

CNM 2019



CULTURA NAVALE E MARITTIMA

Report of Contributions

Contribution ID: 1

Type: **extended abstract**

Come progettavano i velieri

Thursday, 14 November 2019 10:00 (30 minutes)

Presentazione libro in apertura Convegno ATENA 2019

Titolo : Come progettavano i velieri – Alle origini dell'Architettura moderna di navi e yacht

Presentazione : Cristiano Bettini

Short Abstract

Il XVIII secolo registra, dopo duemila anni dalla scoperta della legge idrostatica di Archimede, un cambio di passo radicale per l'Architettura navale, che avviene in epoca velica e si concentra scientificamente nei primi decenni del secolo, sebbene la segretezza imposta ad architetti e costruttori abbia ritardato di diversi decenni la divulgazione dei nuovi metodi di progetto e calcolo.

Tale svolta si rese possibile grazie agli sviluppi dell'analisi matematica e della meccanica razionale in epoca di rivoluzione scientifica ed illuminista, dove la scoperta dell'equilibrio degli scafi basato sul metacentro, avvenuta verso la metà del secolo stesso ad opera del matematico Eulero e del fisico Bouguer, rappresenta il passo più emblematico di questa svolta epocale, ancora alla base dell'Architettura navale contemporanea. Negli stessi anni, gli studi sulla dinamica dei fluidi e sulla resistenza al moto in essi dei corpi solidi, portati avanti da Stevin, Newton, J. Bernoulli, Leibniz e più tardi da Froude, venivano sviluppati proprio in campo navale.

I testi antichi esaminati dall'Autore provengono da Francia, Gran Bretagna, Olanda, Svezia, Spagna, Danimarca, Portogallo, Stati Uniti d'America, dagli Stati italiani pre-unitari e, per via indiretta, dalla Russia. Una singolarità rilevabile ancor oggi è la scarsissima permeabilità tra studi delle varie nazioni, fatta eccezione per le principali competitrici dell'epoca, Gran Bretagna e Francia.

L'Autore sviluppa il tema storico e progettuale in modo inedito, integrandolo con la propria esperienza di governo in mare sia dei grandi velieri che degli yacht, cercando di renderlo accessibile a un'ampia platea di lettori ed illustrandolo con circa 1000 immagini e disegni. Capitoli a parte sono dedicati allo Yachting, che pur nascendo da basi comuni con l'Architettura navale, se ne distaccò progressivamente assumendo una forte autonomia progettuale dai primi decenni dell'800.

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Session Classification: Plenary Session 1

Track Classification: Naval architecture and marine engineering evolution

Contribution ID: 2

Type: **extended abstract**

The progress of nautical studies in Southern Italy between 1734 and 1861

Friday, 15 November 2019 09:30 (20 minutes)

The development of the Neapolitan royal fleet and of the merchant marine in the second half of 1700s provided for a good technical preparation for the officers and sailors: therefore, an articulated structure was created for the development of nautical studies. After the arrival of Charles of Bourbon (1734) the Academy of Navy was founded for the officers and a College for Pilots was created in Naples, in the Church of Santa Maria di Loreto (1749). Then in 1770 the Nautical Colleges of Naples and Piano di Sorrento were founded. The progress of the nautical and astronomical studies introduced by illustrious professors who from time to time have used the most famous texts, first Spanish, French and English then also Italian will be studied.

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Session Classification: The careers of the sea 1

Track Classification: The careers of the sea

Contribution ID: 4

Type: **extended abstract + paper**

The Genoese ships in the 12th and 13th centuries

Thursday, 14 November 2019 11:00 (20 minutes)

The history of the great Genoese power has generally well known historical reputation, which continues over the decades, with its roots sunk in the Middle Ages and lasting until the Renaissance, period of greater magnificence, in which it was known as the Superba. From a historical point of view related to shipbuilding, it is therefore interesting to find out which boats had to compose and thus give life to this great traffic network, above all commercial and diplomatic, which made Genoa great; in particular we will concentrate in the 12th and 13th centuries, when the control of the city came to include the coasts from Ventimiglia to Portovenere and it was in the full development and economic expansion of this enormous maritime power. Entering between different issues such as the analysis of the most used boats, which were in particular the navis, the commercial boat for excellence, the galley, with the thinnest and fastest shape compared to the previous one and the bucius, a type similar to the navis for the shape of hull even if of reduced dimensions, we want to expose, albeit in an area limited to an academic article, the development in these centuries of these boats. We also want to take into consideration the economic value that these boats had been taking into account different factors that affected it, such as the age of the ship and its state of preservation; we will also give a look to the men who were part of this fermented world, as could be the shipwright during the construction, the owner or co-owners of the ships, and also the crewmen who made the boat alive each with different tasks, how could they be rowers, armed sailors and officers, guiding her along the different routes, during the trips across the Mediterranean. All this without neglecting some aspects of life that were part of the activities carried out all around the boats, dwelling for example on the relations between the shipyard and the client, or the loca, an investment vehicle widely used by the traders of the time. It will also be shown how the trade routes were modified, noting an expansion of the range of action in conjunction with the passage of time, an effect explained by the probable increase in length and size that the boats themselves underwent changing over decades. This operation is possible thanks to the analysis of the notary documents preserved in the State Archives of Genoa and of the contemporary genre literature such as the Annals of Caffaro di Rustico Da Caschifellone (1080 or 1081 - circa 1164), crusader as well as analyst and diplomat who gave us a vast compendium of information recording the chronicles of the city of Genoa relating to the Middle Ages.

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Session Classification: History 1

Track Classification: History of shipbuilding and navigation

Contribution ID: 6

Type: **extended abstract + paper**

Boats propelled by paddle wheels and animal propulsion: a curious history

Thursday, 14 November 2019 11:20 (20 minutes)

In the eighteenth century, there were three major innovations that produced significant changes to shipbuilding and the ship. This is the advent of iron construction, the use of the alternative steam machine and the invention of propeller propulsion. The incipit of the development of steam propulsion originates in the mechanical transmission of boats with paddle wheels. Already in the Renaissance scholars and inventors of the most diverse fields of knowledge had imagined being able to apply the paddle transmission to the motion of a boat. We find examples of this in manuscript and printed treatises on the most ingenious inventions and projects of the time. However, the real development of the steam engine-propelled ship came when the propeller replaced the paddle wheel, so it is an invention of recent times, perhaps even taken from the technology of windmills. The need to have a driving force able to rotate an endless screw, even if called a propeller-screw, caused numerous well-known or less known authors to experiment in the design of curious boats with wheels formed with blades moved by human or animal propulsion. In this brief note, we want to talk about the development of a naval propulsion system which, in the pioneering period of the development of steam propulsion, played a not inconsiderable role in the evolution of the paddle wheels transmission.

