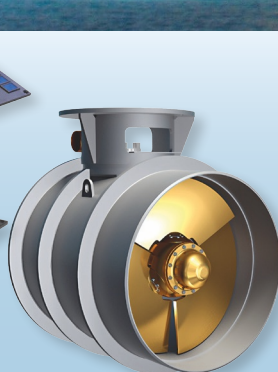


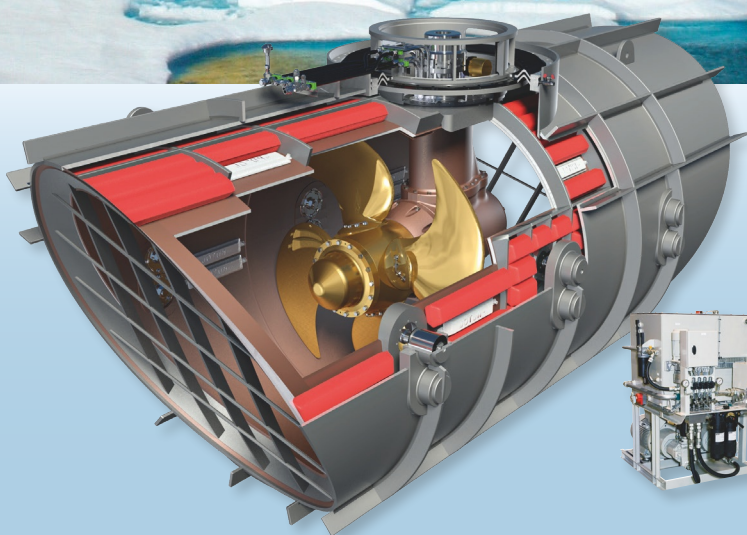
1999 “Balder Viking”

2000 “Tor Viking II” AHTS / Icebreaker
2000 “Balder Viking” AHTS / Icebreaker
2001 “Vidar Viking” AHTS / Icebreaker

Offshore and icebreaking are core segments for Viking Supply Ships AS. These 3 ships were built as combined icebreakers and Anchor Handling Tug Supply vessels. In winter they operate as icebreakers and for the rest of the year as AHTS.

Each of the 3 ships has been upgraded with a LowNoise tunnel thruster in the bow to increase crew comfort.





2001 "Vidar Viking"
 Yard: Havyard Leirvik
 Design: KMAR 808
 Bow: LowNoise FU80 LRC 2000 880 kW
 Retractable Azimuth Thruster AR63 LNC 1650 880 kW
 Heeling Compensation Pump FU37 LTC 1000 230 kW
 Stern: FU63 LTC 1750 880 kW



Brunvoll with a strong position in the US market ...

Seacor Marine's fleet of offshore marine support vessels operate in many countries. Brunvoll has delivered some 30 Thruster Systems to Seacor Marine.



2000/2010 "Seacor Rigorous" AHTS

Seacor Marine with

Tidewater with some

Tidewater provides marine support services for the global offshore industry. Brunvoll has delivered some 100 Thruster Systems to several series of Tidewater vessels.



2009 "Tommy Sheridan Tide"

2008 "Sea Kiowa"

GulfMark Offshore Inc. owns, operates and manages a fleet of offshore support vessels including Platform Supply, Anchor Handling Towing Supply, Fast Supply/Crewboats and Specialty Vessels. Brunvoll has delivered thruster systems for many of these ships.

GulfMark Offshore runs



30 Brunvoll Thrusters



1998/2011 "Seacor Vanguard" AHTS

100 Brunvoll Thrusters



2005 "J Hugh Roff Jr." AHTS



2006 "du Moulin Tide"
2007 "Sea Cheyenne"

some 50 Brunvoll Thrusters



Brunvoll with a strong position in the US market ...



2000 "HOS Cornerstone" 240 Class Offshore Supply Vessel

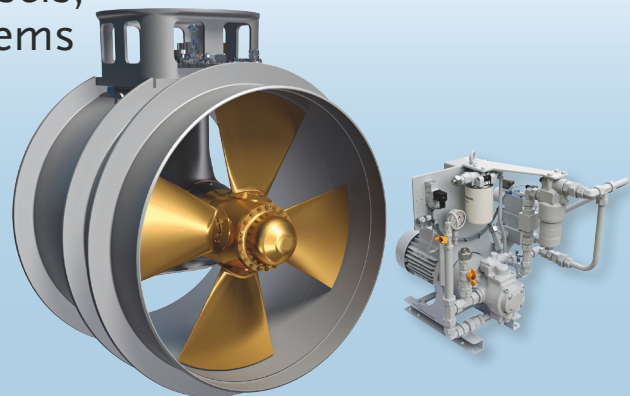


HOS with 10 x VTHM Super 320 Class vessels, each equipped with Brunvoll Thruster systems

Yard: VT Halter Marine

Bow: 2 x FU80 LTC 2000 970 kW

Stern: 1 x FU80 LTC 2000 970 kW



Hornbeck with some 120 Brunvoll thrusters

Hornbeck Offshore Services, Inc. provides marine transportation services to exploration and production, oilfield service and offshore construction. Its technologically advanced supply vessels primarily serve the offshore industry.

2008 "HOS Mystique"

Yard: Leevac Industries LLC

Bow: 1 x Tunnel Thruster FU63 ZTC 1550 709 kW

1 x Tunnel Thruster FU63 LTC 1550 709 kW

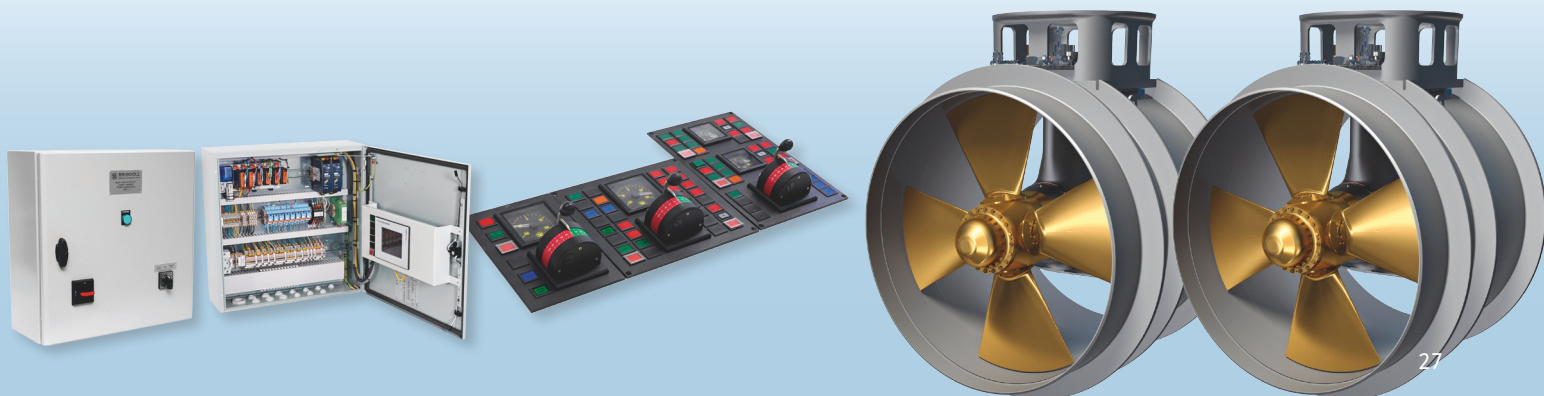
Stern: 1 x Tunnel Thruster FU63 LTC 1550 709 kW



2009 "HOS Black Powder" 250 EDF Offshore Supply Vessel



2001 "HOS Innovator" 240E Class "New Breed" OSV/ROV Support



Brunvoll's new Rim-Driven Thrusters have been running smoothly for thousands of hours in demanding North Sea operations

The first large Rim-Driven Thruster (RDT) was installed in "Edda Fram" in 2007. Brunvoll developed, engineered and produced this innovative RDT 1750. It was installed with resilient mounting to supplement the two existing LowNoise tunnel thrusters on the pioneering PSV "Edda Fram" owned by Østensjø Rederi and designed by Skipsteknisk AS.

All the thrusters functioned smoothly. Østensjø installed an RDT on the sister vessel, "Edda Frende", in 2009, and has now ordered a new RDT for a third newbuilding.



2007 "Edda Fram"

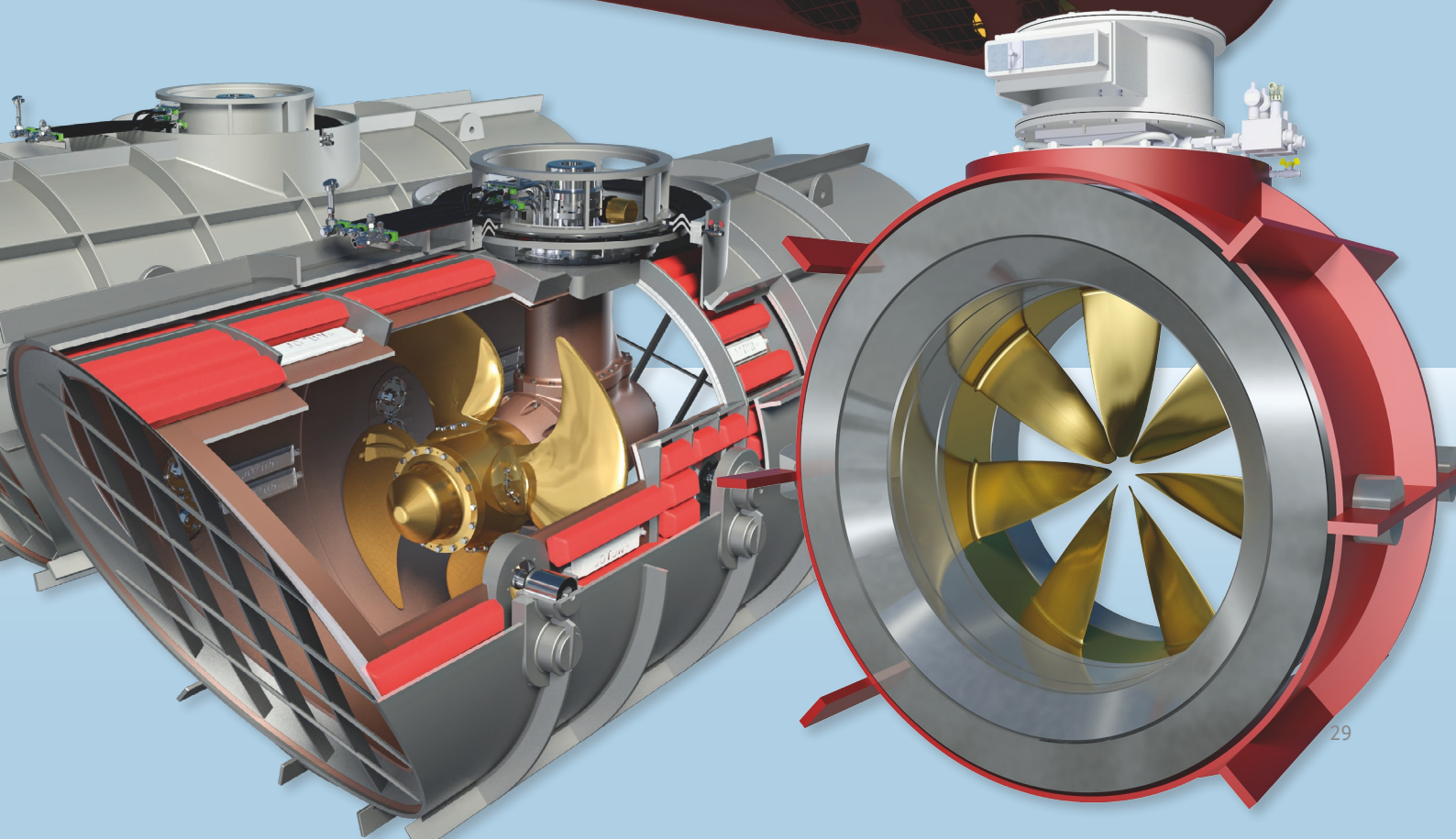


2009 "Edda Frende"



