A publication of The Royal Institution of Naval Architects | www.rina.org.uk/tna



A publication of The Royal Institution of Naval Architects | www.rina.org.uk/tna





A publication of The Royal Institution of Naval Architects | www.rina.org.uk/tna





Cruise ship technology / Propellers & thrusters / China / Finland / February 2015

The future of the maritime industry

### 8-18 **News**

8-10 News

12 News analysis

14-18 Equipment news

### 40-57 Features

### Feature 1 Cruise ship technology

40-43 Cruise line moves to meet new emission regulations

### Feature 2 China

44-47 Blue Whale series surfaces

48-49 Market doubts issue 55 effectiveness

### Feature 3 Finland

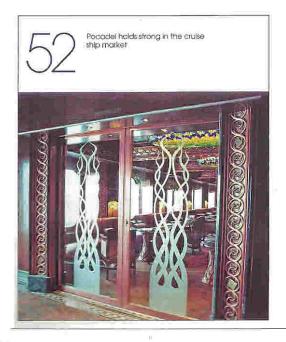
50-51 3D design application saves time and money

52-53 A glass apart

### Feature 4 Propellers & thrusters

55 Rolls-Royce thrusts into the future

57 Veth goes green



### 20-38 In-depth

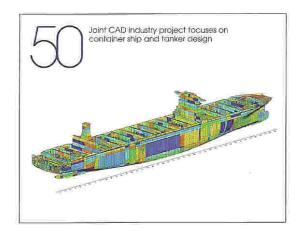
20-26 Global emissions: | Is a radical shift in shipping on the horizon

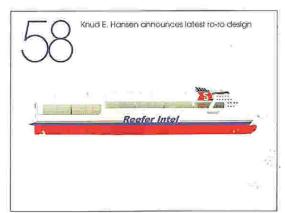
27-32 Ship trials: | Meeting the standards

34-35 Clarksons: | Historic and scheduled delivery statistics

36-38 Coatings: | Predicting the rough with the smooth

58-60 Ro-ro | Stena's many happy returns





### 62 Diary





A publication of The Royal Institution of Naval Architects | www.rina.org.uk/tna



IMO Final Approval Type Approval



### SAVE MONEY, SAVE NATURE

How would you achieve both? -There is NK-O3 BlueBallast System for you.

- Application for Gravity operation
- No Modification on the existing Ballast main-pipe
- No Necessary for replacement of original Equipment
- Location Flexibility to Install

Your wise choice, N





### www.nkcf.com

497, Shinpyeong-dong, Saha-gu, Busan, Korea 604-030 Tel:+82-51-204-2211~3 Fax:+82-51-204-2215 E-mail:njchun@nkcf.com

















Green Promise for the People







Engine technology report / Tanker technology /
Shipboard water treatment /
Bridge & communications systems / March 2013

Nano state can reduce consumption

### 8-17 **News**

8-10 News

12 News analysis

14-17 Equipment news

### 26-50 Features

### Feature 1 Engine technology report

26 MAN takes fuel flexibility to another level

27-30 Wärtsilä X92 built for bigger fhings

### Feature 2 Shipboard water treatment

31-32 The challenge of onboard ballast water sampling

34-35 DIY sampling from PSM

36 GEA Westfalia aims to clean up

37 Techcross' outlook for 2013

### Feature 3 Tanker technology

38-40 Turkish tankers come of age

### Feature 4 Bridge and communications systems

42-43 Taking stock of ECDIS

43 Navtor goes global

44-47 Raytheon Anschutz stays up to date

47 Cobham keeps a weather eye open

48 SAM Electronics gets onboard Viking Grace

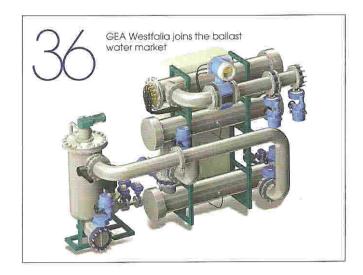
48 Free roaming for Stena Line passengers