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Session Classification: History 1

Track Classification: History of shipbuilding and navigation

Contribution ID: **10**Type: **extended abstract**

RoPax: L'evoluzione del layout

Friday, 15 November 2019 15:20 (20 minutes)

Abstract. La ricerca in oggetto intende investigare il settore delle RoPax, ovvero delle navi destinate al trasporto misto di passeggeri e veicoli dotati di ruote, oggi considerate tra i vettori di maggior interesse nella sfera del Transportation Design, grazie alle ricadute positive che il loro impiego ha evidenziato nell'ambito degli scambi commerciali e della coesione territoriale. Il ferry si è diffuso in Europa a partire dalla seconda metà del XX secolo, un'epoca caratterizzata da una incalzante ripresa economica post-guerra che ha favorito lo sviluppo delle rotte commerciali e della cantieristica navale. Il ferry costituisce l'estensione diretta delle reti viarie e ferroviarie sull'acqua in assenza di infrastrutture di terra. Non è un caso che derivi dalla "landing ship tank", le navi realizzate per le operazioni anfibie che consentivano di sbucare soldati e veicoli sulla spiaggia, della quale ha ereditato la versatilità e la praticità come valori identitari che ne contraddistinguono lo spirito del viaggio. Lo studio mira a far emergere le trasformazioni più significative inerenti alla forma architettonica della nave, attraverso l'analisi e il confronto di disegni di unità selezionate sulla base di criteri comuni, quali il tipo di carico, l'area geografica di servizio, ecc. Ciò che interessa maggiormente è ricostruire l'evoluzione del layout per comprendere le motivazioni che hanno orientato le scelte progettuali sino ad oggi. Tra le tante variabili di ordine tecnico e stilistico, il design del ferry è estremamente influenzato dalle trasformazioni sociali e dagli stili di vita dei passeggeri. Di recente, l'utilizzo del ferry ha fatto registrare un'impennata che ha spinto le compagnie armatrici a incrementare la qualità dei servizi e dell'intrattenimento a bordo. Pertanto, navigare sul ferry a mutato di significato, da viaggio "spartano" a confortevole quasi come su una nave da crociera. Il confronto tra ingegneria e architettura è divenuto più che mai attuale e determinante per la realizzazione di buone navi. Rivolgendo lo sguardo avanti, le prossime sfide saranno dettate dall'innovazione sostenibile e dalla rivoluzione digitale, aprendo la porta a nuovi scenari nell'industria navale, che modificheranno nuovamente il layout del RoPax.

Primary author: Mr CASCINO, Carmelo (Knud E. Hansen)**Co-author:** Mrs ARINI, Francesca (Knud E. Hansen)**Presenters:** Mr CASCINO, Carmelo (Knud E. Hansen); Mrs ARINI, Francesca (Knud E. Hansen)**Session Classification:** Ship & Nautical Design**Track Classification:** Ship and nautical design

Contribution ID: 12

Type: **extended abstract + paper**

Sustainable Development Goals in the cruise industry: The contribution of sustainability disclosure

Thursday, 14 November 2019 17:20 (20 minutes)

This paper aims to investigate societal sustainability according to the Sustainable Development Goals (SDGs), that is the 17 global goals for Sustainable Development settled by the United Nations General Assembly in 2015. Especially, the study is focused on the cruise industry that is a segment of the wider tourism industry that does not know currently “crisis” in terms of increase of the cruise demand and size ships. Drawing from a deep review of the literature and practice on the topic by integrating the SDGs model and the sustainability disclosure framework, we investigate, through a manual content analysis of sustainability disclosure sources, the major cruise companies for explaining the way in which cruise industry could follow and achieve the sustainable goals, mostly the 11 SDG. The study allows to obtain interesting and useful results for the academics and practitioners in the making-decision processes.

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Session Classification: Waterfront evolution and coastal marine environment

Track Classification: Waterfront evolution and coastal marine environment

Contribution ID: 13

Type: **extended abstract**

Un patrimonio di disegni progettuali navali della fine del XIX secolo

Thursday, 14 November 2019 14:20 (20 minutes)

E' in corso presso il DITEN della Scuola Politecnica dell'Università di Genova la catalogazione, a cura della Sezione Ligure Piemontese di ATENA, di un cospicuo numero di disegni progettuali navali risalenti alla fine del XIX secolo ed ai primi anni del XX, finora conservati in armadi presso la vasca navale della Scuola.

Questi disegni, quasi certamente entrati a far parte del materiale didattico di sostegno per gli studenti della Regia Scuola Superiore Navale, costituiscono una ricca fonte di consultazione e documentazione di un periodo storico dell'ingegneria navale a partire dalla fine del XIX secolo, fino ai primi decenni del XX secolo, consentendo anche lo sviluppo di percorsi tematici di approfondimento.

Il riordino di questo giacimento di disegni rientra in un programma di valorizzazione e conservazione del patrimonio storico e culturale della Scuola di Ingegneria Navale di Genova, al quale partecipa la Sezione Ligure Piemontese di ATENA, che ha visto negli anni recenti la catalogazione di una raccolta di Atlas Navali relativi alla cantieristica francese di metà-fine '800, la pubblicazione di un catalogo dei modelli di navi e di strutture navali presenti nelle bacheche della Scuola, il censimento di strumenti di calcolo e disegno in uso nella prima metà del XX secolo, con fotografie, manuali, metadati oggi consultabili sul portale University Repository dell'Università di Genova, nell'archivio Duiliochip.

Il lavoro proseguirà nei prossimi mesi con la catalogazione delle tavole di questa raccolta, digitalizzate e corredate di metadati, e inserite in un repository in modo da renderne possibile la consultazione, ma si ritiene utile fornire già fin d'ora queste prime indicazioni sul tipo di materiale già censito e sui contenuti di alcune serie di tavole.

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Presenter: Mr DAMILANO, Gianfranco (ATENA Sezione Ligure Piemontese)

Session Classification: Maritime Museums and Libraries

Track Classification: Refitting and conservation of marine and maritime heritage

Contribution ID: 14

Type: **extended abstract + paper**

Evolution of the motor yacht superstructure: relations between habitable plant and environmental context

Friday, 15 November 2019 15:40 (20 minutes)

The motor yacht, in the course of its evolution in the modern period, ever since it has become an element of serial production and therefore of global diffusion, has profoundly retraced its typological identity: its external conformation has become over time an identifying element of the more different ways to conceive and decline yachting. By virtue of a principle closely related to social factors, its formal definition initially relates to styling and aerodynamics, for the only factor that presupposed a totalizing sporting experience, even in its aesthetic celebration: dynamism. The superstructure becomes precisely the field of choice through which this character find aesthetic definition. In its evolutionary path the recreational cabin cruiser will progressively move away from the boundaries of the mere stylistic research that had characterized nautical production for several decades, to retrace the typological boundaries in eminently functional terms. In recent times, it has become the interpreter of a complete evolution, not limited only to the formal-aesthetic field. It rediscovers its essence of habitable structure and, as such, its contiguity with the productive and research sectors related to the theme of the "habitable machine".

