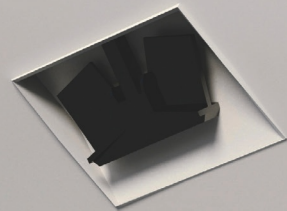


CRUISE



The World's
No.1
in Cruise Ships



Cruise liners need to
Brunvoll precision



1 of 2 cruise newbuildings

“park” close to the centre
is increasingly valued...

rely on Brunvoll Thrusters

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CRU

All the leading cruise

16 RCCL ships with Brunvoll Thrusters

Royal Caribbean Cruises Ltd. is the world's second largest cruise company, operating the Royal Caribbean International, Celebrity Cruises, Pullmantur, Azamara Club Cruises and CDF Croisieres de France brands.



8 MSC ships with Brunvoll

MSC Cruises is the world's fourth largest cruise line and a leader in the Mediterranean cruise market. It belongs to the Mediterranean Shipping Company (MSC Group).



Star Cruises and NCL – 10 ships with Brunvoll

Star Cruises, together with its jointly controlled entity, Norwegian Cruise Line, is the third largest cruise operator in the world and the largest cruise operator in Asia.



USE

lines trust Brunvoll



30 Carnival ships with Brunvoll Thrusters

The Carnival Group is the world's largest cruise line. Of Carnival's cruise brands, Brunvoll has delivered thrusters for Carnival Cruise Lines, Princess Cruises, Seabourn, AIDA Cruises, Costa Cruises, Ibero Cruises and P&O Cruises. Since 1989, Brunvoll has delivered some 100 thrusters for 30 ships in the Carnival Group.

MEGA

AIDA, NCL and RCI all chose Brunvoll



UNITS

Mega Thrusters for their new Mega Ships

Thousands of people – larger ships,
to ever more challenging destinations.

Larger ships bring economies of scale –
but also the potential for higher operational risk.

Our mega thrusters provide a new dimension in power
combined with proven Brunvoll reliability.

NCL

Brunvoll FU115 thrusters for next generation
NCL megaships at Meyer Werft

AIDA

AIDA decided on 3 x FU115 thrusters for
newbuildings at Mitsubishi Heavy Industries

RCI

RCI and Meyer Werft decided on 4 x FU115
thrusters for next generation RCI megaships