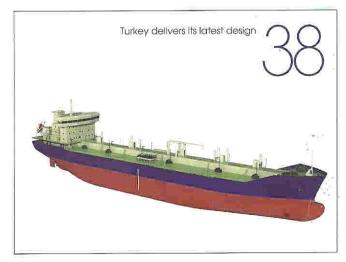
50 Transas sees more orders in 2013

### 18-24 In-depth

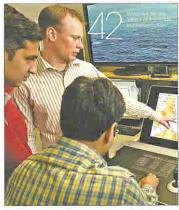
18-22 **Green shipping** | Streamline realises greater efficiency

23-24 **CAD/CAM** | Safer, greener, smarter, maritime IT trendsetters





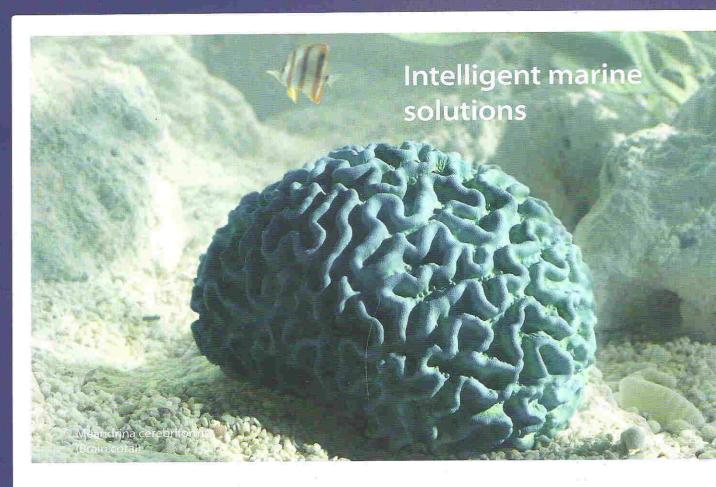




54 Diary



A publication of The Royal Institution of Naval Architects | www.rina.org.uk/tna



At Rolls-Royce we work closely with our customers to develop innovative, value-adding solutions tailored to future requirements, with ship designs and power and propulsion systems that deliver outstanding performance and minimise emissions. Rolls-Royce - thinking ahead to deliver intelligent solutions for tomorrow.

Trusted to deliver excellence



Diesel technology / Tanker technology / Noise & vibration / Bridge & communication systems / Turkey / March 2011

Innovation is the key

### 8-14 **News**

8-10 News

12-14 Equipment news

### 16-19 In-depth

16-19 **Performance monitoring** | The devil's in the data

### 55 Crew's views

62 Diary

### 20-54 Features

### Feature 1 Diesel technology

20-22 Success of industry collaboration points to further funding

23 HSG-concept shaft takes to the waves

24-26 Turbo charging boosted by regulation

27-28 Ferries ripe for scrubber offer

### Feature 2 Tanker technology

30-38 The Vossnack Cylinder Tanker

### Feature 3 Noise & vibration

40-45 Tanker structural vibration investigations

45-48 Beating the drum

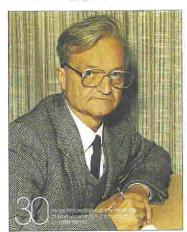
### Feature 4 Bridge & communications

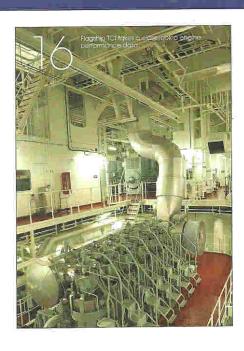
50 Raytheon launches Nautosteer AS

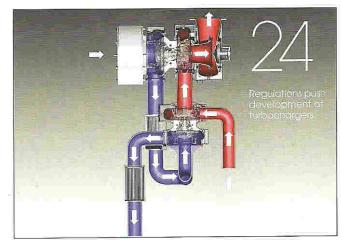
52 Vizada looks to the stars

### Feature 5 Turkey

53-54 Crowning glory











A publication of The Royal Institution of Naval Architects | www.rina.org.uk/tna



ZERO POLLUTION I HIGH PERFORMANCE J BEARING SYSTEMS

Green ship technology / Ice class vessels / CAD/CAM update / Norway / January 2011