The superstructure of the modern boat represents an "interactive envelope", almost completely losing the self-referential definition, limited to the aesthetic field, which it had in the past. It becomes a technological envelope, with a complete interface with the environmental context; it is a metaphor for a possible transformation of the pleasure boat, which rethinks its relationship with the sea: passing from a consumerist phase to a more thoughtful one that respects the environmental resource. In the deck system, the original split between the interior and the external context – in particular, between the perimeter casing and the parts of the layout – is now increasingly attenuated on the basis of a progressive connection between these components: in the organization of a system, or of an increasingly complete interaction among heterogeneous elements. The superstructure then is no longer an isolated shell, but an integrated complex, dynamically adaptive with respect to environmental variables, and interactive with respect to the various parts of the set-up complex. It is the organism that regulates the functions and interactions of the living cell (understood as a complex object) in which the aesthetic apparatus has been progressively relativized. From this point of view, the nautical object could be seen as an evolved industrial product, as a significant field of application of heterogeneous specialties: the superstructure and the main deck become instruments of connection between the housing activity and the environmental context, in the multitude of aspects that the modern conception of life on board underlies. In the typological complexity the role of the project assumes a decisive importance, since, besides a formal and functional ideational tool, it becomes the programmer of the confluence of specific aspects. The excursus also aims to analyse the evolutionary process of the "total" project, which could be seen in its composition as a continuum, increasingly oriented to environmental compatibility and - from the point of view of optimization of resources - to the adoption of innovative manufacturing processes, technologies and materials. The result is the synthesis of a confluence of multiple specialist areas, some traditionally connected to the nautical sector, some unprecedented ones, others shared with different design and production sectors.

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Session Classification: Ship & Nautical Design

Track Classification: Ship and nautical design

Contribution ID: 15

Type: **extended abstract**

Palazzo Marina a Roma: “faro” di storia e cultura marittima e navale

Thursday, 14 November 2019 14:00 (20 minutes)

Storica e monumentale sede della Marina Militare nella Capitale, “Palazzo Marina” assolve fin dalla sua fondazione il ruolo di importante “faro” di cultura marinara e di strumento di comunicazione della marittimità italiana. L’edificio è stato volutamente eretto sulle sponde del Tevere per ribadire la natura- le e storica vocazione marittima dell’Italia e per ricordare come la penisola abbia conquistato un ruolo preminente nella storia ogni qual volta abbia assecondato la sua geografia. Un messaggio, questo, che l’edificio “trasmette” da 90 anni, attra- verso la sua posizione e tramite un programma iconografico (e quindi comunicati- vo) espresso fin dalla facciata e riaffermato all’interno, nel susseguirsi degli am- bienti di rappresentanza.

La vicinanza al fiume risponde alla volontà governativa di collocare il Ministero della Marina in una “ideale e anche fisica continuità tra il Tevere navigabile e il mare” e di rimandare, così, alla vocazione marinara che Roma, attraverso il suo fiume - antica via per il Mediterraneo -, ha sempre rivendicato, ponendosi alla stregua di Venezia e Genova.

Genova, Roma e Venezia sono i nomi iscritti sulle tre finestre monumentali dell'avancorpo centrale della facciata di Palazzo Marina sul Lungotevere: sono i simboli dell'Imperium Maris italiano nella storia, che vengono menzionati anche al suo interno, sia nelle decorazioni pittoriche e scultoree, sia nelle arti applicate. Inaugurato il 28 ottobre 1928, ma progettato tra il 1911 e il 1913 nell'ambito del programma edilizio governativo di Roma Capitale di epoca giolittiana, l'edificio, eretto appositamente per la Marina Militare (all'epoca Regia Marina) e ad essa esclusivamente destinato, “parla” di mare attraverso iscrizioni, simboli, raffigura- zioni e quello straordinario “ordine architettonico marinaro” che il suo progettista, Giulio Magni, inventa per l'occasione.

Vero e proprio unicum per la sua intonazione navale, Palazzo Marina propone al visitatore un viaggio simbolico e storico a ritroso attraverso le glorie d'Italia sul mare, dalla Grande Guerra all'antica Roma. Il percorso parte dalla Grande Guerra, cui fanno riferimento le due ancore delle corazzate austroungariche Viribus Unitis e Tegetthoff - esibite in facciata come trofei di guerra-, per risalire, attraverso un itinerario sia fisico sia ideale, fino all'antica Roma, passando per il Risorgimento, la battaglia di Lepanto, le Repubbliche Marinare.

Tutte le arti sono dispiegate per celebrare la Marina e il suo elemento naturale, il mare; scultura, pittura, arti applicate, elementi d’arredo assumono forme di navi, di onde, di vele e di remi, di animali marini e di simboli marinari, attinti non solo dall’epoca classica, ma anche dalle glorie delle Repubbliche di Venezia e di Geno- va. I ritratti e le allegorie rimandano alla storia italiana, sia bellica sia esplorativa. Alle iconografie consolidate vengono affiancate altre inusitate, elaborate per mostrare le nuove scienze e le nuove tecnologie di cui la Marina si avvale e di cui è promotrice. Alle allegorie si affiancano i realistici dipinti murali di Pieretto Bianco, in una delle sale più importanti del palazzo: dedicati al vincolo indissolu- bile tra “navigare” e “costruire”, essi costituiscono uno straordinario documento figurativo di archeologia industriale, di storia navale e di storia della tecnologia italiane.

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Session Classification: Maritime Museums and Libraries

Track Classification: Maritime museums and libraries

Contribution ID: **18**Type: **extended abstract**

Bio-inspired protective structures for marine applications

Friday, 15 November 2019 12:00 (20 minutes)

Materials and structures for marine applications often require to combine high mechanical performance with lightness. Sandwich structures based on polymeric or metallic cores are traditional lightweight solutions for marine applications. However, common sandwich structures do not always offer a suitable protection from some ordinary in-service events such as low-velocity impacts with floating and submerged objects or with docks. The design of more efficient lightweight protective systems for marine applications, may take inspiration from nature, which developed incredible solutions throughout millions of years of evolution. In the current work, bamboo structure was studied and subjected to mechanical tests. The results of the analysis allowed the identification of some structural characteristics which make the investigated materials efficient in impact absorption. Consequently, some bio-inspired designs were suggested with the aim of improving low-velocity impact resistance of some marine structures, providing good structural performance and lightweight properties.

