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NAVAL VESSELS AND DEFENCE TECHNOLOGY

2009071738

Still Afloat: Australia's FFGs survive a tortuous upgrade.

Jane's Navy Intl, v 114 n 4, May 2009, p 30 [5 p, 8 fig]

Kerr, J.

English

The Royal Australian Navy's Adelaide-class frigates have nearly completed an extensive upgrade programme intended to give them an unprecedented level of combat effectiveness. This article gives details of the upgrade which included the installation of an eight-cell Mk 41 vertical launch system for the Evolved SeaSparrow Missile; a new fully integrated active/passive underwater warfare system suite; enhanced electronic surveillance and decoy defence systems; and provision for the first time in the RAN of the Link 16 tactical datalink.

Frigates
Modernisation
Modification

2009071740

Highly mechanised weapons handling for QE class carriers.

Warship Technology, May 2009, p 26 [3 p, 4 fig]

No author given

English

This article describes the automated weapons handling system for the UK Royal Navy's Queen Elizabeth (QE) class aircraft carriers HMS QUEEN ELIZABETH and HMS PRINCE OF WALES, described as being "at the cutting edge of British engineering". The system will provide mechanical handling facilities for moving palletised munitions around the deep magazine and weapon preparation areas, and a series of weapons lifts to connect the magazines, hangar, weapons preparation area and flight deck.

Aircraft carriers
Handling equipment
Weapons

2009071742

KRI FRANS KAISIPO.

Holland Shipbuilding, v 58 n 3, March 2008, p 21 [4 p, 14 fig]

No author given

English

Damen Schelde Naval Shipbuilding, the Netherlands, has delivered the fourth and last sister vessel in a series of corvettes for the Indonesian Navy. The vessel will be used for maritime search and rescue missions in the Indonesian territorial waters. The KRI FRANS KAISIEPO features a helicopter deck for helicopters with a maximum weight of 5 tons. The installed propulsion power of 17,820 kW gives the vessel a maximum speed of 28 knots.

Courvettes
Naval Vessels
Vessel descriptions

2009071745

Hull structure monitoring of the Armidale class patrol boat.

Intl Conf on Innovation in High Speed Marine Vessels; 28-29 Jan 2009; Freemantle, Australia. Pprs. Publ by RINA, London, UK. CD-ROM [8 p, 7 ref, 3 fig]

Gardiner, C., Vincent, P., Et al

English

Austal Ships in the Defence Science and Technology Organisation (DSTO) have undertaken a collaborative project to develop an innovative hull condition-monitoring network for the Armidale Class Patrol Boat. A prototype system has been designed and will be installed on The Royal Australian Navy's HMAS Glenelg. Potential advantages of the new system include reduced power requirements, lower hardware cost, reduced sensor sizes and increased versatility of a sensor network that utilises a "plug-in" approach such that monitoring capabilities can be easily adapted to evolving requirements. Long-term operational experience of high-performance hull forms is mainly limited to the commercial fast-ferry sector. The corresponding design space and operational profile is generally different to that of a naval patrol boat. Therefore, there is a need to develop a greater understanding of the short and long-term structural response of such high-speed aluminium semi-planing hulls for naval operations. This paper describes the sensors and the network architecture. An outline is then given of how the data will be analysed to develop a capability for structural fleet management and life-assessment.

Hull surveillance
Naval vessels
Patrol craft
Structural monitoring

2009071747

Ship 3D model and design database reuse for warship operation and maintenance purposes.

COMPIT '09, 8th Intl Conf on Computer and IT Applications in the Maritime Industries; 10-12 May 2009; Budapest, Hungary. Organised by TUHH Technologie GmbH. Procs. P 411 [9 p, 4 ref, 12 fig]

Malheiros, C.V.

English

Much work is put in 3D product data models in ship design. The data is essential for design and production, but rarely used beyond the production stage. For warships, the problem is aggravated by the high cost of generating the 3D PDM and the usual small series of ship built. However, maintenance and operation of warships requires frequently data stored already in the PDM. The paper proposes an approach to reuse the design and production PDM for operation and maintenance. The reference design presented in this work is a Landing Craft Unit in which database and 3D model were built from the FORAN System.