SYST

Why is Brunvoll a major

Complete Thruster Systems

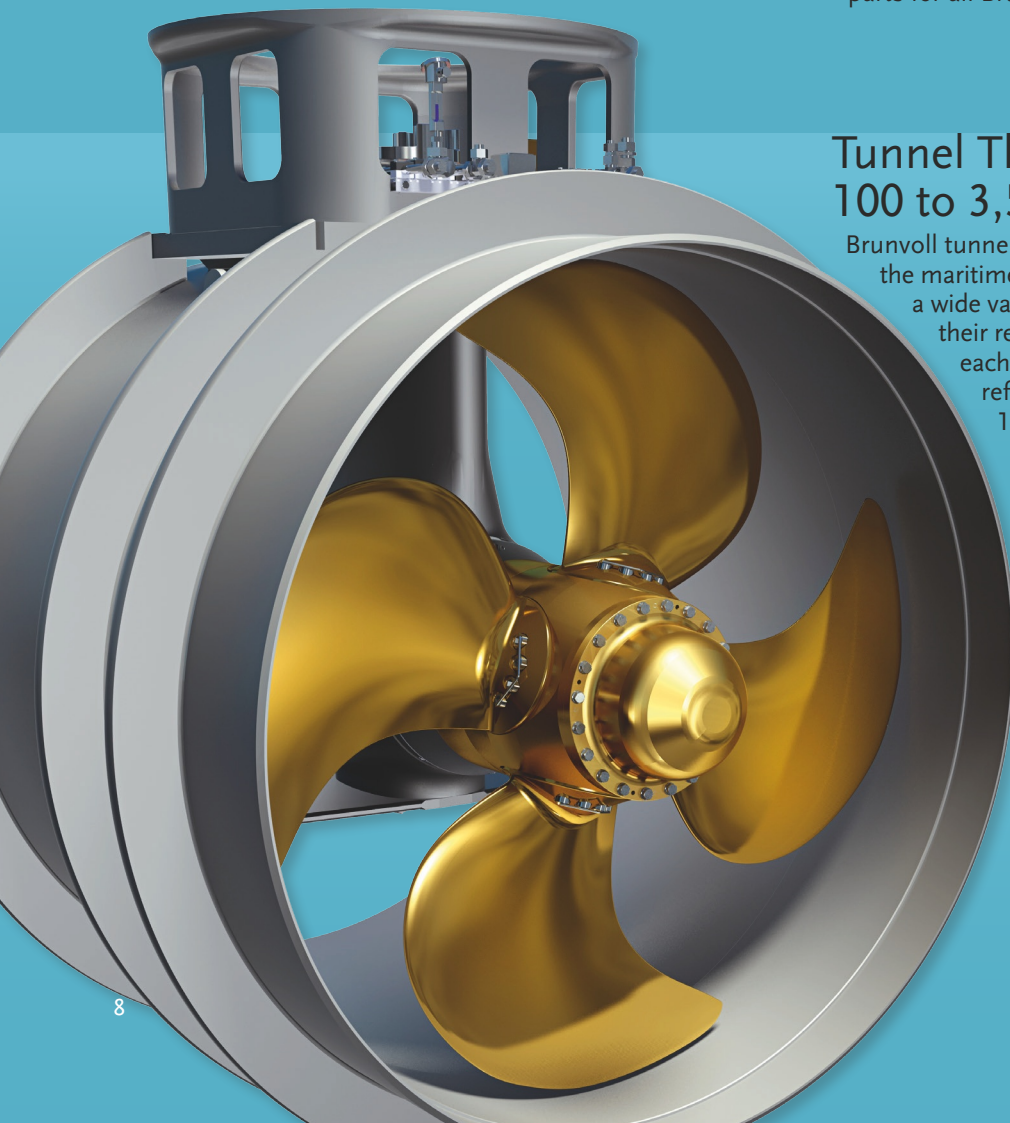
- Brunvoll offers fully integrated thruster solutions complete with drive, control, alarm and monitoring systems, electronic cabinets, and hydraulic power units.
- Small or large – Brunvoll supplies thruster systems for virtually any kind of cruise vessel.
- Brunvoll's renowned quality and design is consistent throughout the range.

Lifetime service and support

- Our streamlined organization focuses on thruster systems only.
- All our thruster systems are Brunvoll design – our service personnel know them inside out.
- Brunvoll's experienced teams of in-house service engineers have multidisciplinary skills.
- Fast and knowledgeable response to service calls is available 24/7.
- For short delivery times, we keep extensive stocks of spare parts for all Brunvoll thrusters in service.

Tunnel Thrusters from 100 to 3,500 kW

Brunvoll tunnel thrusters have been a success throughout the maritime sector. In the challenges presented by a wide variety of marine industries, they have proved their reliability with thousands of operating hours each year. 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.



force in cruise?

Multidisciplinary in-house expertise

- Mechanical. Hydraulic. Electric. Electronic. Hydrodynamic. Brunvoll's comprehensive in-house expertise, focused only on thrusters, saves time, saves effort, and boosts long-term benefits.
- Fully integrated design, engineering, production and service enable unmatched expertise, continuity and experience. The result is unique flexibility in a demanding market.
- Designers, shipbuilders, owners and crews worldwide appreciate the partnership with Brunvoll and the short path to effective solutions.
- Our insight into propeller design, performance and thruster interaction enables optimized solutions with better thrust, lower energy consumption, low noise, low vibration and improved lifetime performance.