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Session Classification: Engineering 2

Track Classification: Ship and nautical design

Contribution ID: 19

Type: **extended abstract**

Il restauro di Velarca. La ricostruzione dello scafo

Friday, 15 November 2019 14:20 (20 minutes)

Restaurare Velarca è stato riportarla al suo poterla usare, viverla come catalizzatore di atmosfere, pensieri, scambi, come contenitore di culture, conoscenze e modi di essere. E come momento di svago. Perché Velarca nel modo in cui è stata voluta dai suoi proprietari e resa da Belgiojoso, Banfi, Perassutti e Rogers nel 1961 è stata tutto questo. Nella storia dell'imbarcazione in legno, ricostruire e, spesso più volte, sostituire elementi ammalorati è pratica comune. La natura regala il materiale giovane per realizzare elementi nuovi identici a quelli che hanno compiuto il loro ciclo. Per il programma di restauro di Velarca lo scafo è stato ricostruito con le stesse forme, gli stessi materiali e la medesima ossatura. Su questo saranno trasferiti gli interni e in buona parte le sovrastrutture

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Session Classification: Refitting & Conservation

Track Classification: Refitting and conservation of marine and maritime heritage

Contribution ID: **20**Type: **extended abstract**

Una Vita Controvento

Friday, 15 November 2019 10:10 (20 minutes)

La presentazione è quella di un libro che descrive la biografia dell'Autore: un comandante di navi petroliere . Ma non si tratta solamente della biografia dell'Autore ma è soprattutto un racconto della vita del navigante in generale . Un libro che è stato scritto con l'intento di far emergere la figura del navigante appunto : una figura che è sconosciuta al grosso pubblico e di cui i media non parlano quasi mai .Il libro ha lo stile di un romanzo ma I fatti narrati sono assolutamente veri come lo sono i protagonisti del libro stesso.

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Presenter: Mr BUONAROTTI, Pasquale (???)

Session Classification: The careers of the sea 1

Track Classification: The careers of the sea

Contribution ID: 21

Type: **extended abstract**

Marittimo 4.0: quale formazione?

Friday, 15 November 2019 11:00 (20 minutes)

L'economia del mare è un valore storico-culturale che esprime la capacità multidisciplinare e di coesione dei territori, sintetizzando le vocazioni artigianali, commerciali, manifatturiere e creative. Oggi, l'economia del mare è in pieno sviluppo e in piena trasformazione digitale, con prospettive di crescita di lungo periodo e in controtendenza rispetto alle incertezze registrate nell'economia generale. Questo, da sé, motiva un'attenzione particolare per comprendere meglio l'estensione del settore, le traiettorie evolutive e quindi i fabbisogni formativi. Le esperienze sviluppate dal Cluster marittimo regionale del Friuli Venezia Giulia (mareFVG) offrono lo spunto per lo sviluppo di iniziative multiregionali convergenti.

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Presenter: Dr ROSSI, Martina M.P. (Maritime Technology Cluster FVG- mareFVG)

Session Classification: The careers of the sea 2

Track Classification: The careers of the sea

Contribution ID: 22

Type: **extended abstract**

Contemporary Boatbuilding Traditions in Sulawesi

Friday, 15 November 2019 14:40 (20 minutes)

Indonesia is a very rich country in terms of maritime heritage, both underwater and ethnographic. The historical relevance of the islands in the global maritime trade network is recognised worldwide, so as the particularity of boat construction and navigation techniques. Contemporary wooden boatbuilding activities and traditional sailing still survive in various Indonesian regions. After a first visit to the island of Sulawesi, in 2018, the authors identified a case study particular significant to enhance the study of the Indonesian maritime heritage: the boatyards of South Sulawesi, Tana Beru and Bira. These boatyards were inscribed in 2017 on the UNESCO representative list of the Intangible Cultural Heritage of Humanity. Vessels constructed in these boatyards are generically called pinisi, a common name attributed to large passenger and cargo boats propelled by sail and engine, which were traditionally associated to the schooners. Boatbuilding construction techniques and ship design in Indonesia are constantly changing, therefore, it is getting more and more important to deepen our knowledge into the complexity of people nautical and maritime skills and activities and to record hull shape and construction characteristics of the boats they produce. Several small boatyards are also widespread in Sulawesi, here, a variety of small-size wooden boats are built. The study consisted in the use of the ethnographic method, considering together social, linguistic, material culture aspects, and maritime traits and manifestations of societies involved in boatbuilding and maritime activities. Hull shapes and construction characteristics have been recorded using the 3D photogrammetry, the resulting 3D models have been used to extrapolate two-dimensional visions of naval lines and construction drawings useful as long standing record of a changing tradition, comprehensible to boatbuilders, nautical architects and engineers, and useful for possible future reconstructions. So far, very few and limited studies have been conducted on the communities involved in the construction of wooden boats in this region, nautical terminology has never been systematically recorded and existing boats have rarely been surveyed in detail. Understanding the social and linguistic background of people living and working in the Sulawesi boatyards, and of those involved in the life of the boatyards, is crucial to reconnect past to present practices of building boats, to understand changes in traditions and the economic implications related to transitions in building techniques and vice versa. Local wisdom related to maritime knowledge and boat construction, as well as their detailed terminology have also been captured through the recording of oral stories, rituals and practices.

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Session Classification: Refitting & Conservation

Track Classification: Refitting and conservation of marine and maritime heritage

Contribution ID: 23

Type: **extended abstract**

NAVIGANDO - Verso le professioni del mare

Friday, 15 November 2019 11:40 (20 minutes)

La crescita blu non potrà che avere fondamento nella disponibilità di risorse professionali qualificate e prima ancora di vocazione ai mestieri del mare, che tuttavia scontano un bias negativo nei giovani e nelle loro famiglie, nonostante la crescente richiesta da parte delle imprese. In risposta a tutto questo, il Cluster marittimo della regione Friuli Venezia Giulia sta realizzando una serie strutturata di interventi mirati ad attivare processi di fascinazione dei giovani e di diffusione della cultura del mare, che si ritiene possibile replicare in altri territori.

Primary author: Dr ROSSI, Martina Maria Paola (Maritime Technology Cluster FVG - mareFVG)

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Presenter: Dr ROSSI, Martina Maria Paola (Maritime Technology Cluster FVG - mareFVG)

Session Classification: The careers of the sea 2

Track Classification: The careers of the sea

Contribution ID: 24

Type: **extended abstract + paper**

Impact of hybrid propulsion on the project of passenger ferries for Italian scenario.

Friday, 15 November 2019 15:00 (20 minutes)

In Italy there is a large fleet of passenger ferries , this fleet is operating in a very special scenario: no matters if we talk about Internal waters like the lakes or the venetian lagoon or the islands in Gulf of Naples or the Sicilian islands, all those ferries must deal with port structures, often of historical interest, and environmental situations extremely particulars and requiring attention. In fact the ferries operating in those areas have the need to offer great manouvrability, silent running, low emissions or no emissions. For all those aspects the hybrid propulsion, combining the use of diesel electric generators and batteries offers the possibility to adopt efficient systems for manouvrability and propulsion, like azimuthal or azipodal propellers and battery packs to ensure silent approaching to the mooring facilities, the possibility to stay at night in port without generators working during the nocturnal stop, realizing a ship that close the areas of interest can operate with almost complete silence and no pollution.