Bow: 2 x LowNoise Tunnel Thrusters FU80 LRC 2250 1,200 kW
1 x Rim-Driven Thruster RDT 1750 800 kW





- Accommodation Vessels
- Cable Layers
- Construction Vessels
- Diving Support Vessels
- Heavy Lift Vessels
- Installation Vessels
- Well Intervention Vessels
- Wind farm installation Vessels

Brunvoll – a pioneer and a leader – trusted in demanding Offshore

The world of offshore work changed forever with the development of dynamic positioning (DP) systems to control a vessel's position automatically with the help of thrusters.

Brunvoll delivered the first thrusters for DP Operation in 1974. Ships could now work in any water depth, respond rapidly to weather conditions, complete short tasks more quickly, and avoid the risk of damaging seabed hardware. At Brunvoll, we are proud to have been a part of this progress from the start. With DP operating 24/7 in some of the world's most challenging



1985 “Seven Pelican” – thrusters still going strong

In an extraordinary test of endurance, the 4 Brunvoll tunnel thrusters on board the vessel “Seven Pelican” have accumulated more than 25 years of operation. In 2010, a full inspection of the 3 LowNoise bow thrusters and the stern thruster showed they are still going strong and still satisfy the stringent noise reduction requirements.

in offshore thruster technology Service Vessels for 40 years

environments, offshore service vessels demand the ultimate in robust and reliable thruster technology. A thruster failure could put the safety of the crew and the vessel at risk. A day of downtime may cost hundreds of thousands of dollars. State-of-the-art offshore ships demand highly skilled and alert crews. LowNoise thrusters are vital to performance and recruitment. Rapid and precise service is crucial when every second counts. No wonder Brunvoll's 40 years of experience and expertise are highly appreciated in the challenging offshore sector.



1984 “Alliance” – probably
the longest running thrusters in the business
– in the sea for close to 30 years

Built as “Wilchief”, this ship was a pioneer in diving support – and is still in service.

Yard: Trosvik Verksted

Bow: 3 x Brunvoll LowNoise SPR VP 1000

Stern: 1 x Brunvoll SPR VP 1000



2008 "Gavea"



2011 "Deepstim Brasil I"



2003 "Dino Chouest"



2009 "BJ Blue Dolphin"



2008 "C-Fighter"

2012 "Aiviq"
 Yard: ECO's North American Shipbuilding,
 Bow: 2 x FU100 LTA 2450 1,500 kW
 Stern: 2 x FU80 LTA 2000 1,050 kW
 Heeling Compensation Pumps:
 2 x FU37 LTC 1000 230 kW

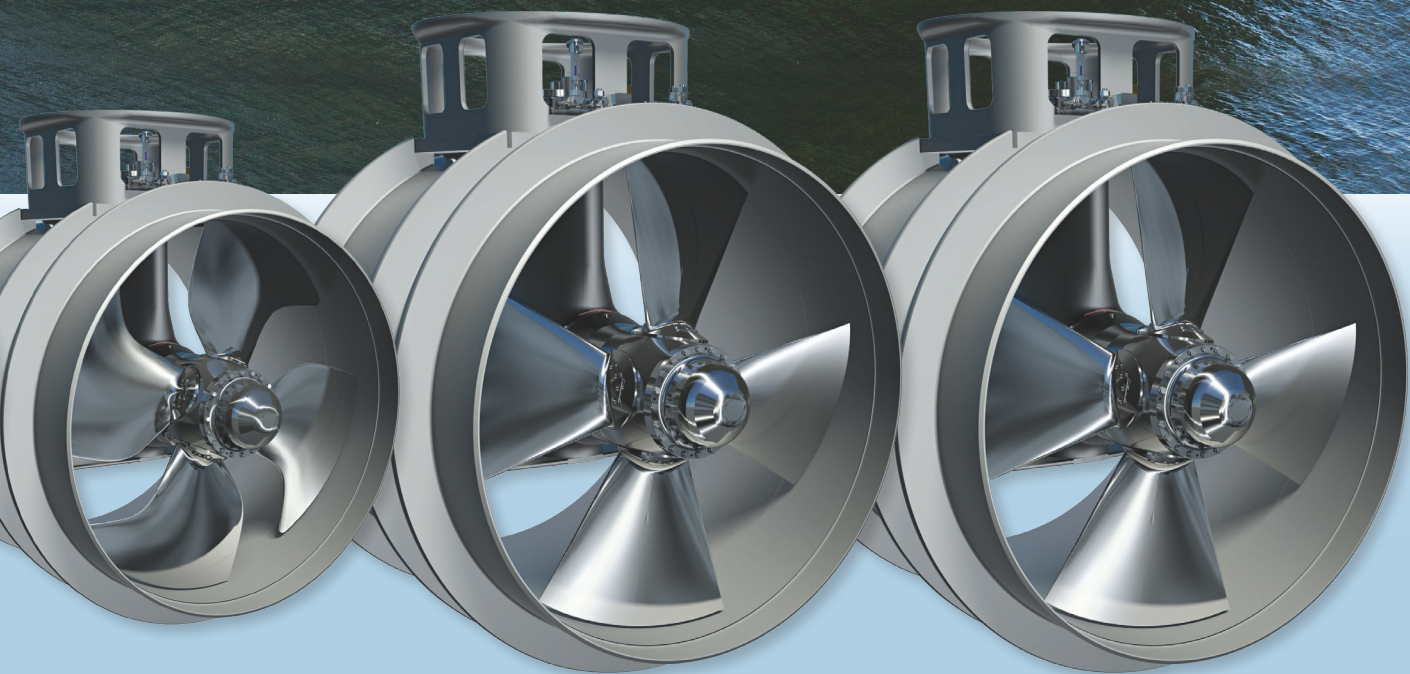
Chouest has some 300 Brunvoll thrusters

Edison Chouest Offshore (ECO) owns and operates a fleet of new-generation offshore service vessels working in the U.S. Gulf and Brazilian market, as well as a large independently owned fleet of research vessels.

2012 "Aiviq" – This combined AHTS and icebreaker is designed for ultra-harsh weather conditions. She can cut through at least a meter of ice at a speed of 5 knots. Anchor laying for drilling rigs is the vessel's primary purpose, but "Aiviq" is also equipped to handle oil spill clean-up.



Brunvoll with a
strong position in
the US market ...



20 April 2010 “Boa Sub C” received a distress call from the “Deepwater Horizon” rig in the Gulf of Mexico

The construction vessel was diverted to assist the rig using her two deepwater ROVs. Under the command of the US Coast Guard, the crew worked tirelessly to support the containment effort. 9 July 2010: “Boa Deep C” joined the rescue operation and played a key role in the successful capping of the well on 16 July. The two construction vessels with Class 3 dynamic positioning are designed for

ultra-deepwater operations with a large operational window. Robust enough to handle rough weather conditions around the world, the vessels have excellent position-keeping performance. The first-class equipment on board each vessel includes five thrusters from Brunvoll.



2003 “BOA Deep C”

2007 “BOA Sub C”

Owner: Boa Group

Design: VS 4201 OCV

Yard: Factorias Vulcano

Bow: 1 x Retractable Azimuth Thruster AR100 LNC 2600 2,150 kW

1 x Combined Retractable Azimuth/Tunnel Thruster AR100 LTC 2600 2,150 kW

1 x LowNoise Tunnel Thruster FU100 LRC 2750 1,425 kW

Stern: 2 x Tunnel Thrusters FU80 LTC 2250 1,425 kW





Eidesvik's new milestone with 7 Brunvolls

Eidesvik operates innovative vessels for supply and logistics, subsea work, seismic survey and cable laying. The company's pioneering solutions include vessels powered by LNG and onboard fuel cell technology. Brunvoll has delivered thrusters to Eidesvik for more than 30 years.