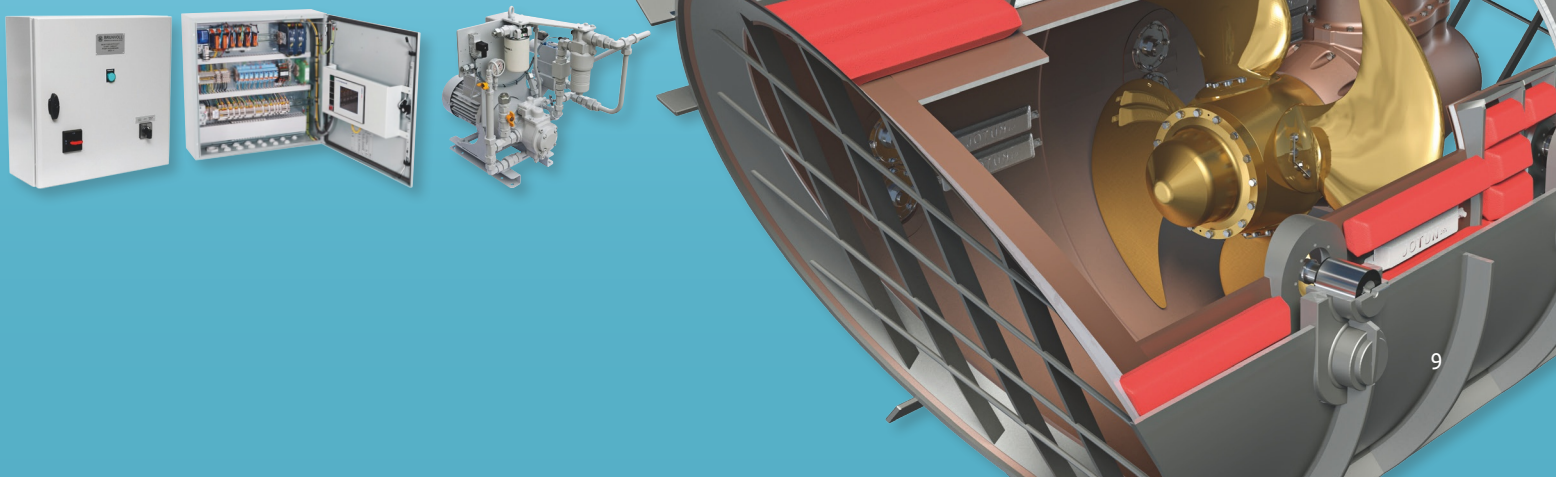
BruCon from Bridge to Blade

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

LowNoise Thrusters

- Brunvoll is the pioneer and leader in low noise thrusters.
- More cruise ships use dynamic positioning with intensive use of thrusters, exposing passengers and crew to the discomfort of noise and vibration.
- Brunvoll's LowNoise thrusters contribute to the highest level of comfort for passengers and crew.



CARNIVAL

Carnival installed their first
...since then, the Carnival Group has tru

Carnival's famous Fantasy class was the first series of modern purpose-built cruise ships – built by Kvaerner Masa Shipyards, in Helsinki, Finland. Brunvoll was selected to provide the six thrusters for the “Carnival Fantasy” – the first and namesake vessel.

1991 “Carnival Ecstasy” 6 x SPA-VP 1,500 kW



1990 “Carnival Fantasy” 6 x SPA-VP 1,500 kW



1996 “Carnival Inspiration”
6 x SPA-VP 1,500 kW



1994 “Carnival Fascination” 6 x SPA-VP 1,500 kW



Brunvoll thrusters in 1989 sted Brunvoll with a hundred thrusters ...

Brunvoll was also trusted to supply the thrusters for the rest of this exciting new series: a major breakthrough for Brunvoll in the cruise industry. These thrusters have earned a reputation for excellent performance.

1998 "Carnival Paradise" 3 x SPA-VP 1,500 kW



1993 "Carnival Sensation" 6 x SPA-VP 1,500 kW



1998 "Carnival Elation" 3 x SPA-VP 1,500 kW



1995 "Carnival Imagination" 6 x SPA-VP 1,500 kW



Brunvoll Thruster Systems on the Spirit Class ships

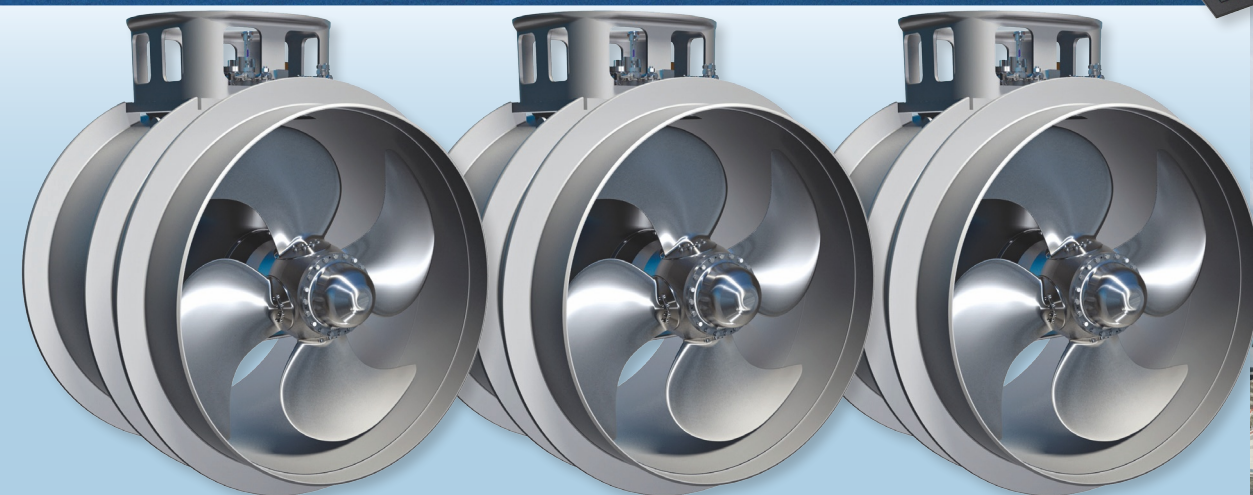
The 88,500-ton "Carnival Spirit" ushered in the elegant Spirit Class – the largest vessels possible that meet the Panamax Form Factor. Joe Farcus, Carnival's irrepressible naval architect, designed each ship to tell a story ... a fantasy to surprise and delight her guests.