All those advantages have an impact on the general layout of the project considering the necessity to respect the limitations in term of stability, with special attention to the damaged stability conditions.

The disposition and the subdivision must be adequated to the navigation requests, according to the range calculation performed considering the results of tank tests and the evaluation of the size batteries.

Furthermore the hybrid propulsion, as well knows, can be more "space demanding" in terms of installation, due to the need to install not only the diesel engine but also several components for the management of the propulsion system, and this has an impact on subdivision.

In conclusion the subject of the work is the case study of several project for ferries , different in size and typology, with hybrid propulsion, examining the fact that the request of maintaining the stability criteria and consequents choices of project, oblige the naval architect to a careful disposition of the subdivision and the work aims at underlining those aspects.

Primary author: Prof. RUGGIERO, Valerio (University of Messina)

Presenter: Prof. RUGGIERO, Valerio (University of Messina)

Session Classification: Ship & Nautical Design

Track Classification: Naval architecture and marine engineering evolution

Contribution ID: 27

Type: **extended abstract**

Inshore Diver, Top up e Offshore Sat Diver, 3 qualifiche normate della subacquea industriale

Friday, 15 November 2019 11:20 (20 minutes)

L'articolo presenta una panoramica dell'evoluzione tecnico-normativa di tre qualifiche normate della subacquea industriale ai sensi della Legge 07/2016 Art. 2.1 del DPR 31/18 Art. 10.1 denominate: Inshore Diver, Top up e Offshore Sat Diver e della nuova figura di Diver Medic Primo Soccorso che è certificabile ai sensi della norma di certificazione delle competenze ISO IEC 17024. L'osservanza di questi regolamenti di competenza e conoscenza consente sia di garantire la sicurezza e la salute dei subacquei industriali che di fornire ai professionisti adeguati requisiti per superare i controlli di omologazione che sono già richiesti da alcuni grandi committenti e che saranno in future la regola per la fornitura di servizi in appalto.

Primary author: Mr KOUVAKIS, MANOS (direttore CEDIFOP)

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Presenter: Mrs DONDANA, Anna (APC Mare AIAS)

Session Classification: The careers of the sea 2

Track Classification: The careers of the sea

Contribution ID: 29

Type: **extended abstract + paper**

The irradiated noise underwater by the ships: a state of the art

Thursday, 14 November 2019 15:00 (20 minutes)

The attention on a global scale to the preservation of the ecosystems and to the reduction of emissions connected to anthropogenic activities falls mainly on industrial activities and on the transport sector. The role of the maritime sector is crucial in this theme since it impacts both on the balance of both marine and terrestrial ecosystems. Reduction of vessel emissions into the marine environment, including energy like the sound radiated underwater, has in recent years received growing attention. Underwater noise from shipping is generally considered as a major contributor to overall sea noise levels. Surface vessels radiate underwater noise mainly due to propeller cavitation; machinery on board and water flow around the ship hull. High sound levels are a potential threat for marine fauna as they can mask acoustic signals used to communicate, navigate and hunt, or even induce temporary or permanent damage to sensory organs. In this paper, we want to study the last developments in this field in which a big job will be made to clarify all the aspects.

Primary author: Prof. COPPOLA, Tommaso (University of Naples)

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Presenter: Mr DE LORENZO, Francesco (Fincantieri)

Session Classification: Engineering 1

Track Classification: Naval architecture and marine engineering evolution

Contribution ID: 30

Type: **extended abstract + paper**

Il Paesaggio marino e costiero: Patrimonio geologico e culturale

Thursday, 14 November 2019 12:20 (20 minutes)

L'attività svolta nell'ambito del percorso formativo di Alternanza Scuola Lavoro (ASL), tra l'Istituto di Scienze Marine del Consiglio Nazionale delle Ricerche (ISMAR-CNR) sede di Napoli, ed il Liceo Scientifico "Galileo Galilei" di Napoli si è incentrata su tematiche inerenti la risorsa mare. Dopo un accurato studio bibliografico, finalizzato all'approfondimento di alcuni concetti base sulle componenti e dinamiche delle Scienze della Terra e del Sistema Mare, ed attività pratiche (di laboratorio e di campo in ambiente marino), realizzate in collaborazione con i ricercatori dell'ISMAR, lo studente è stato formato ad una lettura critica del territorio in termini di forme del paesaggio, con particolare attenzione alle definizioni geologiche di Pericolosità, Rischio e dunque Resilienza del territorio. Sono state realizzate delle schede tecniche, riassuntive del confronto tra il paesaggio napoletano dell'ambiente marino-costiero, come ritratto nelle opere pittoriche del Vedutismo ('700 - '800), con quello attuale, oggi in gran parte trasformato a causa della intensa antropizzazione del territorio. Il lavoro ha avuto come finalità la sensibilizzazione delle "coscienze" sulla tutela e salvaguardia del territorio marino. L'esperienza progettuale condotta con gli studenti ha rilevato che la comprensione e la valorizzazione del Paesaggio napoletano in termini scientifici, rappresenta un patrimonio culturale e può avere risvolti applicativi ampi ed interessanti in termini di sviluppo economico-sostenibile, in linea con quanto prescritto dalla Convenzione Europea del Paesaggio.

Primary author: Dr BUONOCUNTO, francesco paolo (ISMAR-CNR)**Co-authors:** Dr VIOLANTE, Crescenzo (CNR-ISMAR); Dr ESPOSITO, Eliana; Dr GIORDANO, Laura; Dr FERRARO, Luciana**Presenter:** Dr BUONOCUNTO, francesco paolo (ISMAR-CNR)**Session Classification:** History 2**Track Classification:** Waterfront evolution and coastal marine environment

Contribution ID: 32

Type: **extended abstract + paper**

Houseboating in ancient times: *thalamegos*, *lusoriae*, *cubiculae* and the Nemi ships as ancestors of nowadays floating houses trend

Friday, 15 November 2019 14:00 (20 minutes)

Houseboating is mainly known as a popular recreational activity, that takes place all around the world, involving groups of people of all ages, aboard houseboats of all varieties and sizes.

Houseboating is a relatively recent, but this practice seems to have a very ancient history. In fact, it can find its roots in India as well as in China or in the European continent, but the history of this practise has often been told indistinguishably with the origins of pleasure boating. It is hard to define which could have been the very first houseboat or floating home in history, since they have in common almost all the features that will distinguish it from working and military boats. This fact plus a diffused imprecise definition of 'houseboat', in the past as nowadays, makes it difficult to reconstruct the true beginning of houseboating, without mixing it with the birth of pleasure yachting.