Newbuilding Offshore Construction Vessel

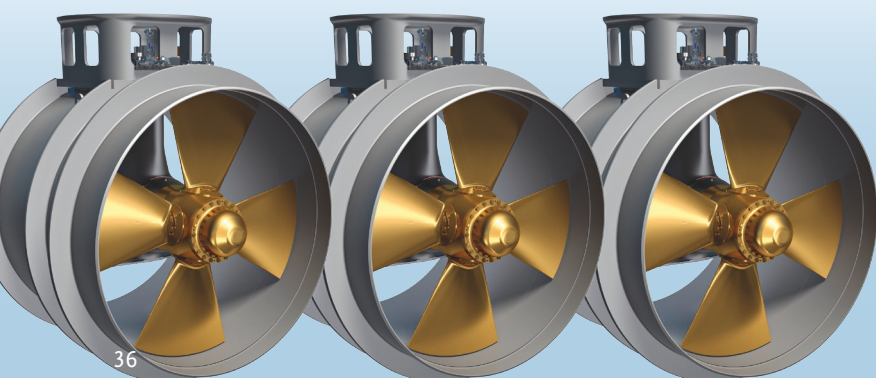
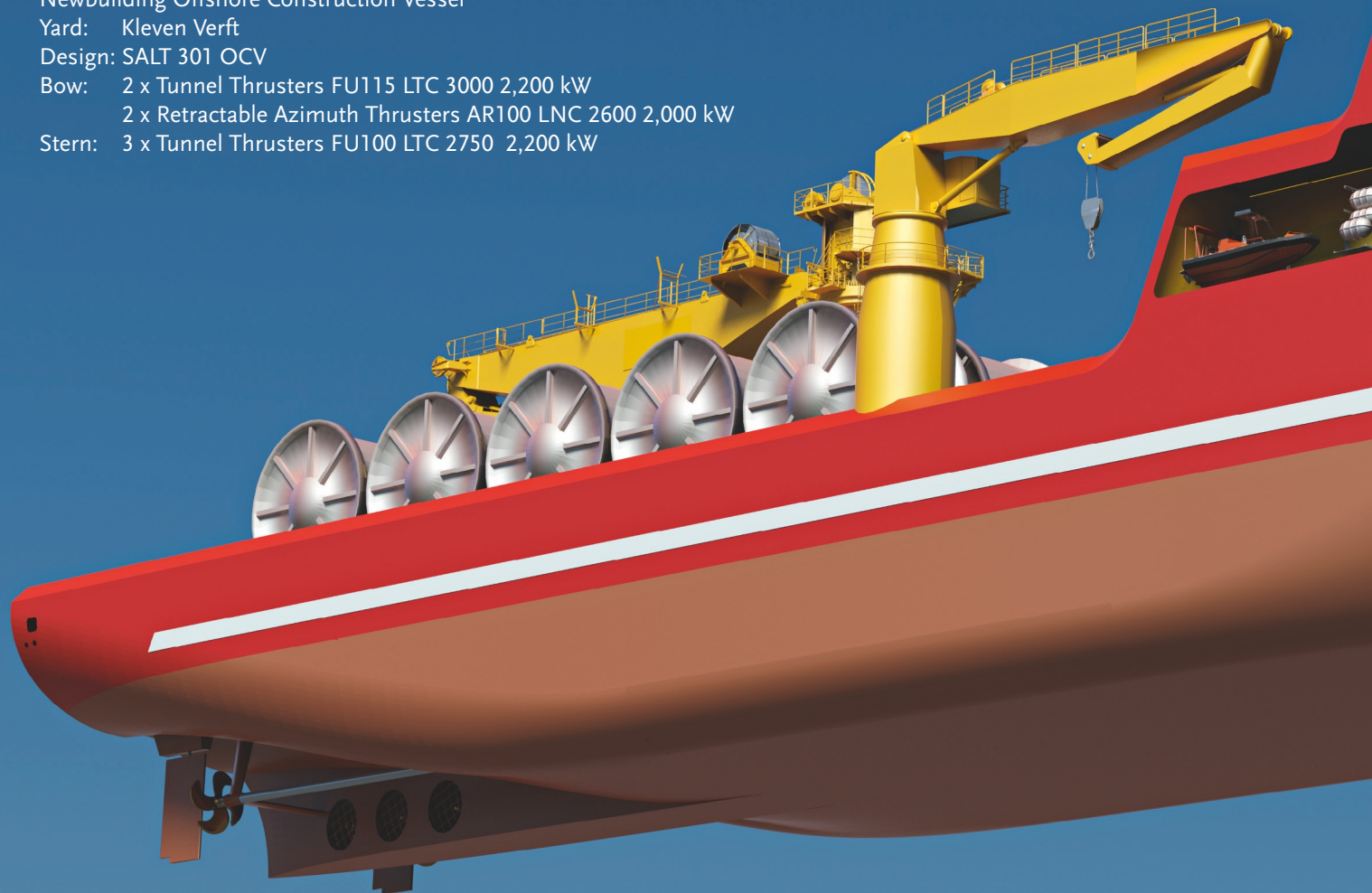
Yard: Kleven Verft

Design: SALT 301 OCV

Bow: 2 x Tunnel Thrusters FU115 LTC 3000 2,200 kW

2 x Retractable Azimuth Thrusters AR100 LNC 2600 2,000 kW

Stern: 3 x Tunnel Thrusters FU100 LTC 2750 2,200 kW





6 Brunvoll thrusters in Forland newbuilding

Forland Shipping owns and operates advanced vessels in offshore and seismic operations. Forland's new subsea vessel will support work class ROVs that can operate in depths below 4000 m. The system has active heave compensation with minimal power consumption.



2008 "Fugro Saltire"



2013 "TBN"

Design: Havyard 857

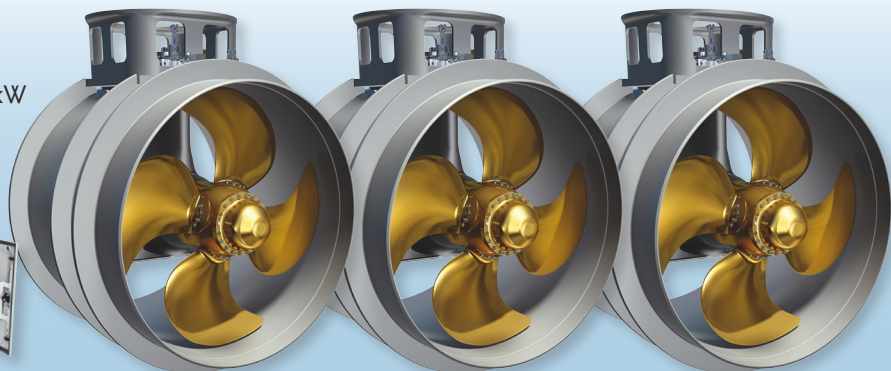
Yard: Havyard Ship Technology

Bow: 2 x Tunnel Thrusters FU93 LTC 2500 1,500 kW

1 x Retractable Azimuth Thruster

AR80 LNC 2100 1,500 kW

Stern: 3 x FU74 LTC 2000 880 kW





“Island Enforcer” needs Brunvoll for offshore construction

The Island Offshore Group provides services to the offshore industry ranging from Platform Supply and Anchor Handling to Advanced Subsea Operations including Increased Oil Recovery (IOR) and Light Well Intervention (LWI). “Island Enforcer” was designed to meet the growing demand for vessels equipped to handle highly complex operations in subsea maintenance and construction.



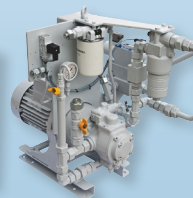
2010 “Island Enforcer”

Yard: Bergen Group BMV

Design: ST-257L CD

Bow: 1 x LowNoise Tunnel Thruster FU100 LRC 2750 2,000 kW
1 x LowNoise Tunnel Thruster FU100 LRC 2750 2,000 kW
1 x Retractable Azimuth Thruster AR100 LNC 2600 2,200 kW

Stern: 1 x Tunnel Thruster FU100 LTC 2750 2,000 kW





“Reef Despina” and “Reef Larissa” with Brunvoll thruster systems

“Reef Despina” and “Reef Larissa” are sister vessels – purpose built for ROV IMR, Survey and Subsea Construction in deep water worldwide. These modern ships with the X-BOW hull lines have been designed for reduced fuel consumption and faster transit speed.



2010 “Reef Despina”

Owner: Neptune Offshore

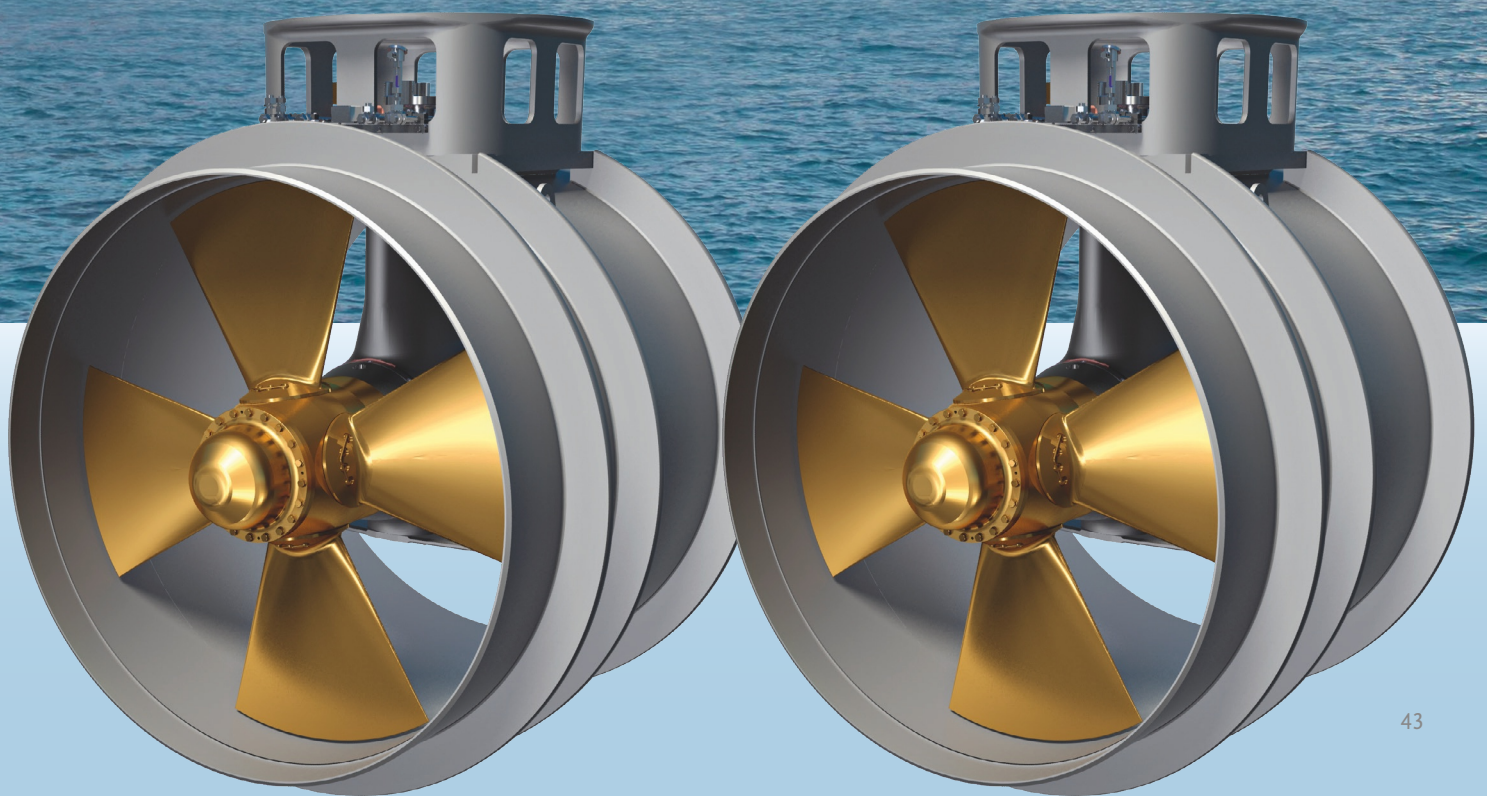
Design: SX 130

Yard: Zhejiang Shipbuilding

Bow: 2 x FU80 LTC 2250 1200 kW

AR63 LNC 1650 850 kW





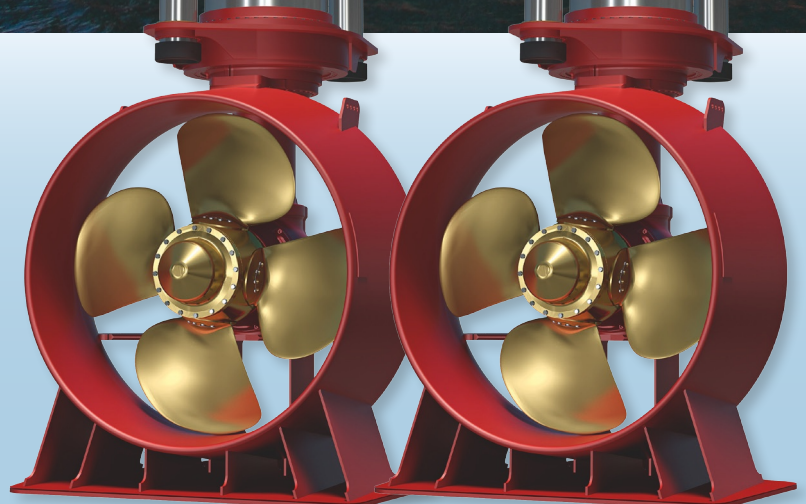
Swire Blue Ocean chose Brunvoll for 2 windfarm installation vessels

Installing 90m tall wind turbines in the middle of the ocean is an extremely demanding operation. The 2 new vessels provide a significantly improved operating weather window.