2000 "Carnival Spirit"
Yard: Kvaerner Masa Shipyards
Bow: 3 x Tunnel Thrusters FU100 LTC 2750 1,900 kW



2002 "Carnival Legend"





2002 "Carnival Miracle"



2001 "Carnival Pride"



Costa Cruises with Brunvoll



2000 "Costa Atlantica"

20 years of smooth LowNoise operation
in Seabourn's luxury ships



1992 "Seabourn Legend"
1988 "Seabourn Pride"



1989 "Seabourn Spirit"



Costa launched a transatlantic liner in 1948. By 1996, Costa Crociere had nine cruise ships. Carnival Corporation acquired control of Costa in 2000. Today, Costa offers voyages in the Mediterranean, Northern Europe, the Caribbean, the Indian Ocean, the Middle East, South East Asia and South America. Costa's Spirit class vessels – "Costa Mediterranea" and "Costa Atlantica" – each have 3 x FU100 LTC 2750 1,900 kW Brunvoll bow thrusters complete with control systems.



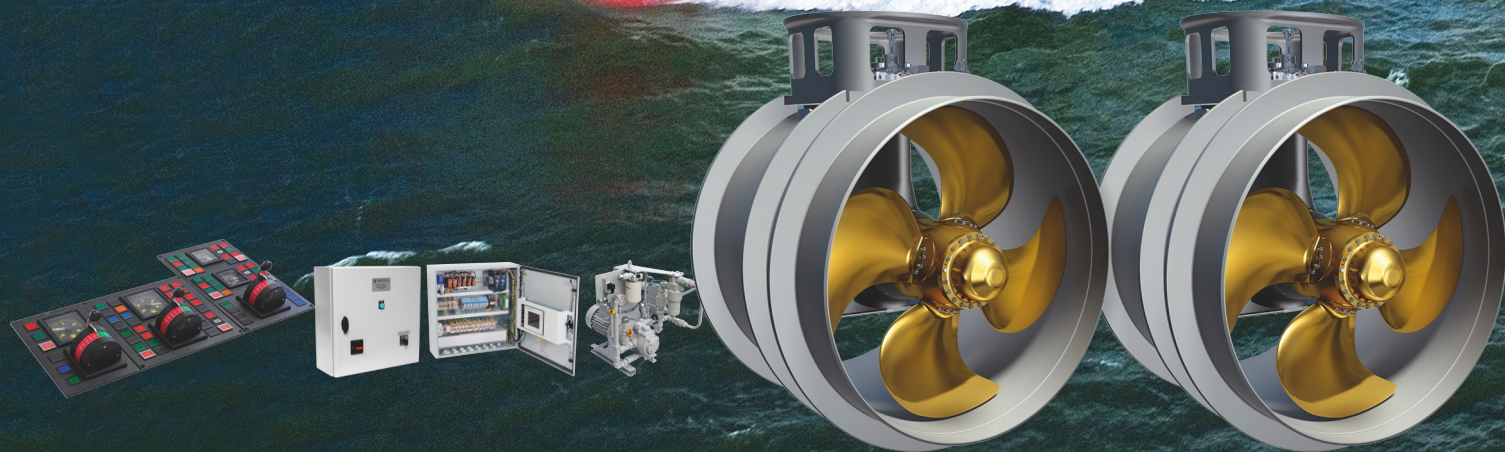
Seabourn has won a reputation for the ultimate in relaxation and renewal at-sea. Low noise and low vibration are critical factors for this ultra-luxury line. Passengers and crew appreciate the Brunvoll LowNoise thrusters, which have been functioning reliably on Seabourn ships for two decades. Each of these Seabourn ships has a Brunvoll SPX-VP 600 kW LowNoise thruster complete with drive and control systems.