Even if houseboats and pleasure boats are often used as synonymous, these kinds of crafts have in common only the purpose of being both dedicated to a spend some leisure time on board. However if yachts main aim is to sail, with navigation as the main activity to do on board, houseboats primarily feature is to be used as a home, not necessarily moving around but simply floating. Knowing this difference, houseboats may be even older than pleasure boats, with the *Thalamegos* and the Nemi ships as its most famous ancestors.

The aim of this work is to define the difference between houseboats, floating houses and pleasure boats, while tracing their forerunners in the Ancient History of the Western World. The most famous Hellenistic floating palace, the *Thalamegos*, the Roman *lusoriae* and *cubiculatae* and the Nemi Ships have been analysed in this work in order to point out similarity and differences between houseboating and pleasure boating, showing links and features with the crafts of today.

Primary author: Dr CALLEGARO, Martina (University of Genoa)

Presenter: Dr CALLEGARO, Martina (University of Genoa)

Session Classification: Refitting & Conservation

Track Classification: History of shipbuilding and navigation

Contribution ID: 33

Type: **extended abstract + paper**

The Failed Project of the “Heavy” MAS

Friday, 15 November 2019 16:20 (20 minutes)

This paper is focused on the history of a specific MAS (Motoscafo Armato Silurante) project among the many that were developed. The MAS was a class of fast torpedo armed vessel used by the Regia Marina during World War I up to World War II. During the two World Wars the general design of the MAS, however, was changed. From 1932 to 1937 the Baglietto shipyard developed, among the many projects, two different prototypes: the MAS-431 and the Motor Torpedo & Gun Boat “Stefano Turr”. The first project was a small and very fast ship that represents the evolution of the MAS of the first World War, summarizing the best of the experiences gathered up to that moment. The “Stefano Turr” project was a large boat of over 60 tons of displacement that, besides dimensions notably superior to those of the MAS-431, has a stepped hull similar to the MAS-431. Unfortunately, the “Stefano Turr” project did not give satisfactory results in terms of performance. This paper tries to investigate the reasons for the lack of success of the hull performance using modern tools as the Computational Fluid Dynamics (CFD) approach.

Primary author: Prof. MANCINI, Simone (Università degli Studi "Giustino Fortunato")

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Presenter: Prof. MANCINI, Simone (Università degli Studi "Giustino Fortunato")

Session Classification: Naval Ships

Track Classification: Ship and nautical design

Contribution ID: 34

Type: **extended abstract + paper**

Available vs Accessible data and information _ the strategic role of adaptive communication in the Naval Architecture and Marine Engineering processes

Thursday, 14 November 2019 15:40 (20 minutes)

Efficient Data & Information sharing is key to and backbone of the collaborative effort to successful completion of projects on time and on budget. Current software tools generating growing amounts of data, and some generate information in more-or-less structured ways, too. However, a heterogeneous, collaborative approach is not supported much by the software industry which remains rather insular in its strategy, thereby forcing format conversions, data repetition and timeline fractures during the life-time design-to-delivery process. This causes data & information to remain, at best, accessible. A new “availability” paradigm that looks at the current environment from a different perspective is proposed for adoption and application to commence remedying the situation. Accessibility is, by definition, a search-based, existence dependent, uncertain and error-prone condition, while availability is, by definition, a data and information supply strategy that follows specific requirements expressed by each stakeholder. Contrary to general perception, proactive exploitation of data and information in the ship and yacht industries is very rarely undertaken and, even then, much less efficiently than possible today, the causes spanning from incompatible formats to culture. Although the first out-of-the-box fully enabled PLM environment for ship design and ship building is now available as a commercial software product, there remains a requirement for upstream preparation work which remains in itself a techno-cultural obstacle. On the other hand, it is nowadays possible to connect many common-place software tools into a managed, adaptive communication environment thereby effectively making data and information available to all stakeholders at the time and in the format required by each. The research presented in this paper discusses the structure and functioning of the collaborative, shared environment achieved with software tools already in common use. The already-in-use-software element is a fundamental facilitator in adjusting current practices to a more PLM-cognizant strategy and also greatly mitigates the cultural obstacles that hamper the much-needed evolution towards an AGILE and LEAN based PLM approach in our industry. The strategic role of adaptive communications is discussed in the context of requirements, constraints and the changes thereof experienced during the design-to-delivery process, disruptions which of even greater impact when caused by unforeseen events.

Primary author: Mr DANESE, Nick (Nick Danese Applied Research)**Co-author:** Mr PAGLIUCA, PAOLO (STN - Studio Tecnico Navale)**Presenters:** Mr DANESE, Nick (Nick Danese Applied Research); Mr PAGLIUCA, PAOLO (STN - Studio Tecnico Navale)**Session Classification:** Engineering 1**Track Classification:** Naval architecture and marine engineering evolution

Contribution ID: 35

Type: **extended abstract + paper**

The submerged cultural landscape: examples from the Bay of Naples

Thursday, 14 November 2019 12:40 (20 minutes)

A substantial amount of prehistoric and historic cultural landscapes is now submerged. Sea levels have fluctuated throughout geological time, periodically encroaching or retreating across coastal plains. These now-submerged zones were important for prehistoric and historic humans, allowing access to marine and terrestrial resources and to transportation and migration routes. The principal process contributing to sea-level changes is the exchange of water between the continental ice sheets and the oceans (glacio-eustatic sea-level changes). Eustatic sea-level changes occur on an oceanic to worldwide scale. They also result from a change in the size of the ocean basin following tectonic seafloor spreading (tectono-eustasy) or sedimentation (sedimento-eustasy). In addition, sea level changes can be driven by local changes of the land with respect to the sea surface due to tectonic deformations, sediment compaction, and human activity. Inundated terrestrial archaeological sites, however, can result from a number of other natural processes, as well as sea-level changes, including earthquakes (such as Port Royal in Jamaica), volcanic processes (such as the ports of Misenum and Baiae, and Portus Julius and Nisida in the Mediterranean) and flooding event (such as Herakleion and Eastern Canopus in Egypt).

Primary author: Dr VIOLANTE, Crescenzo (CNR-ISMAR)

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Presenter: Dr VIOLANTE, Crescenzo (CNR-ISMAR)

Session Classification: History 2

Track Classification: Marine archeology

Contribution ID: 36

Type: **extended abstract**

Formazione e finanza al servizio della marineria. Il caso di Procida nell'Ottocento.

Friday, 15 November 2019 09:50 (20 minutes)

Con il nostro contributo su Procida ci si propone di studiare l'impegno di una comunità che, a partire dall'arrivo Carlo di Borbone nel 1734, si afferma nel settore della marineria, della navigazione e della finanza dentro e fuori del regno di Napoli.