With a usable deck area of more than 4,000 m² and a total jackable weight of not less than 8,400 mt, the vessels offer great flexibility in the carriage and installation of offshore wind foundation and turbines of all types and sizes.



Photo: Courtesy of Swire Blue Ocean





2012 "Pacific Orca" – 2013 "Pacific Osprey"

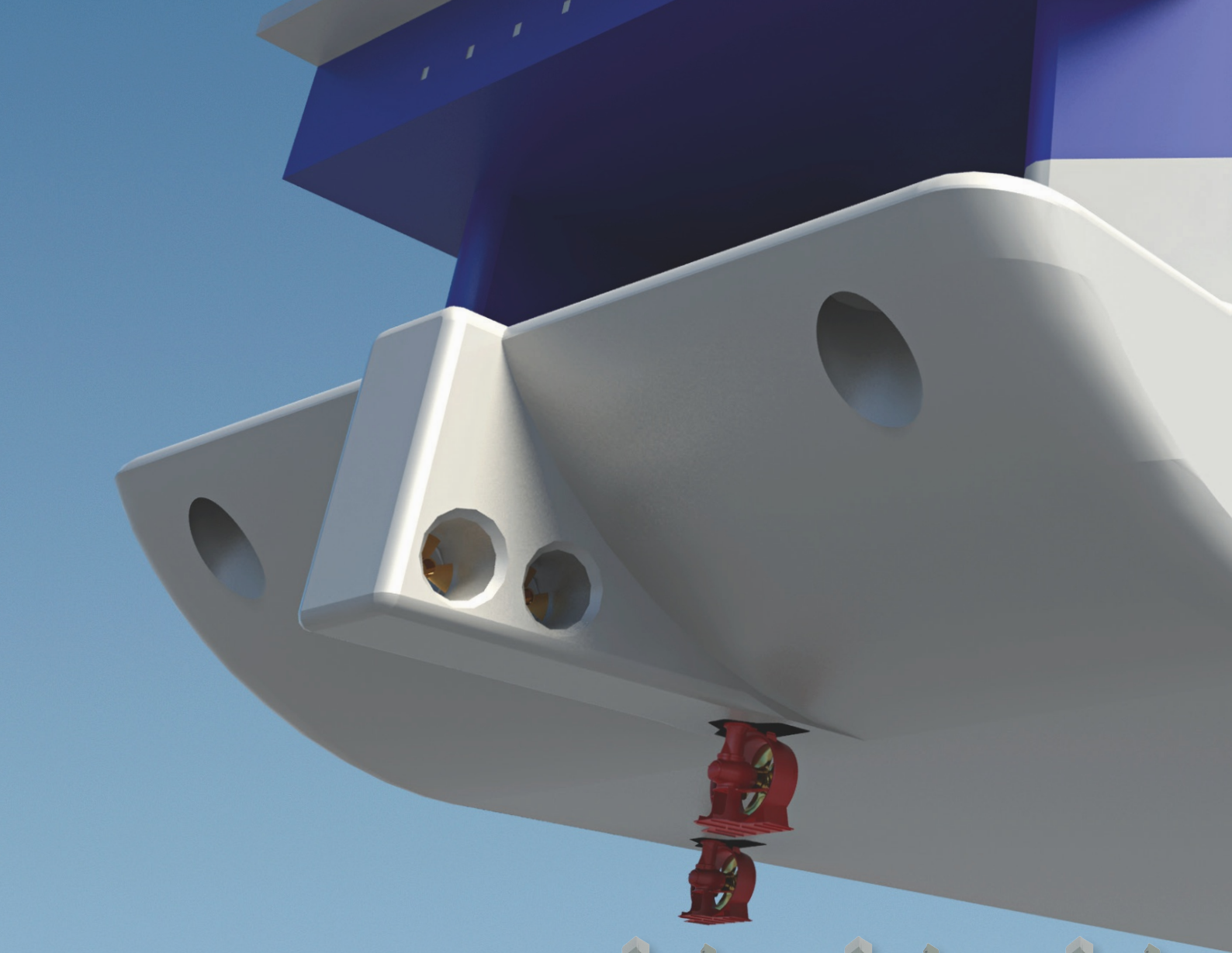
Owner: Swire Blue Ocean

Yard: Samsung Heavy Industries

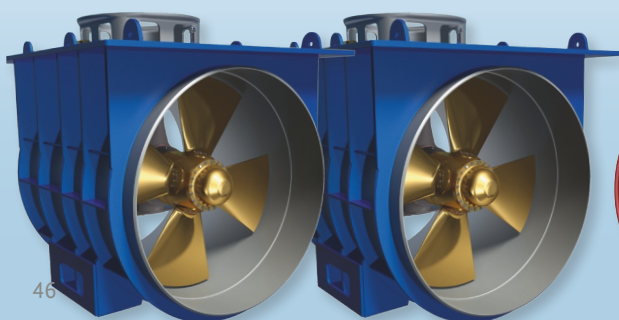
Bow: 2 x Tunnel Thrusters FU100 LTC 2750 2,200 kW

2 x Retractable Azimuth Thrusters AR100 LNA 2600 2,200 kW





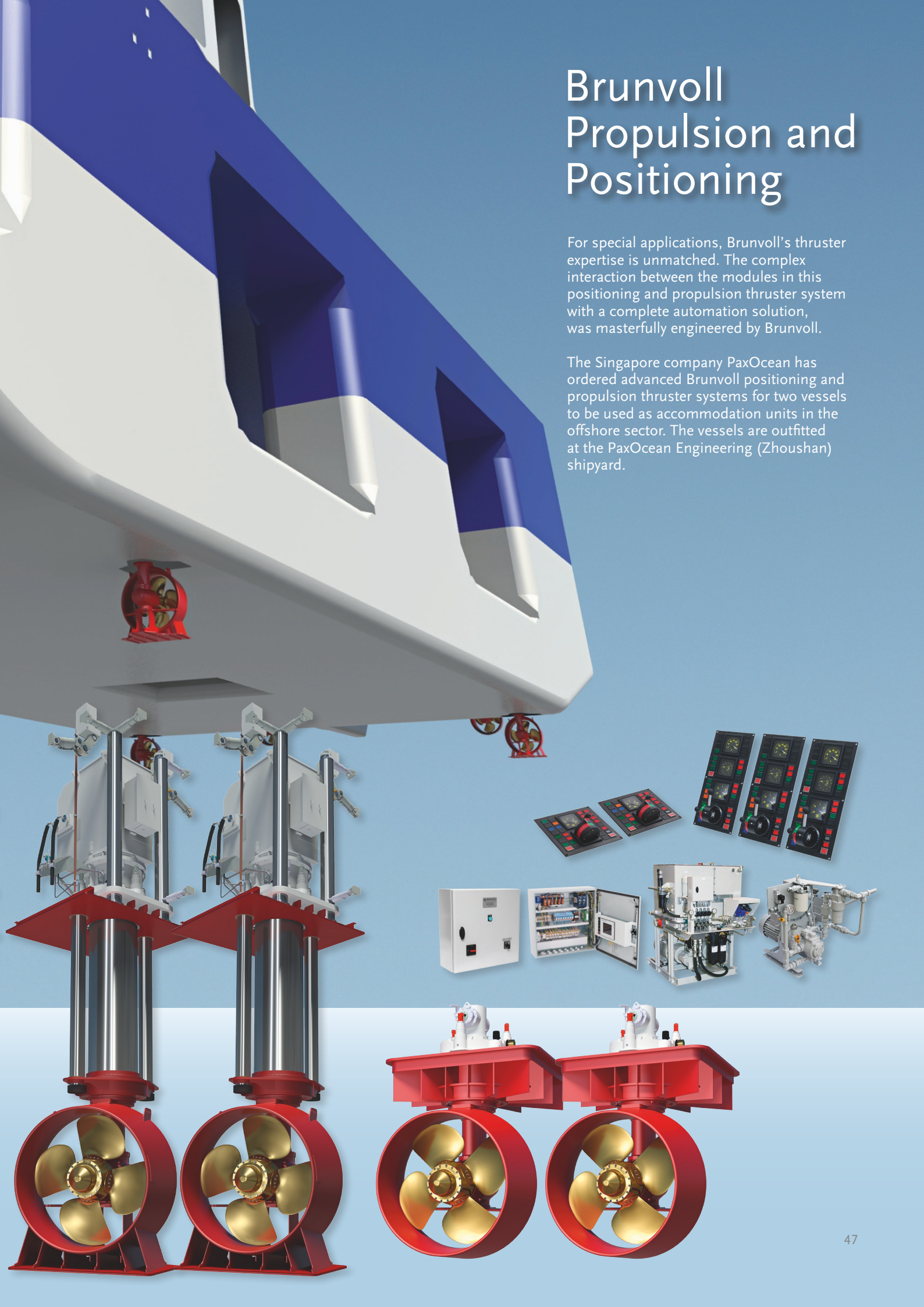
Bow:
2 x Tunnel Thrusters FU100 LTC 2450 2,400 kW
Bow centre:
3 x Retractable Azimuth Thrusters AR100 LNC 2600 2,400 kW
Stern:
2 x Retractable Azimuth Thrusters AR100 LNC 2600 2,400 kW
2 x Azimuth Propulsion AW100 ZNC 2600 2,038 kW



Brunvoll Propulsion and Positioning

For special applications, Brunvoll's thruster expertise is unmatched. The complex interaction between the modules in this positioning and propulsion thruster system with a complete automation solution, was masterfully engineered by Brunvoll.

The Singapore company PaxOcean has ordered advanced Brunvoll positioning and propulsion thruster systems for two vessels to be used as accommodation units in the offshore sector. The vessels are outfitted at the PaxOcean Engineering (Zhoushan) shipyard.