Redefining nuclear power

### 8-14 **News**

8-10 News

12-14 Equipment news

### 16-32 In-depth

16-28 Coatings | Smooth operator

30-32 State Aid | Deliberation of state aid for yards enters critical phase

### 70 Diary

### 29-44 Features

### Feature 1 Green ship technology

33 The long and the short of green shipping

34-37 Anticipating a sea change

38-39 Green ships of the future

40-41 LR and partners back plug and play nuclear cassette

42-43 Triality tanker interests owner

### Feature 2 CAD/CAM

44-47 What future for 3D design

48 Qinetiq GRC introduces latest collaborative solution

50-51 Foran evolves to next step

52 HSVA develops the empiric prediction metho

d

53 Keeping up with demand

### Feature 3 Ice class vessels

54-56 Fleet modernisation signals new commitment to polar research

58-59 Trading places

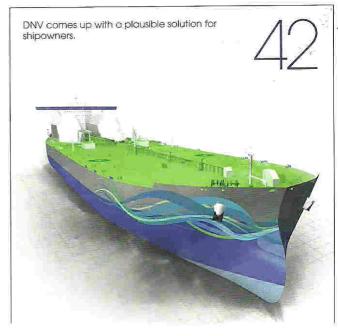
60-61 New generation ice breakers

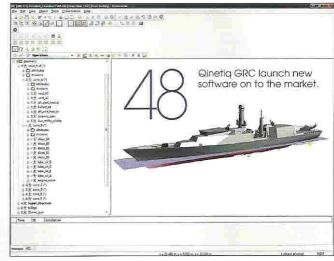
### Feature 4 Norway

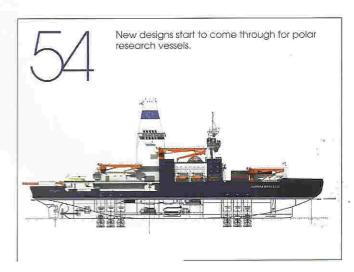
62 Kongsberg develops "Green" engine room simulator

64-65 Höegh gets ahead of the LNG market





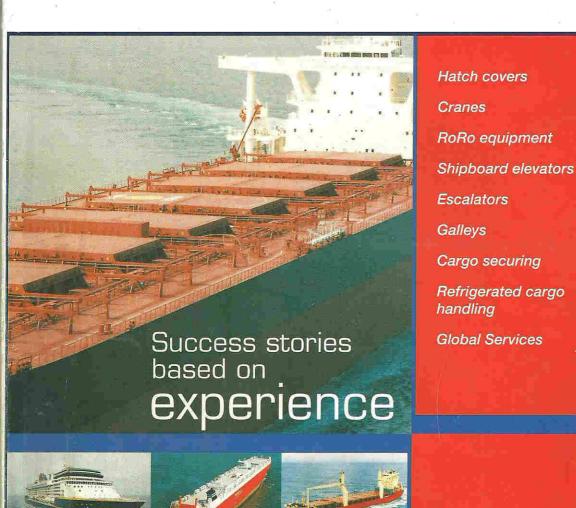




### HAVAL ARCHITECT







MacGREGOR Group P.O. Box 5716 S-114 87 Stockholm Sweden

Tel: +46-8-5458 5900 Fax: +46-8-5458 5901

www.macgregor-group.com

**MacGREGOR** 

MacGREGOR Group's product portfolio is focused on products and services that meet the growing demands of shipowners and shipyards. A partnership with us ensures a long, profitable lifetime for all types of vessels. We co-operate with reliable suppliers on all continents in order to guarantee high quality and flexible deliveries whenever they are needed.