7 AIDA newbuildings from Meyer Werft all equipped with Brunvoll Thrusters in bow and stern

Brunvoll thrusters give the AIDA fleet "cruise control"
for precise manoeuvring in challenging ports.
AIDA Cruises is expanding its leading position in the
German cruise market.

Bow: 2 x FU100 LTC 2750 2,300 kW
Stern: 2 x FU80 LTC 2250 1,500 kW

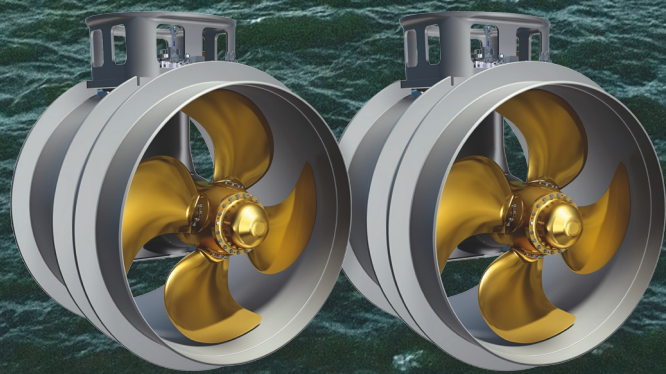


2007 "AIDAdiva"
2012 "AIDAstella"



2008 "AIDAbella"





AIDA decided for
3 x FU115 thrusters
to newbuildings
at Mitsubishi
Heavy Industries

2009 "AIDAluna"



2010 "AIDAblu"



2010 "AIDA Sol"



RCI and Celebrity Cruises have

Three Norwegian shipping companies established the Royal Caribbean Cruise Line in 1968. The company is the world's second largest cruise line, with a variety of brands. Brunvoll has delivered thruster systems to several ships operated by Royal Caribbean International (RCI) and Celebrity Cruises.

1997 "Enchantment of the Seas" 3 x FU100 LTC 2750 1,750 kW



1996 "Grandeur of the Seas" 3 x FU100 LTC 2750 1,750 kW



1997 "Rhapsody of the Seas" 3 x FU100 LTC 2750 1,750 kW



1995 "Legend of the Seas" 2 x SPA VP 1,500 kW



TRIBBEAN

long experience with Brunvoll

Brunvoll is proud to have delivered thrusters to all six vessels in RCI's Vision Class. The Brunvoll thrusters have run smoothly throughout the long career of these ships.



1997 "Splendour of the Seas" 2 x SPA VP 1,500 kW



1998 "Vision of the Seas" 3 x FU100 LTC 2750 1,750 kW



Quantum Class

In March 2012, RCI and Meyer Werft decided on four FU115 LTC 3000 3,500 kW bow thrusters for each of the next-generation RCI megaships.

4 Millennium Class ships with Brunvoll LowNoise Thrusters

Celebrity Cruises was founded as a premium cruise line in 1989 with a vision of superior quality, grand style, and exceptional service.

Brunvoll delivered the world's largest LowNoise thrusters to the 4 Millennium Class cruise liners from 1999 to 2002. The trouble-free operation of these LowNoise thruster systems has provided an excellent reference for Brunvoll.

Yard: Chantiers de l'Atlantique

Bow: 3 x LowNoise FU100 LRC 2750 2,350 kW



2000 "Celebrity Millennium"
2002 "Celebrity Summit"



2001 "Celebrity Infinity"





2003 "Celebrity Constellation"



NORW

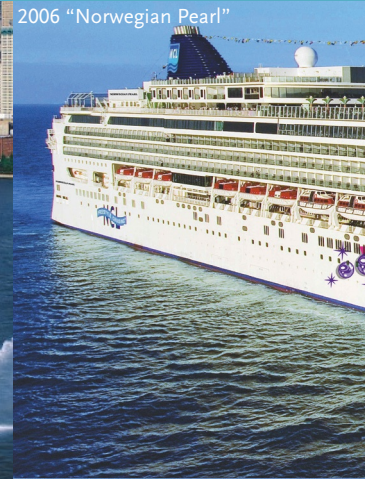
8 Star newbuildings – each with 3 Brunvoll