Brunvoll has a strong position in sophisticated Offshore Service Vessels



2008 "Stril Herkules" Field support / Rescue



2007 "Edda Flora" IRM



2007 "Normand Pacific" Multi-Purpose Vessel



1978/2006 "The Performer" MSV



2006 "EDT Protea" Diving Support Vessel
2008 MV "Frauke" Heavy Lift Vessel



2011 "Fugro Symphony" Diving Support Vessel
2011 MV "Lone" Heavy Lift Vessel



2006 "Toisa Voyager" ROV/PSV





2010 "Edda Fides" Flotel



2007 "Normand Seven" Offshore Construction Vessel



1985 "Acergy Harrier" Diving Support Vessel



2006 "HMS "Protector" (ex. "Polarbjørn") Multi Purpose Vessel/Icebreaker



2010 "Mermaid Endurer" Multi Purpose Vessel



2010 MV "Svenja" Heavy Lift Vessel

TAN

Brunvoll Thruster Systems

Brunvoll was the pioneer in Retractable Azimuth Thrusters for shuttle tankers. Today, they are virtually an industry standard. Shuttle tankers are a typical application for Brunvoll's large new thruster units. The thruster systems play a vital role in enabling the tanker to maintain position so that oil can be offloaded



2001 "Navion Oslo"
2000 "Cartola"



2003 "Grena"



KERS

are No.1 in Shuttle tankers

safely from offshore installations. In the surge in shuttle tanker activity in 2011, Brunvoll received a substantial number of the orders for thruster systems for new vessels. Modern shuttle tankers are often equipped with up to 5 thrusters including several retractable azimuth thrusters.



2000 "Ataulfo Alves"
2003 "Navion Stavanger"



1998 "Navion Britannia"



Viken Shipping chose Brunvoll Systems for 5 newbuildings

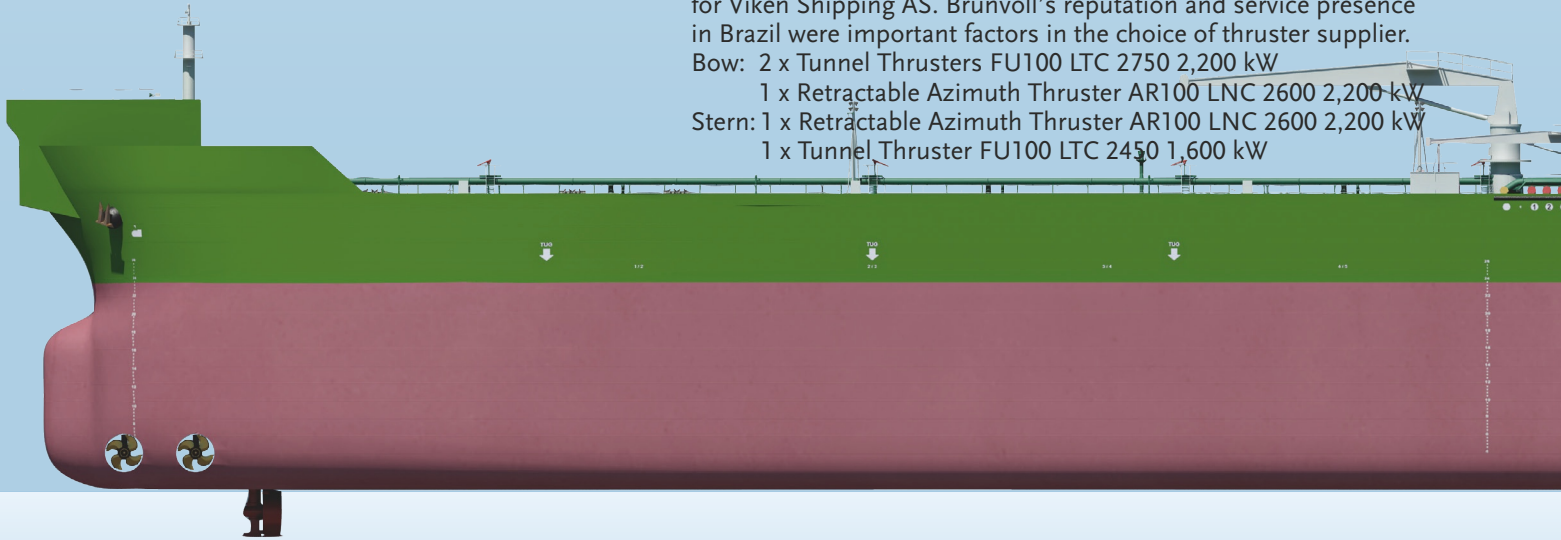
2012 – 2013 Five DP2 Aframax shuttle tankers of 100000t with advanced green technology are being built at Samsung Heavy Industries for Viken Shipping AS. Brunvoll's reputation and service presence in Brazil were important factors in the choice of thruster supplier.

Bow: 2 x Tunnel Thrusters FU100 LTC 2750 2,200 kW

1 x Retractable Azimuth Thruster AR100 LNC 2600 2,200 kW

Stern: 1 x Retractable Azimuth Thruster AR100 LNC 2600 2,200 kW

1 x Tunnel Thruster FU100 LTC 2450 1,600 kW



Tsakos Energy Navigation chose Brunvoll Systems for 2 newbuildings

2013 Two DP2 Suezmax shuttle tankers.

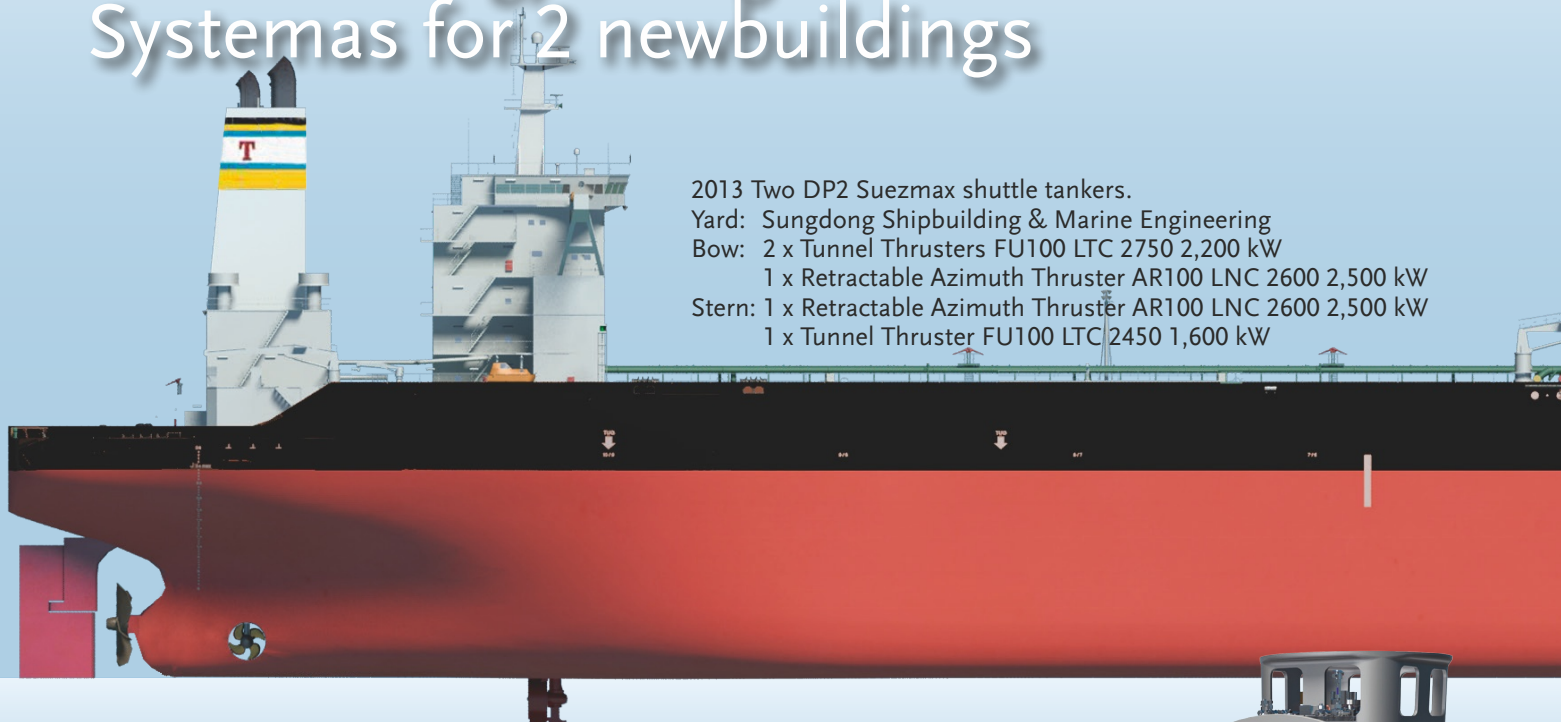
Yard: Sungdong Shipbuilding & Marine Engineering

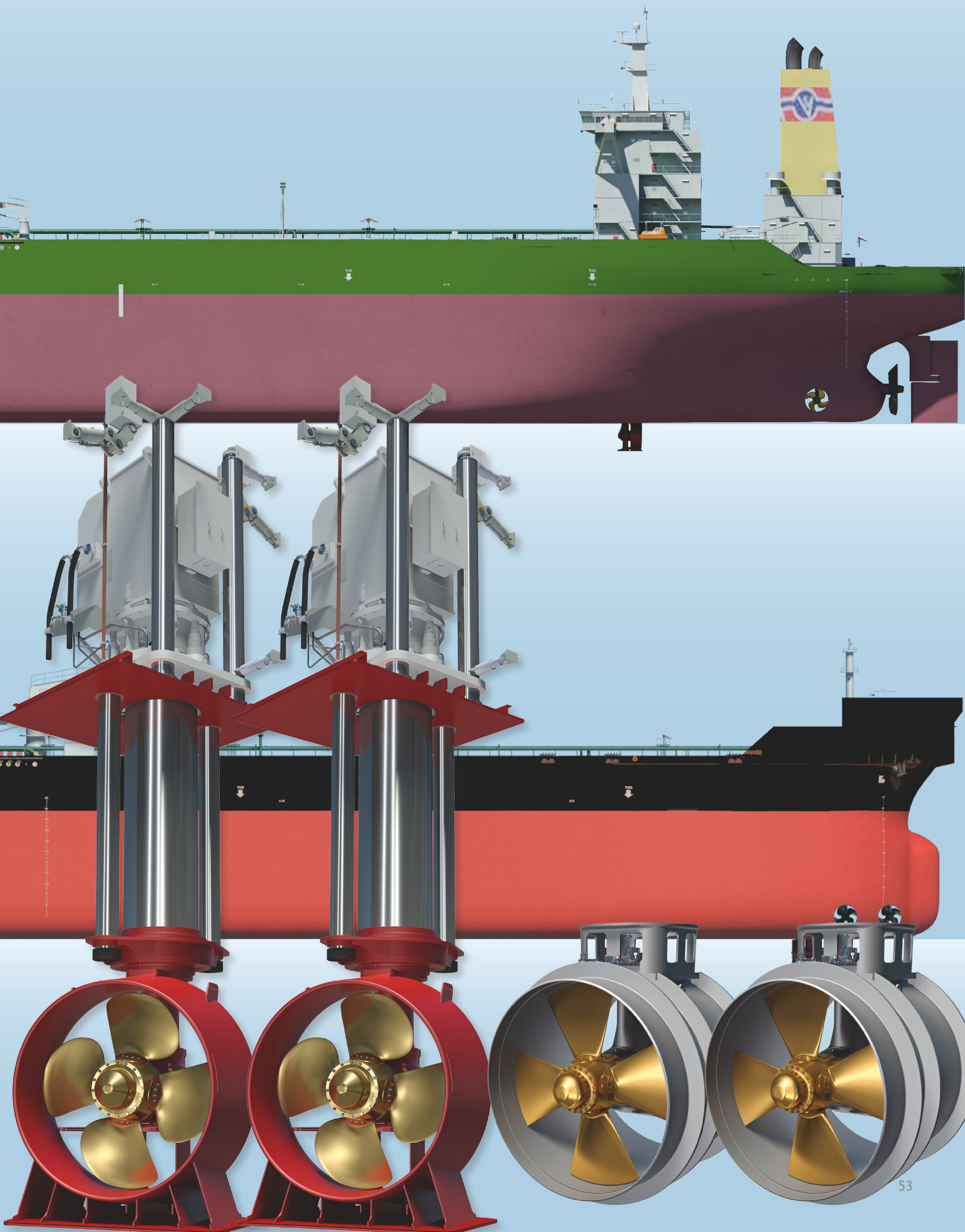
Bow: 2 x Tunnel Thrusters FU100 LTC 2750 2,200 kW