Naval vessels
Product models
Ship maintenance
Ship operation

2009081984

Light fantastic: US eyes laser weapon technology for the future ship self-defence.

Jane's' Navy Intl, v 114 n 5, June 2009, 9 8 [2 p, 2 fig]

Scott. R.

English

This article examines the US Office of Naval Research's latest initiative to develop Free Electron Laser (FEL) Technology for the ship defence applications. A Key attraction of a FEL weapon is that its speed of effect eliminates the manœuvre advantage of current and future high-g anti-ship missile threats. At the same time, it provides a cost-effective complement to expensive Guided Missile rounds against relatively inexpensive high-density targets.

Lasers
Weapons

2009081986

A crew location recognition system for a naval ship by applying ubiquitous technologies.

J of Ship and Ocean Technology, v 12 n 3, Sept 2008, p 26 [10 p, 6 ref, 2 tab, 7 fig]

Lee, J.T., Cho, S-R., Kim, S-J.

English

Recognition of real time locations of crews for a naval ship is important, not only for operational efficiency but also for the safety of crew onboard the ship. More than 100 crew can be dwelling on a modern naval ship and they are involved in various duties. Also, many visitors frequently come aboard while the ship is moored in a harbour. It sometimes requires considerable time and effort to locate a person for an urgent mission. It would enhance the operational efficiency if locations of onboard crew were recognised and monitored in real time. An active type RFID tag, which has a specific ID number, is distributed to each crew member, which should be carried during his stay in the ship. A number of fixed type RFID readers are to be located in the major passages of the ship, which are connected to the main computer via a Local Area Network. The location of the crew member would be identified by the ID number of his RFID tag and the location of the RFID reader which detected the RFID tag. A middleware is needed to process the collected data in the main computer. The data is fed to application software, which actually display locations of the concerned crews. The software is coded using graphic user interface for better user friendliness, which has the function of storing the location history of a crew, and sending warning messages to appropriate persons, if unallowable behaviour is detected. An auxiliary naval ship is selected for an experimental application study of the proposed system. It turns out that the required budget and time for the realisation of the system is within the allowable limits. However, complementary measures to protect the privacy of onboard crews should be considered and adopted, before the application of the system is realised.

Naval vessels
Position (location)
Recognition
Ship personnel

2009081988

Compact DC power and propulsion systems - the definitive solution.

UDT Europe, Undersea Defence Technology Conf; 9-11 June 2009; Cannes, France. Organised by Clairon Defence Ltd, London, UK. Day 1, Session 4B.

Maltby, R., Butcher, M., Parvin, P.

English

The limited volume allocated to the propulsion system in a naval platform has always presented a challenge for mechanical and electric system designers alike. The problem is exacerbated when designing an electric propulsion system for the smaller warship or submarine. Many potential developments such as permanent magnet motors or high temperature superconducting machines promise significant

improvements over the more conventional solutions, but currently these will require long and costly development programmes before they will enable effective solutions at low risk to the end-user. By considering the novel application of power electronics to distribution architectures and existing machine types, a power and propulsion system has been developed which offers an overall power density approaching that achievable with high temperature superconducting machine based systems. The proposed design utilises conventional iron-cored machine technology combined with mature power switching devices and DC distribution that results in a lower risk, power and propulsion system solution. The system is also adaptable to future technology insertion utilising designs such as high temperature superconducting machines de-risked in other market applications. This paper describes the development of such an electric power and propulsion system. It reviews the issues behind the decision to adopt this development route, discusses the development process, reviews the benefits of this system and describes how naval requirements have been addressed. The paper reviews the test results to date, considers the system integration issues and predicts application opportunities for the proposed system.

Electric power
Electric propulsion
Naval vessels

2009081992

Queen Elizabeth Class build gets underway.