Primary author: Ms SALVEMINI, raffaella (cnr-issm)

Co-author: Dr AVALLONE, Paola (Issm cnr)

Presenters: Dr AVALLONE, Paola (Issm cnr); Ms SALVEMINI, raffaella (cnr-issm)

Session Classification: The careers of the sea 1

Track Classification: The careers of the sea

Contribution ID: 37

Type: **extended abstract**

Le tecniche di varo, alaggio e conservazione delle imbarcazioni negli arsenali del Mezzogiorno medievale

Thursday, 14 November 2019 12:00 (20 minutes)

Partendo da due documenti contenuti nei corposi volumi della cancelleria angioina è possibile ricostruire le tecniche di alaggio e di varo delle imbarcazioni utilizzate negli arsenali di periodo angioino. Per fare ciò bisogna attuare un'attenta analisi filologica di alcuni termini presenti nei due documenti in questione. Il primo è in francese vernacolare, datato 1279, e riguarda alcuni lavori di fortificazione di uno degli arsenali della città di Napoli. In particolare, si chiede di rifornire tutti gli arsenali del resto della Campania di strumenti utili per l'alaggio e il varo delle galee. Tali strumenti prendono il nome di: *basses, rustiques, paratis, argans, traitors de chanvre, tailles*. Il secondo documento è invece in latino-medievale ed è datato 1272, e anche qui, in occasione di lavori di cui necessitava l'arsenale di Messina si consegnano alcuni strumenti per agevolare l'alaggio e il varo delle galee nell'arsenale. Questi strumenti sono quasi praticamente gli stessi affidati agli arsenali campani del documento precedente ma scritti in latino: *petias basarum, palatas, arganos, agumina grossa, tallias magnas*. Tramite l'interazione con altri documenti coevi e successivi è possibile risalire al significato di ognuno dei termini degli strumenti sopradetti e di conseguenza ricostruire le tecniche di alaggio e di varo utilizzate, e inoltre comprendere come queste non siano affatto cambiate nel passaggio tra medioevo ed età moderna. Una volta sciolti i dubbi sul come un' imbarcazione potesse effettivamente entrare o uscire dall'arsenale, capiremo tramite l'analisi di un altro documento della cancelleria angioina come questa potesse, invece, permanere al suo interno, evitando che agenti come l'umidità e la corrosione la intaccassero.

Primary author: Dr PRISCO, Luigi (Centro Studi Tradizioni Nautiche (CSTN))**Presenter:** Dr PRISCO, Luigi (Centro Studi Tradizioni Nautiche (CSTN))**Session Classification:** History 2**Track Classification:** History of shipbuilding and navigation

Contribution ID: 38

Type: **extended abstract**

A collection of boat models from the Museo Nazionale Preistorico Etnografico “Luigi Pigorini”: a case study

Thursday, 14 November 2019 14:40 (20 minutes)

A collection of boat model kept in the former Colonial Museum in Rome, now housed in the Museo Preistorico Etnografico “Luigi Pigorini” is a rare testimony, in Italy, of traditional boats in use in the early 20th century in the Mediterranean and in the western Indian Ocean. The project – a collaboration among the Museo Nazionale Preistorico Etnografico “Luigi Pigorini”, the Università di Napoli “L’Orientale” and the Università di Napoli “Federico II” – aimed at: providing a digital record of the models, which are currently not on exhibit, an accurate description to improve and update the current museum inventory, to understand more about the history of the collection, and to study the models and the boats they represent. Some model boats were photographed to produce a digital 3D model, in order to obtain line drawings and to conduct hydrostatic analysis. This study has allowed to identify the different types of boats represented by the models and to make an assessment of their historical and ethnographic value.

Primary author: Prof. ZAZZARO, Chiara (Università di Napoli ”L’Orientale”)

Co-authors: Prof. PENSA, Claudio (Università di Napoli Federico II); Mr OMBRATO, Luigi (Università di Napoli Federico II); Prof. MARTORELLI, Massimo (Università di Napoli Federico II); Mr SORRENTINO, Vincenzo (Università di Napoli Federico II)

Presenters: Prof. ZAZZARO, Chiara (Università di Napoli ”L’Orientale”); Prof. PENSA, Claudio (Università di Napoli Federico II)

Session Classification: Maritime Museums and Libraries

Track Classification: Refitting and conservation of marine and maritime heritage

Contribution ID: 39

Type: **extended abstract + paper**

On the Effect of Uncertainties on Onboard Progressive Flooding Simulation

Nowadays, the quasi-static techniques devoted to progressive flooding simulation are present in the literature. Most of them can be applied onboard to support crew decisions after a flooding casualty. However, in real scenarios, the input parameters, adopted to carry out time domain simulations, are often not accurately assessed or even unknown. The aim of this paper is to study the effect of these uncertainties affecting the damage geometry, the ship geometry and the loading condition at damage occurrence. A sensitivity study on the relevant input parameters has been carried out on a box-shape barge, showing that most of them have a strong influence on progressive flooding simulation. Regarding damage geometry which is directly connected to damage detection algorithms, the internal subdivision geometry has a stronger impact compared with damage location and area. Further study is required, especially when internal spaces are connected by small openings. Nevertheless, the paper highlights the importance of an accurate preparation of ship model and assessment of loading condition, providing some insights on these problems.

Primary authors: Prof. MARINÒ, Alberto (University of Trieste); Mr BRAIDOTTI, Luca (University of Trieste, University of Rijeka); Prof. BUCCI, Vittorio (University of Trieste)

Presenter: Mr BRAIDOTTI, Luca (University of Trieste, University of Rijeka)

Track Classification: Naval architecture and marine engineering evolution

Contribution ID: 40

Type: **extended abstract + paper**

On the Digitalisation Processes in the Adriatic Region

Thursday, 14 November 2019 17:00 (20 minutes)

Nowadays a fast and challenging digitalisation process is underway within the maritime domain. Many disruptive technologies will cause a radical modification of the operations, of the logistics and of the labour market in the near future. With particular attention to the Adriatic region, this work provides an extensive review of the disruptive innovations that might be applied by port authorities, shipping companies and terminal operators. The analysed technologies, dealing with both freight and passenger transport, are divided into three digitalisation macro trends: informatisation, big data and automation. In the further stages of this research activity, the most promising technologies to be implemented in the Adriatic area will be selected by prime stakeholders and then subject to impact analysis. The planned methodology is here presented and discussed.