1 x Retractable Azimuth Thruster AR100 LNC 2600 2,500 kW

Stern: 1 x Retractable Azimuth Thruster AR100 LNC 2600 2,500 kW

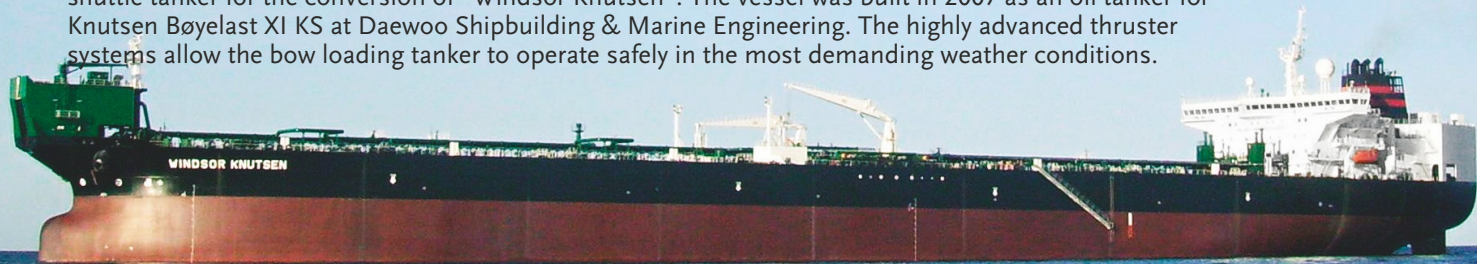
1 x Tunnel Thruster FU100 LTC 2450 1,600 kW





Knutsen NYK Offshore Tankers expanding with more heavy duty Brunvoll thruster systems

2007/2011 "Windsor Knutsen". Brunvoll has delivered the most comprehensive package ever installed on a shuttle tanker for the conversion of "Windsor Knutsen". The vessel was built in 2007 as an oil tanker for Knutsen Bøylast XI KS at Daewoo Shipbuilding & Marine Engineering. The highly advanced thruster systems allow the bow loading tanker to operate safely in the most demanding weather conditions.



Bow: 1 x Tunnel Thruster FUT00 LTC 2450 1,800 kW
1 x Tunnel Thruster FU100 LTC 2750 2,200 kW
1 x Retractable Azimuth Thruster AR100 LNC 2600 2,200 kW
Stern: 2 x Retractable Azimuth Thruster AR100 LNC 2600 2,200 kW



1996 "Gerd Knutsen"



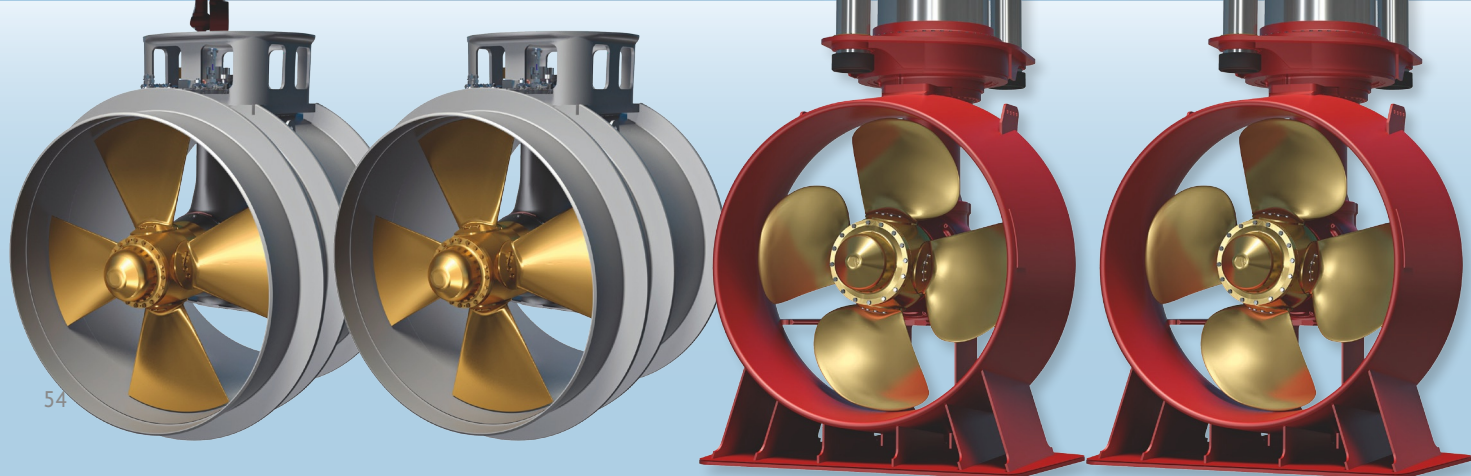
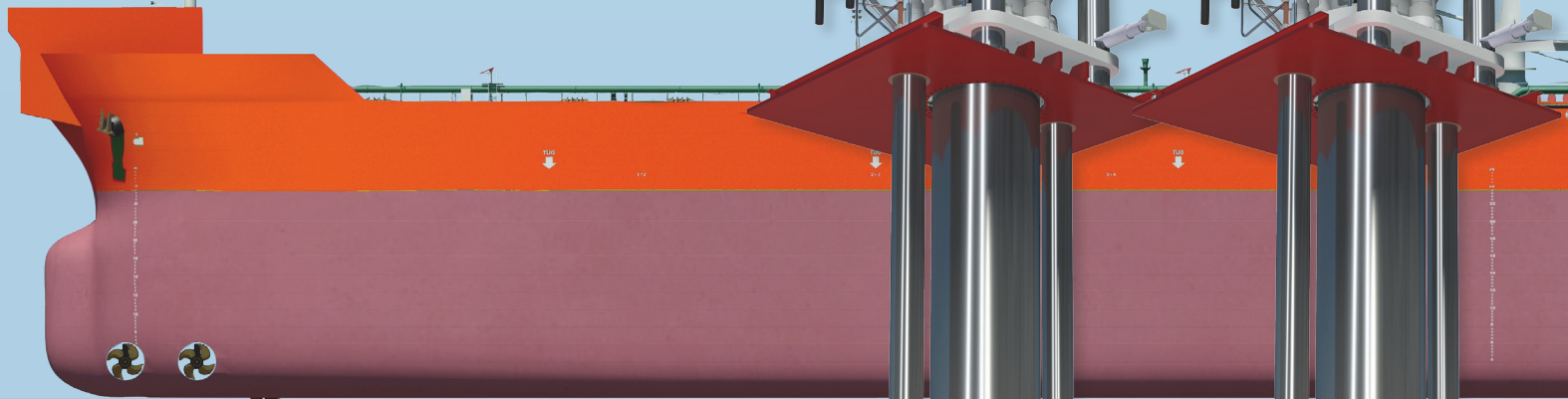
1999 "Karen Knutsen"



1999 "Sallie Knutsen"

In 2011 Brunvoll Thruster systems were chosen for three newbuildings at Hyundai

Knutsen NYK Offshore Tankers AS is the world's second largest operator of DP shuttle tankers. Today, the company's major activities are in the North Sea, Brazil and Canada. Brunvoll thrusters were chosen for newbuildings and projects enabling conversion to more and more "heavy duty" systems because of Brunvoll's systems.





2011 "Bodil Knutsen"

Bow: 1 x Tunnel Thruster FU100 LTC 2750 2,200 kW

1 x Retractable Azimuth Thruster AR100 LNC 2600 2,200 kW

Stern: 2 x Retractable Azimuth Thruster AR100 LNC 2600 2,200 kW



1999 "Gjon Knutsen"



1999 "Betty Knutsen"



2011 "Anneleen Knutsen"

2013 "Carmen Knutsen"