Today MacGREGOR operates in over 25 major shipping and shipbuilding countries and is constantly strengthening its local presence worldwide. The service network consists of more than 50 service stations offering 24-hour-service around the globe to a fleet of 13,000 ships outfitted with MacGREGOR products.

Utilise our experience to stay ahead of the competition.

THE NAVAL ARCHITECT International Journal of The Royal Institution of Naval Architects

> Editor Tim Knaggs

Assistant Editor Cheryl Saponia, BA Hons

Design/Production Manager Sandy Defraine

Group Advertisement Manager Debbi Bonner

Advertisement Consultant John Labdon

Advertisement Production Manager Sarah Helm, BA Hons

Marketing Manager Adelaide Proctor

Publisher

Mark J Staunton-Lambert

Published by: The Royal Institution of Naval Architects

Editorial & Advertisement Office: 10 Upper Belgrave Street London SW1X 8BQ, UK

Telephone: Telefax: E-mail:

+44 (0) 20 7235 4622 +44 (0) 20 7245 6959 editorial@rina.org.uk advertising@rina.org.uk

Website: www.rina.org.uk

Printed in Wales by: Stephens & George Magazines Merthyr Tydfil

The Institution is not, as a body, responsible for opinions expressed in The Naval Architect unless it is expressly stated that these are the Council's views.

Registered charity No. 211161

© 2002: The Royal Institution of Naval Architects. This publication is copyright under the Berne Convention and the International Copyright Convention. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted without the prior permission of the copyright owner. Permission is not, however, required to copy abstracts of papers or of articles on condition that a full reference to the source is shown.

Multiple copying of the contents without permission is always illegal.

one-year subscription in 2002 to The Naval Architect costs £85 (UK), £90 (Europe), and £100 (elsewhere in the world). Overseas despatched by airspeed.

> Audited Circulation 9101 JAN - DEC 2001 ISSN 0306 0209



## FNAVA I ARCHITEC





Eddystone, the second of a series of four new ro-ro ships for the AWSR consortium (plus two ships at Harland & Wolff) is seen here being launched recently from the covered berth of Flensburger Schiffbau-Gesellschaft. A special article on this new series, planned for a sealift service with the UK Ministry of Defence, appears on page 70 as part of our report on German shipbuilding and marine industries.

### PRINCIPAL ARTICLES

- 6 Norröna: a new flagship next year for Smyril-Line
- 43 Fimmarken: new ship for popular Hurtigrute service
- 134 Maximum wave bending moment back to basics?
- 139 Romantika: stylish new ferry for Gulf of Finland
- 143 Carnival Legend joins the Panamax-Max cruise liner class

### SPECIAL FEATURES

### 13-42 Russia

- 13 Transforming Baltiysky Zavod into a state-of-the-art shipbuilding centre
- 19 Severnoye Bureau: aiming to be a major player
- 20 Analysis of modern icebreaker propulsion concepts
- Valday-class cargo ships launch new era for Russian shipbuilding
- 31 Podded tanker proposal by Admiralty shipyards for Arctic service
- 37 Advanced new ships from Krylov's design bureau
- 40 Offshore export success for Vyborg shipyard

### 53-86 Germany

- 53 Peene-Werft success as last container ship in series is delivered
- 56 Upgraded test tank at HSVA to have high-speed and
- 67 New super-heavy-lift multipurpose vessels for Rickmers
- 70 Hurst Point: leading a new UK sealift series
- 80 6100 lane-metre design boosts Flensburger's ro-ro portfolio
- 84 Pod debut for STN Atlas

### 105-119 Fast ferries

- 105 Transforming the economics of fast freight
- 114 Ro-pax catamaran with three forms launched
- 117 Pentamaran fast ferry for European routes
- 119 High-speed ferries need integrated power and propulsion

### **REGULAR FEATURES**

- 3 Editorial comment: Russian shipbuilding a sleeping giant re-awakes
- 4 News review
- 9 Book reviews
- 88 Letters to the editor
- 97 Trade and equipment news
- 156 Diary