Star Cruises is the world's third largest cruise line. The company dominates the Asia-Pacific cruise market. When Star Cruises took over Norwegian Cruise Line (NCL) in 2000, it became

2002 "Norwegian Dawn"



2006 "Norwegian Pearl"



2006 "Norwegian Jade"



1999 "Superstar Virgo"



2005 "Norwegian Jewel"



EGIAN

FU100 complete with control systems

the first global cruise line and launched a major newbuilding programme. Norwegian Cruise Line introduced Freestyle Cruising with its focus on giving guests more freedom and flexibility.



2001 "Norwegian Star"



2007 "Norwegian Gem"



1998 "Norwegian Spirit"

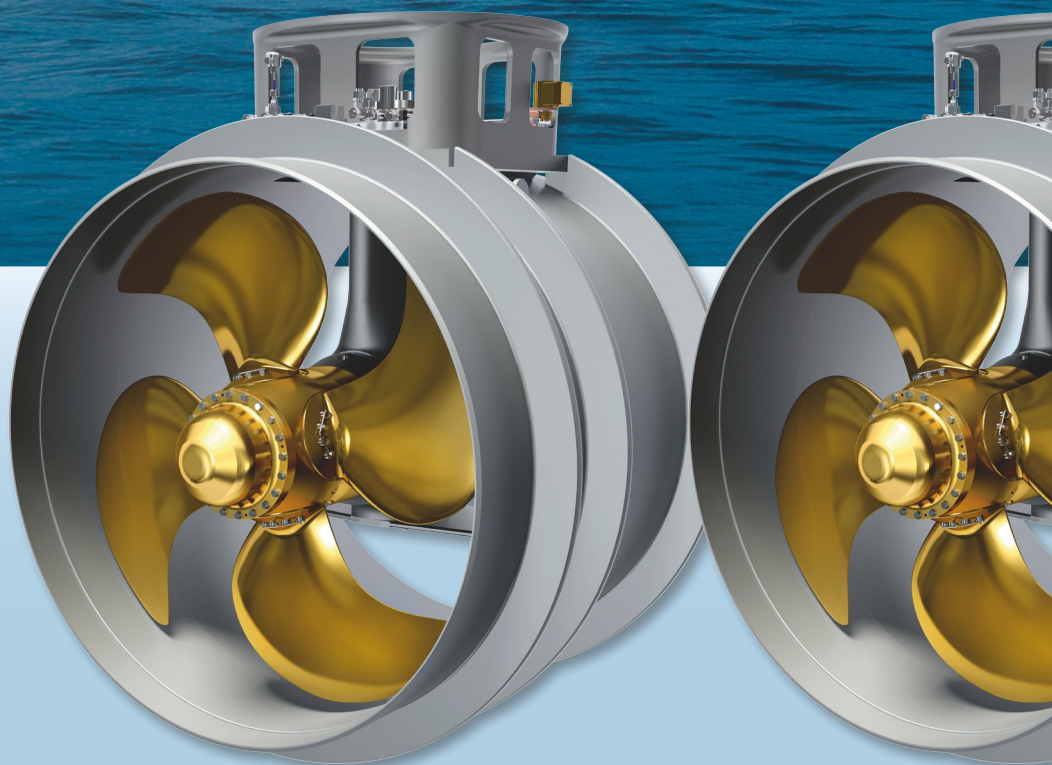


Norwegian Cruise Line trust Brunvoll thrusters in Breakaway Class mega ships



“Norwegian Breakaway” (2013) and
“Norwegian Getaway” (2014) increase
NCL’s capacity by more than 30%.
These exciting new ships are the first
to use Brunvoll’s top-of-the-range
FU115 thrusters.

2013 “Norwegian Breakaway”
Yard: Meyer Werft
Bow: 3 x FU115 LTC 3000 3,000 kW





MSC

Brunvoll was chosen for the In 2004 MSC decided on

MSC – Mediterranean Shipping Company – diversified into cruise in 1988. Brunvoll thrusters were chosen for the 4 Mistral class ships. In 2004 MSC decided on Brunvoll in



2003 "MSC Lirica" 2 x FU100 2750 2,350kW



2001 "MSC Sinfonia"
2 x LowNoise FU80 LRC 2250
1,400kW



CRUISES

“Mistral” Class of the new millennium Brunvoll in 4 mega newbuildings...