Owner: Knutsen NYK

Yard: Hyundai Heavy Industries

Bow: 2 x Tunnel thruster FU100 LTC 2750 2,200 kW

1 x Retractable Azimuth Thrusters AR100 LNC 2600 2,500 kW

Stern: 1 x Tunnel thruster FU100 LTC 2750 2,200 kW

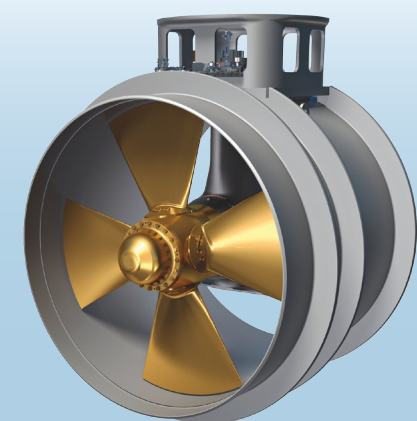
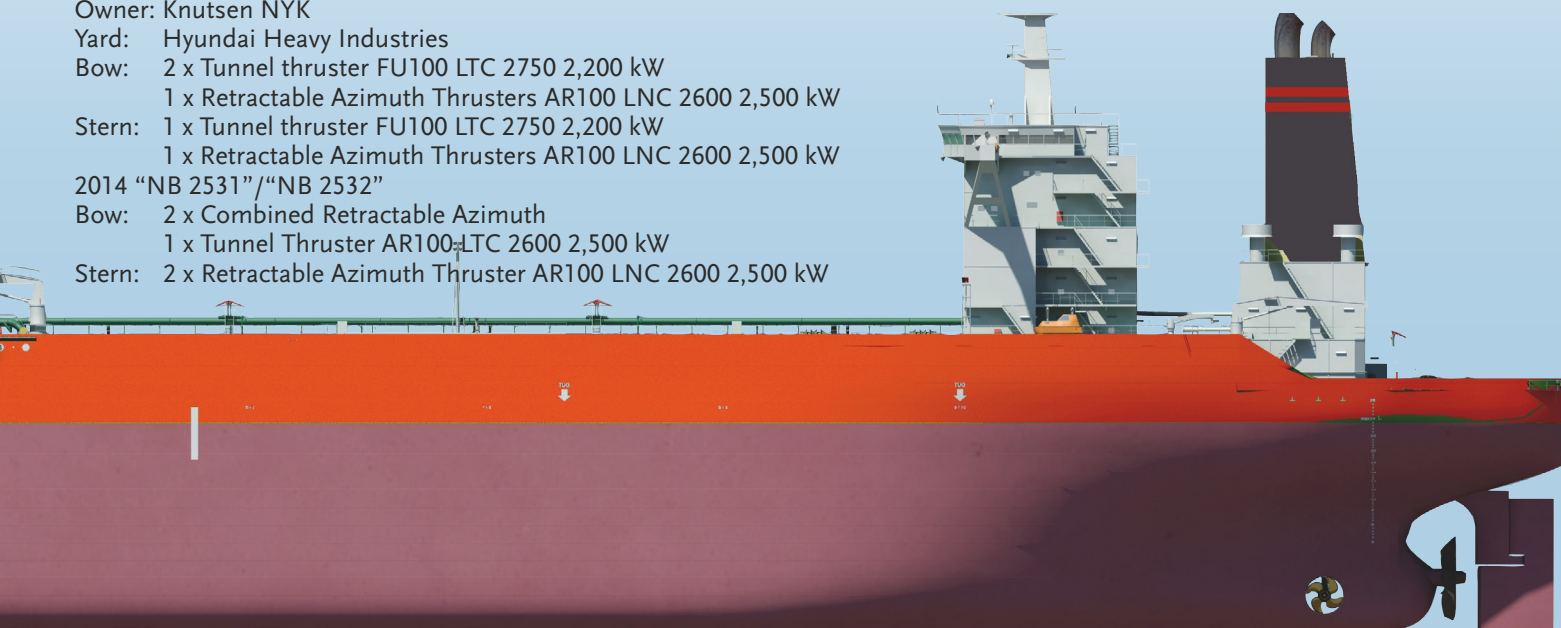
1 x Retractable Azimuth Thrusters AR100 LNC 2600 2,500 kW

2014 "NB 2531"/"NB 2532"

Bow: 2 x Combined Retractable Azimuth

1 x Tunnel Thruster AR100-LTC 2600 2,500 kW

Stern: 2 x Retractable Azimuth Thruster AR100 LNC 2600 2,500 kW



Teekay chose Brunvoll Thruster Systems for 4 advanced shuttle tankers

Teekay's fleet is focused on deepwater offshore production, floating storage and transport projects. Teekay has chosen Brunvoll thruster systems for 4 high-specification shuttle tankers.

2013 Hulls 2037, 2038, 2039 and 2040 Suezmax Shuttle DP2.

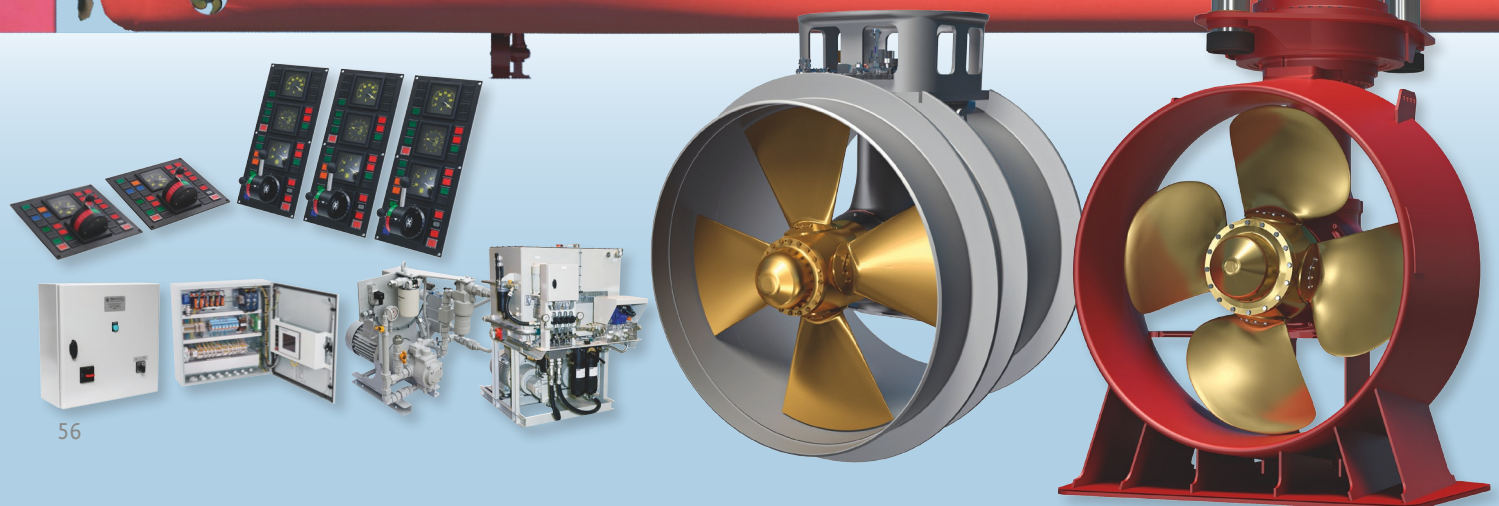
Yard: Samsung Heavy Industries

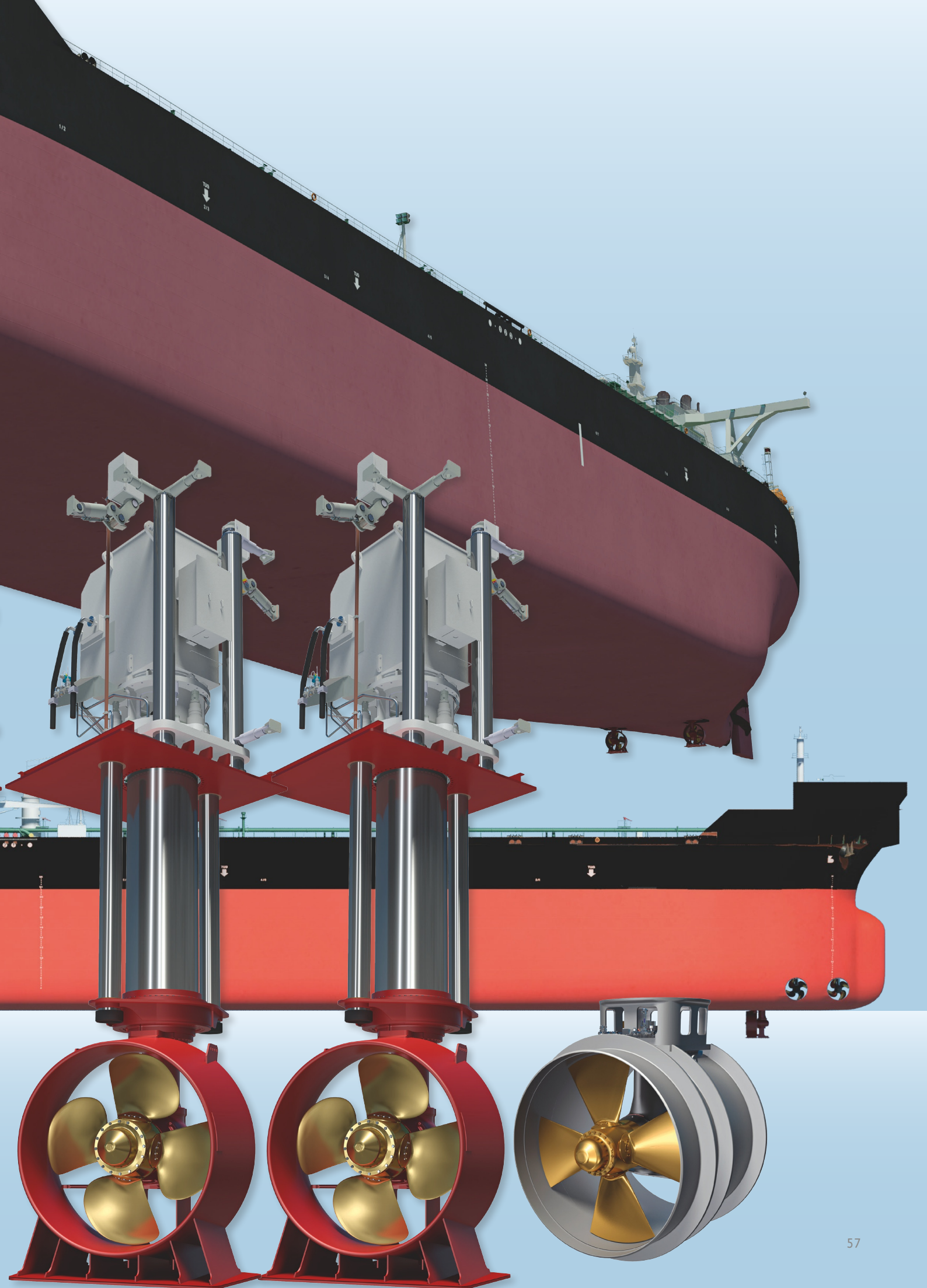
Bow: 1 x Tunnel Thruster FU100 LTC 2750 2,200 kW

2 x Retractable Azimuth Thrusters AR100 LNC 2600 2,200 kW

Stern: 1 x Retractable Azimuth Thruster AR100 LNC 2600 2,200 kW

1 x Tunnel Thruster FU100 LTC 2750 2,200 kW





SEIS

Brunvoll has a strong position

New frontiers of exploration bring new challenges, with greater water depths, harsher climatic conditions and more complex geology. Demands for higher acquisition and transit speed, greater productivity, safety and data quality are growing.



2008 "Geo Caribbean"



1993 "Geco Diamond"

2013 "Ramform Titan"

Owner: PGS Geophysical

Yard: Mitsubishi Heavy Industries

Bow: 1 x Brunvoll Retractable Azimuth Thruster
AR100 LNC 2600 2,200 kW

The delta shape of the Ramform seismic vessels has become an icon of safety and efficiency for Petroleum Geo-Services (PGS).

The company chose Brunvoll retractable azimuth thrusters for the Ramform Titan Class of fifth-generation seismic vessels, with their distinctive broad and ultra-stable hull construction.



in the advanced seismic fleet

Brunvoll thrusters have proved their worth in this exciting segment of the seismic fleet. The seabed seismic market has seen a paradigm shift in the use of dynamic positioning, with thrusters operating continuously for thousands of hours each year.



Seabed Seismics require continuous use of thrusters 7,000-8,000 hours annually



The fast-growing segment of seabed seismics imposes new requirements for manoeuvring over long periods. Increasingly complex operations take place, often in challenging fields and severe weather conditions. Brunvoll welcomes the challenge.