In-Depth, n 14, 2009, p 21 [4 p, 6 fig]

No author given

English

This article describes the integrated power and propulsion system being supplied by Rolls-Royce for the UK Royal Navy's Queen Elizabeth Class aircraft carriers.

Aircraft carriers
Gas turbines
Propulsion systems

2009092243

Golden Virginia: US Navy sub programme raises the bar.

Jane's Navy Intl, v 114 n 6, July/Aug 2009, p 12 [6 p, 8 fig]

Newell, C.

English

Despite recent setbacks, the US Navy's Virginia-class attack submarine programme has managed to pair consistent delivery with rapid evolution, thanks to a streamlined construction process that delivers both speed and efficiency. This article describes the modular construction process.

Modular construction
Submarines

2009092244

Fuzzy optimal general arrangements in naval surface ship design.

Ship Technology Res, v 56 n 3, July 2009, p 121 [21 p, 24 ref, 7 tab, 18 fig]

Kirtley, E.K.N.

English

A new approach to generating, evaluating, and optimising general arrangements of naval surface ships is presented in this paper. Beginning from a known hull form with fixed main structural members, the user edits the continuous longitudinal passages and the default list of relevant ship spaces with associated constraints for location, adjacency, and shape. Spaces are allocated to discrete regions of the ship called Zone-decks. Operating one Zone-deck at a time, the topology and geometry are solved iteratively. The geometry step returns all of the spaces' and accesses' bulkhead locations on an orthogonal grid and a cost function evaluation to the genetic algorithm optimisation on topology. The proposed algorithm returns an optimal arrangement as defined by the user specified goals and constraints and by utilisation of the available area.

General arrangements
Naval vessels
Optimisation
Ship design

2009092245

CVF design evolution described at RINA conference.

Warship Technology, July/Aug 2009, p 14 [8 p, 9 fig]

Knight, S.

English

The UK Royal Navy's new aircraft carriers HMS QUEEN ELIZABETH and HMS PRINCE OF WALES will be the biggest warships ever to be constructed in the UK. This article describes the evolution of the design, the principal drivers on the overall size of the ship, the possible options and configurations to meet competing requirements, and the design policies and tenets set in place at the outset of the design; and the 'baseline' designs, presenting the three fundamental iterations of the design, describing the overall form, arrangement and principal features.

Aircraft carriers
Naval vessels
Ship design

2009092247

Scalable, flexible launcher meets changing requirements.

Warship Technology, July/Aug 2009, p 38 [3 p, 5 fig]

No author given

English

A new scalable, flexible launched system enables submarines to lunch a range of defferent devices, from acoustic countermeasures or hard-kill torpedo decoys to rapidly deployed sensors, without compromising on stealth or submarine operations.

Submarines
Weapons

2009102493

A study on deception ship for ship susceptibility improvement based on system engineering approach.

J of the Soc of Naval Architects of Korea, v 46 n 3, June 2009, p 313 [12 p, 17 ref, 4 tab, 12 fig]

Kang, H-J., Shin, J-G., Et al

Korean

To project military power, the paradigm on the modern warship acquisition has evolved with larger platforms and high-technology equipment. For example, the Aegis combat system equipped warship is one of the most advanced and capable defence systems currently in use. Concurrently, if a warship was attacked and disabled, it may worsen the asymmetry of the battle field and it also reduces the morale of the fleet. At present, the performance of a unit weapon has improved remarkably. A Korean-built SS-209 class submarine, Lee Chun-ham, participated in Naval Exercise Tandem Thrust conducting in 1999, sinking the target ship ex-USS Oklahoma by a single torpedo. USS Stark was struck on May 17, 1987, by two Exocet anti ship missiles and disabled. For this reason, susceptibility should be prior to vulnerability and recoverability. In this paper, a small deception ship which has very similar signatures to a large and high technology equipped warship is conceptually studied by using a systems engineering approach. It may be an effective way to enhance the susceptibility of the key fighting power.

Naval vessels
Recovery
System engineering
Vulnerability

2009102494

Construction cost estimation on the initial design stage of naval ships based on a product configuration model.