4 mega newbuildings. Fast-growing MSC Cruises is a leader in the Mediterranean cruise market, with a wide range of seasonal itineraries in other parts of the world.



2004 “MSC Opera” 2 x FU100 LTC 2250 2,350 kW



2001 “MSC Armonia” 2 x FU80 LTC 2750 2,350 kW

They rely on complete Brunvoll Systems

When MSC took a further step into cruising with four large newbuildings in the Musica class, the company came back to Brunvoll for the powerful thrusters needed for these vessels with a gross tonnage range from 89,600 to 93,330 tons.

Yard: Chantiers de l'Atlantique

Bow: 3 x FU100 LTC 2750 2,300 kW

Stern: 2 x FU100 LTC 2450 2,000 kW

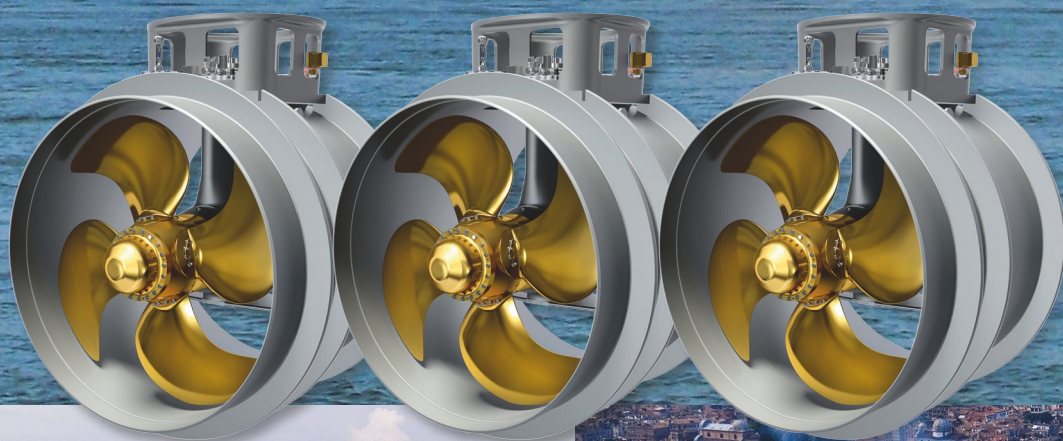


2008 "MSC Poesia"



2007 "MSC Orchestra"





2010 "MSC Magnifica"



2006 "MSC Musica"

HAPAG

Hapag-Lloyd chose Brunvoll



The “Europa 2” complements Hapag-Lloyd’s “Europa” in the luxury cruise segment. The new ship has 11 decks and capacity for 516 passengers. For outstanding comfort and manoeuvrability, “Europa 2” has LowNoise thrusters from Brunvoll.

Yard: STX France
Bow: 2 x LowNoise FU80 LRC 2250 1,500 kW

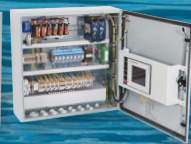
... after choosing Brunvoll



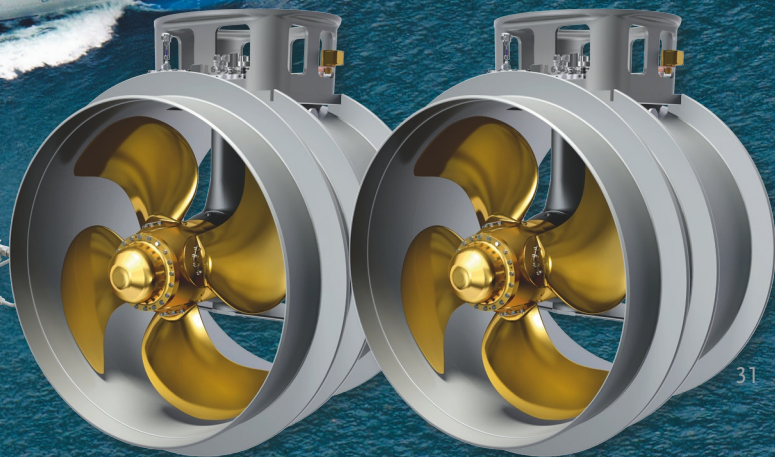
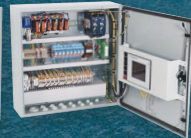
1999 “Europa” Luxury Cruise Liner
Bow: 2 x Brunvoll FU63 LTC 1750 800 kW

FLOYD

LowNoise for “Europa 2”



Thrusters for “Europa” in 1999



HURTIC

The world's most beautiful



HURTIGRUTEN

voyage - and the toughest!