2009 "Sanco Spirit"

Owner: Sanco Shipping

Yard: Vaagland Båtbyggeri

Bow: 1 x Tunnel Thruster FU63 LTC 1750 700 kW

Bow: 1 x Combined Retractable Azimuth/Tunnel Thruster AR63 LTC 1750 700 kW

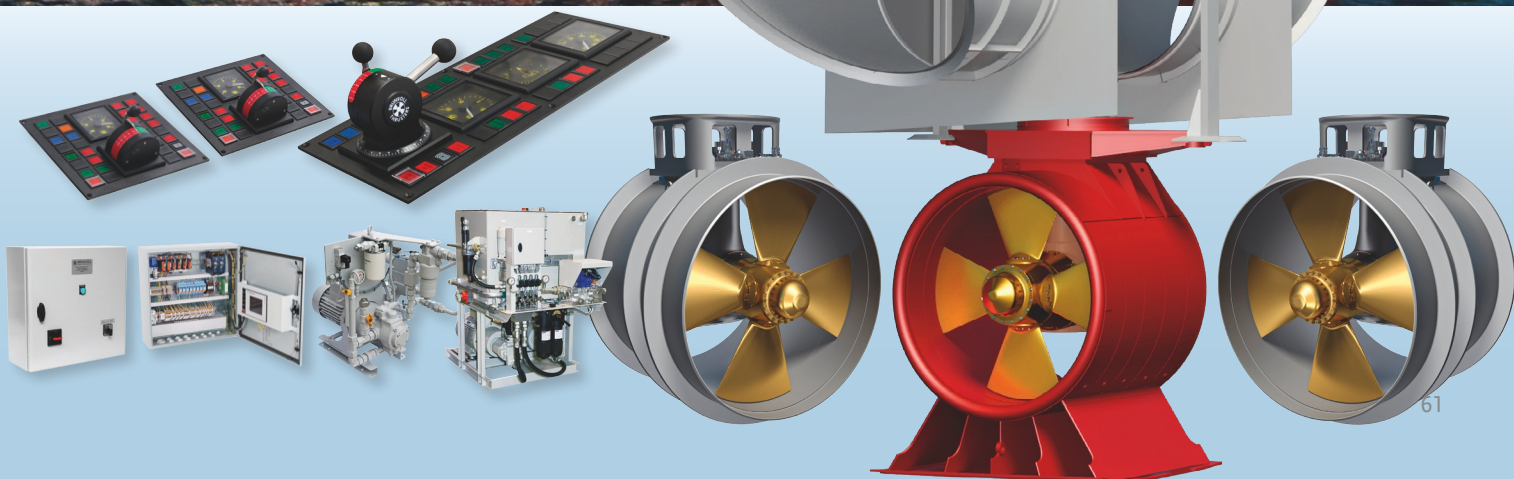
Stern: 1 x Tunnel Thruster FU63 LTC 1750 700 kW

2008 "Sanco Star". The thrusters have been in operation for more than 7,000 hours per year



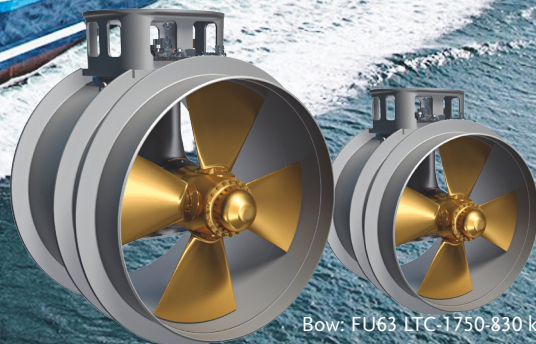
2009 "Boa Thalassa" and 2008 "Boa Galatea" – 3000 annual operating hours logged for the thrusters





“Oceanic Vega”

– is a seismic research vessel designed for high performance with regard to speed and fuel consumption as well as an ergonomic workplace. The ship was built for Eidesvik Seismic Vessels AS.



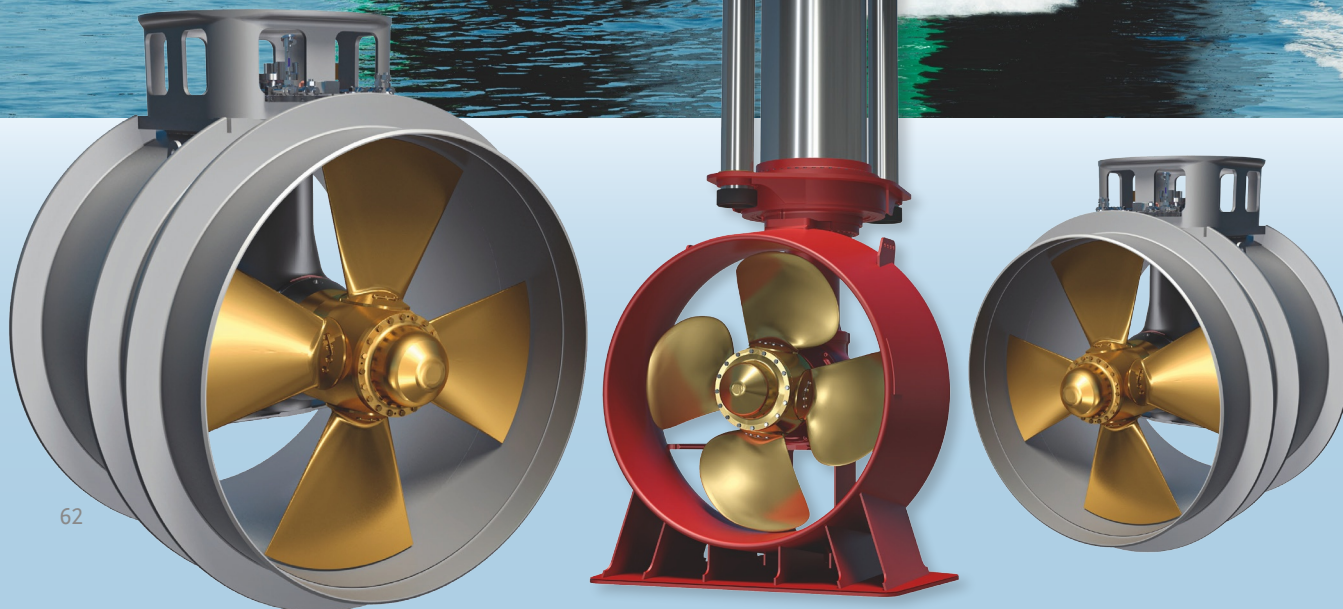
Bow: FU63 LTC-1750-830 kW

Bow: FU100 LTC-2450-1200 kW

8 vessels for Polarcus

Polarcus chose Brunvoll thrusters for its fleet of eight seismic vessels of Ulstein design – two SX124, two SX133, and four SX134. Six of the vessels were built at Drydocks World – Dubai and two at Ulstein Verft. The vessels carry ice class notations ranging from ICE-1A* to ICE-C.

Brunvoll – appreciated in



6 vessels for WesternGeco

Yard: Astillero Barreras Vigo and Drydocks World Dubai

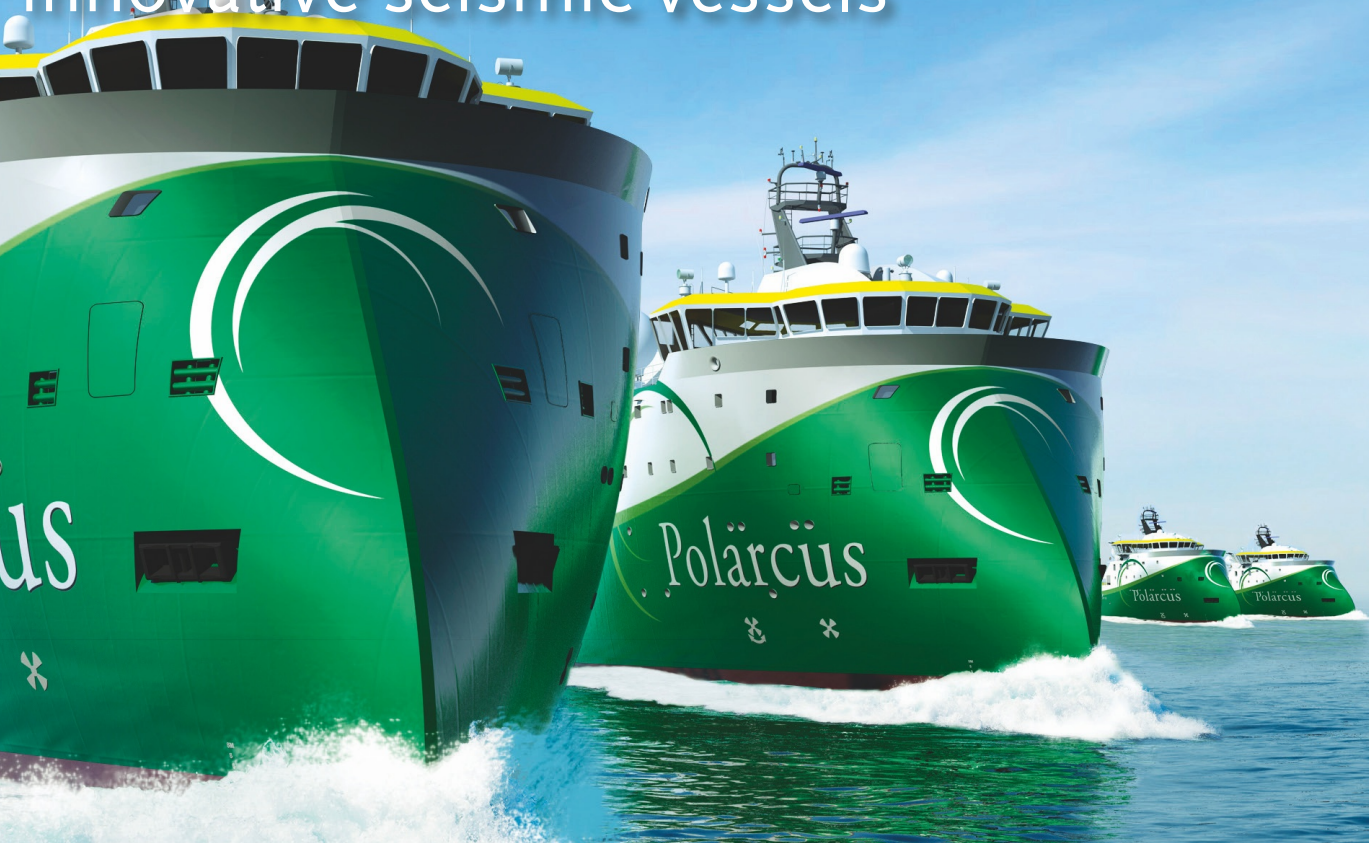
Design: Ulstein SX124

Bow: 1 x Tunnel Thruster FU100 LTC 2450 1,200 kW

1 x Retractable Azimuth Thruster AR63 LNC 1650 850 kW



innovative seismic vessels



Bow: 1 x Tunnel Thruster FU100 LTC 2450 1,200 kW

1 x Retractable Azimuth Thrusters AR63 LNC 1650 850 kW

Stern: 1 x Tunnel Thruster FU63 LTC 1750 830 kW



Brunvoll information resources are available in the publications shown here.

Please contact us if you would like to receive any of our brochures.

You are also welcome to read or download them as PDF files at www.brunvoll.no

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