J of the Soc of Naval Architects of Korea, v 46 n 3, June 2009, p 351 [11 p, 9 ref, 2 tab, 10 fig]

Oh, D-K., Jeong, Y-H., Et al

Korean

Many manufacturers define the system of a new product flexibility, and take advantage of previous-product information using the product configuration concept. Product configuration is an approach that defines the system of a new product centred on the product structure by referring to the previous-product information. In this paper, it is established how to apply the concept of a product configuration utilising previous-ship information in the construction cost estimation process systematically and effectively. For this, the advanced-construction cost estimation process is defined based on a naval ship product model, and design construction cost estimating model. It is validated that this process and model have applicability through the case study of the construction cost estimating of a mine-warfare ship.

Cost estimates
Naval vessels
Shipbuilding costs

2009102495

Hybrid electric drives for US Navy destroyers.

Propulsion, 2009, p 4 [4 p, 3 fig]

Sturtevant, G.H., Petersen, L.J., Voth, J.M.

English

The US Navy initiated studies in 2007 to assess the viability of installing Hybrid Electric Drive (HED) system in its DDG 51 Arleigh Burke Class Aegis guided-missile destroyers to reduce fuel consumption through electric propulsion and, later, begin to evaluate increased capacity in available ship service power generation. This article looks at the HED system considered and the challenges to be overcome.

Electric drives
Hybrid propulsion
Naval vessels

2009112745

Naval ship structures exposed to rocket thermal and pressure loads.

J of Ship Res, v 53 n 3, Sept 2009, p 159 [10 p, 7 ref, 2 tab, 31 fig]

Mascia, D., Tuveri, M.L.

English

Effects of rocket launch on naval ship structures located near a rocket gun are studied. Using a finite element thermal analysis, the temperatures along the thickness are determined and then applied to the structure to investigate the thermal stresses distribution. Stresses caused by time/space dependent pressure loads are also investigated using transient structural analysis.

Loads (forces)
Naval vessels
Ship structures
Stress analysis
Thermal stress

2009112746

Calculation method of the residual capability of damaged warships

OMAE 2008, 27th Intl Conf on Offshore Mechanics and Arctic Engng; 15-20 June 2008; Estoril, Portugal, Publ by ASME, New York, US; ISBN 978-0-7918-4818-0. Vol 2, pp 657-664.

Ren, H., Li, C., Et al

English

The residual capability of damaged warships is one of the important aspects of its residual strength assessment. The calculation method of ultimate longitudinal bending moment was based on the Smith method. Then, a method to calculate the statistical characteristic values of residual capability of damaged warships was presented, in which some uncertainties, such as the size of broken holes caused by weapons, material mechanical properties of the steel and the size of structures, etc., were considered. The ultimate longitudinal bending moment of Reckling No.23 model was calculated and compared with the result from the literature, the result is quite satisfactory. With a warship as an example, the statistical characteristic values of residual capability of the damaged ship hull were calculated, and some factors which may evidently affect the residual capability were investigated.

Bending moments
Hull damage
Naval vessels
Strength

2009112747

Rising to the occasion: air cushion craft stay up front.

Jane's Navy Intl, v 114 n 7, Sept 2009, p 21 [6 p, 8 fig]

Hollosi, C.

English

A powerful argument advocating the air cushion vehicle for amphibious assault operations is that it can land on 75% of the world's beaches, whereas only 25% of beaches are suitable for assault by conventional landing craft. This article surveys current developments and looks to the future.

Air cushion vehicles
Landing craft
Naval vessels

2009112748

In a class of their own: new corvettes take centre stage.

Jane's Navy Intl. V 114 n 7, Sept 2009/ 9 29 [6 p, 7 fig]

Pape, A.

English

The wide range of tasks and multirole missions now faced by maritime security forces across the world has created a high demand for ship versatility at affordable prices, a middle ground that the modern corvette has begun to occupy. This article looks at current developments within this sector.

Courvettes
Naval vessels