### 9 Book reviews

- Waves in Ocean Engineering
   Self-Unloading, Hybrid and Geared Bulk Carriers
- Pressure Vessels External Pressure Technology
   Ocean Waves and Oscillating Systems:Linear Interactions Including Wave Energy Extraction
- \* Modern Marine Engineers Manual Volume II



# ITIATAI MARCH 1986 AttClaitect

VSEL group suppliers of submarines to the Royal Navy

VSEL





### The Naval Architect

International Journal of the Royal Institution of Naval Architects

### Editor:

Michael Wake, BSc, C.Eng, MRINA

Assistant Editor: Carol Fulford, B.A.

Sales Director: Henry R. Jackson

Advertisement Manager:

Richard Kirkby

Subscriptions and Publications: Lesley Smithers

Editorial and Advertisement Office:

10 Upper Belgrave Street, London SW1X 8BQ.

Telephone: 01-235 4622/4. Telegrams: Sinai, London. Telex: 265844 SINAI G

Ten issues published per year: January, February, March, April, May, June, July, September, October and November

Printed in England by Staples Printers St Albans Limited at The Priory Press

The Institution is not as a body, responsible for opinions expressed in *The Naval Architect* unless it is expressly stated that these are

1985: The Royal Institution of Naval Architects. This publication is copyright under the Berne Convention and the International Copyright Convention. All rights reserved. No part of this publication may be reproduced. stored in a retrieval system or transmitted without the prior permission of the copyright owners. Permission is not, however, required to copy abstracts of papers or of articles on condition that a full reference to the source is shown. Multiple copying of the contents without permission is always illegal.

### ADVERTISEMENT REPRESENTATIVES:

France: E. Costemend, Agence Gustav Elm, 41 Avenue Montaigne, 75008 Paris, France Tel: 720 25 30,723-32-67-96-85 Telex: 290 260 GUSTELM F.

Germany, Austria and Switzerland: T. Anthony, Am Lerchenberg 22, D 2112 Jesteburg b. Hamburg, Germany. Tel: (04183) 5541

Vittorio F. Negrone, Ediconsult Internationale. Piazza Fontane Marose 3, 16123 Genoa. Italy. Tel: 543.659; 268.334; 268.513. Telex: 211197.

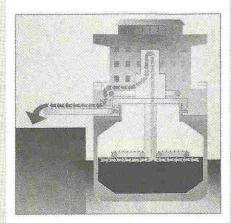
Scandinavia: AB Stephan R. G. Orn, PO Box 184. S-27100 Ystad, Sweden. Tel: 46-411 18400, Telex: 33335 ORNS.



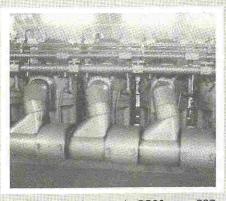
Audited circulation 1984 January December 8,024

ISSN 0306-0209

### **E Naval Architect**



Moelven's newly developed Dorius self unloading system, page E90.



Pielsticks new long-stroke PC20, page E97.

### CONTENTS

MARCH

Cutting port times-a review of self unloading systems . . . . E90

Heavy fuel offshore-Tage Blomeg of Wärtsilä Diesel proposes the use of low 

Pielstick's PC20, first of a new generation of long-stroke medium speed diesel 

M.A.N. - BeW top the market in 1985-Doug Woodyard looks at the market shares last 

Mooring system design for floating production by J. B. Spelman-Marriott and D. P. Peace . . . . . . . . . . . . E105

Compliant marine vehicles by M. H. Patel of University College London......E110

Benwalid, the latest cattle carrier conversion from Jos L. Meyer by J. H. Cox . . . E115

### Regular Features

	See Albert 1985 See Level 1984 British See	
Comm	entary	E83
News	Review	E85
Naval	News	E89
Trade	and Equipment News	E113
Diary .		E123
Viewp	oint	E124

### **Technical Paper**

The Technical Investigation of the Sinking of the Ro-Ro Ferry European Gateway by J. R. Spouge