Hurtigruten ships must manoeuvre in and out of 34 ports along Norway's jagged coastline and challenging weather round the clock, 365 days a year.

Hurtigruten has provided a vital transport link to Norway's coastal communities for more than a century.

Today, they offer a breathtaking voyage along the fjords, inlets and islands of this dramatic coastline. Each ship makes 66 port calls from Bergen to Kirkenes and back.

From the harshest winter conditions with
– as a coastal liner they use the Brunvoll



1997 "Nordnorge"
1993 "Richard With"



2003 "Midnatsol"

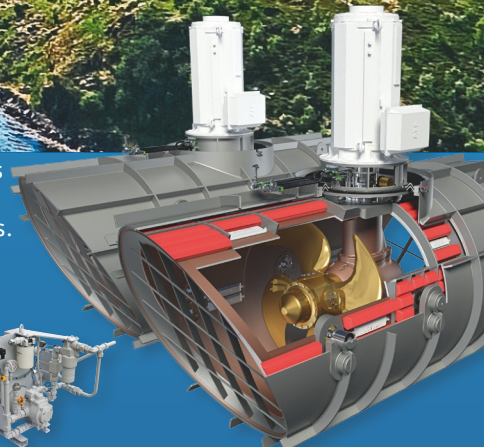


minus 30°C to midnight sun and plus 30°C
LowNoise thrusters many times a day



2002 "Trollfjord"
1985 "Vesterålen"

9 of the Hurtigruten ships have Brunvoll thrusters – put to the test in extreme conditions including strong currents, fierce winds and icy temperatures. A continuous and valuable testbed for the renowned Brunvoll thrusters.



1993 "Kong Harald"



2003 "Finnmarken"

Brunvoll has 25 years of experience from all types of Cruise Ships



2001 "Silver Whisper"



2002 "The World"

1999 "Grand Mistral"



1991 "Sea Spirit"



1992 "Island Sky"



1999 "Pacific Princess"



2001 "Adonia"



1999 "Ocean Princess"



2001 "Silver Shadow"



2003 "Crystal Serenity"
1998 "Insignia"



2001 "Seven Seas Mariner"



1991 "Caledonian Sky"



1992 "Continuum II"



1984 "Artania"

RENDV

Geiranger, Norway



1973 "Veøy" ferry
Bow: SPT VP 295 kW



2004 "MSC Opera" — Bow: 2 x FU100 LTC 2750 2,350 kW



1994 "Nordlys"
2 x LowNoise FU63 LRC 1750 790 kW

ELZOUS

12 July 2010



"Europa"

- 5 ships
- 10 Brunvoll thrusters
- 3 decades of development
- Generation after generation of trust in Brunvoll

Against the backdrop of this majestic scenery, about 180 cruise ships visit the village of Geiranger each summer. The natural beauty of the Norwegian fjords makes this destination a favourite with travellers. At the same time, the rugged coastline is at the heart of one of the world's most advanced maritime clusters. Brunvoll is a key partner in this unique network, with its unmatched portfolio of specialized skills and experience.

1999 "Europa" – Bow: 2 x FU63 LTC 1750 800 kW



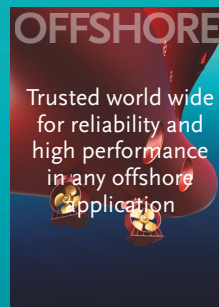
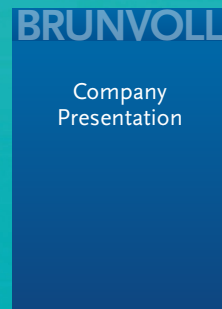
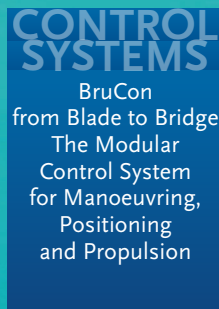
2000 "Costa Atlantica" – Bow: 3 x FU100 LTC 2750 1,900 kW



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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