Primary authors: Prof. MARINÒ, Alberto (University of Trieste); Mr BOTTIN, Guglielmo (Elevante S.r.l.); Mr BRAIDOTTI, Luca (University of Trieste, University of Rijeka); Prof. MAZZARINO, Marco (IUAV); Mr COCIANCICH, Maurizio (Elevante S.r.l.); Ms BERTAGNA, Serena (University of Trieste); Mr LA MONACA, Ubaldo (University of Trieste); Prof. BUCCI, Vittorio (University of Trieste)

Presenter: Mr BRAIDOTTI, Luca (University of Trieste, University of Rijeka)

Session Classification: Waterfront evolution and coastal marine environment

Track Classification: Naval architecture and marine engineering evolution

Contribution ID: 41

Type: **extended abstract + paper**

Integration of nautical charts and satellite images in Marine GIS of the Gulf of Naples

Thursday, 14 November 2019 17:40 (20 minutes)

In the last decades Marine Geographic Information Systems (MGISs) have had an increasing diffusion because of their ability to store, manage and analyze a great amount of heterogeneous data concerning sea and ocean environments. To build a MGIS, nautical charts are fundamental: they provide useful information such as shoreline configuration, seafloor morphology, water depths, anchorages, and other features that are suitable not only for navigation, but for marine science applications, i.e. aquatic biology and ecology. Satellite images contribute to bring more information in MGIS concerning many aspects of the sea and ocean environment, so remotely sensed data in high quality, large quantity and multitemporal acquisition can be introduced in the database. For their correct usage, satellite images require pre-elaboration to overlay them to nautical charts: usually they are supplied in different cartographic projection than the modern nautical charts as well as in different geodetic datum than the historical nautical charts, so re-projection and datum transformation are necessary and not banal. This paper aims to describe the approach adopted in MGIS of the Gulf of Naples to harmonize heterogeneous data concerning nautical charts and satellite images. Both large and medium scale maps are considered as well as remotely sensed images with high and medium resolution. The experiments demonstrate that adequate positional accuracy can be achieved for all layers compatibly with the scale of the representation.

Primary author: Prof. PARENTE, Claudio (University of Naples "Parthenope")

Co-authors: Dr VALLARIO, Andrea (University of Naples "Parthenope"); Dr ALCARAS, Emanuele (University of Naples "Parthenope")

Presenter: Prof. PARENTE, Claudio (University of Naples "Parthenope")

Session Classification: Waterfront evolution and coastal marine environment

Track Classification: Waterfront evolution and coastal marine environment

Contribution ID: 42

Type: **extended abstract + paper**

Evacuation analysis of open deck areas on passenger ships

Thursday, 14 November 2019 15:20 (20 minutes)

Passenger ships evacuation analysis is nowadays a required step in the ship design process. In this sense, a new set of international Regulations has been issued to improve the survival ability of passenger and ro-ro ships. The "Safe Return to Port" Regulation is referring to the need to grant adequate ship functionality when a casualty occurs (e.g. fire or flooding), requiring the ship evacuation when damage exceeds a given threshold. For such a reason, the evacuation analysis is mandatory for both new and existing passenger and ro-ro ships, since the early stages of design. The International Maritime Organisation Guidelines prescribe the examination of additional scenarios besides the standard ones. The present work presents a case study for the evacuation of a 4906-person cruise ship, considering the specific example of the open deck, which is one of the additional scenarios required by regulations. The advanced calculation method has been used to simulate the evacuation process, using software EVI.

Primary authors: Prof. MARINÒ, Alberto (University of Trieste); Dr TORI, Beatrice (Maritime Technology Cluster FVG - mareFVG); MAURO, Francesco (Universita' di Trieste, University of Rijeka); Ms BERTAGNA, Serena (University of Trieste); Prof. BUCCI, Vittorio (University of Trieste)

Presenter: Dr TORI, Beatrice (Maritime Technology Cluster FVG - mareFVG)

Session Classification: Engineering 1

Track Classification: Naval architecture and marine engineering evolution

Contribution ID: 43

Type: **extended abstract + paper**

Early-design issues of a gas propelled escort tug

Thursday, 14 November 2019 16:20 (20 minutes)

Tethered escort of ships is performed by specially designed tugs linked by a tow-line to a strong point aft of the assisted ship. In fact, the tug is called to control the course and speed of the assisted ship in an emergency situation), so reducing the risk of grounding or collision. A substantial number of studies about ship casualties shows the grounding as the predominant accident when the ship is approaching the harbour or narrow fairways. In order to take part in escort operations, a tug must be provided with the additional service notation escort tug, which confirms its specific capabilities in accordance with particular stability criteria that will be harmonised by International Maritime Organisation from 2020. In case the tug should be propelled with Liquefied Natural Gas, then dedicated issues related to containment system should be solved. Through this paper, an overview will be given upon the possible escort operations that an escort tug could face during his operational life, together with the possible types/configurations of tugs that can be used for this kind of operations. Moreover an example will be given on the determination of escort performances by means of a self developed code on a sample tug.

Primary authors: Prof. MARINÒ, Alberto (University of Trieste); MAURO, Francesco (Universita' di Trieste, University of Rijeka); Mr LA MONACA, Ubaldo (University of Trieste); Prof. BUCCI, Vittorio (University of Trieste)

Presenter: MAURO, Francesco (Universita' di Trieste, University of Rijeka)

Session Classification: Engineering 1

Track Classification: Naval architecture and marine engineering evolution

Contribution ID: 44

Type: **extended abstract + paper**

Limiting environment determination for an offshore vessel

The design of an offshore vessel requires the combination of multiple aspects typical of naval architecture and marine engineering. Between them, the definition of environmental loads and excitation is relevant, since it is required to evaluate motion operability, dynamic positioning capability and structure dimensions. These three topics traditionally refer to independent analyses and are treated in separate design stages. Moreover, the techniques and the calculations performed to assess the performances of the vessel under design differ topic by topic, referring to different limiting environmental conditions. This paper presents a comparison between the different limiting environment determination for the assessment of ship motion, dynamic positioning and maximum design loads for structures. In particular, advanced analysis methods are applied on a reference vessel to highlight the differences between station keeping, sea keeping and structural loads limiting environment. A combined representation of station keeping and sea-keeping data is then used to compare the vessel operability issues with recommended design loads.

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Presenter: Prof. BUCCI, Vittorio (University of Trieste)

Track Classification: Naval architecture and marine engineering evolution

Contribution ID: 45

Type: **extended abstract + paper**

An exploratory study on global risk-assessment determination for gas-fuelled inland waterways passenger ships

The increasing focus on navigation sustainability is forcing the utilisation of alternative power sources on board of inland vessels. The adoption of Liquefied Natural Gas is for sure a good option to reach the imposed targets on pollutant emission reductions. However, the issues related to the gas storage on board increase the hazards for people and environment in case of failures compared to a diesel fuelled vessel. In this sense, the analysis of risks is of primary importance. Traditionally, the failure and risks individuation is mainly based on qualitative consideration. In this study a procedure to quantify the risk is proposed and is tested on two inland waterway vessel having two different LNG propulsion systems installed on-board. The proposed method is aimed to give a quantitative comparison between two designs.

Primary authors: Prof. MARINÒ, Alberto (University of Trieste); MAURO, Francesco (Universita' di Trieste, University of Rijeka); Prof. BUCCI, Vittorio (University of Trieste)

Presenter: Prof. BUCCI, Vittorio (University of Trieste)

Track Classification: Naval architecture and marine engineering evolution

Contribution ID: **46**Type: **extended abstract**

Josef Ressel – 190 anni dopo

Thursday, 14 November 2019 11:40 (20 minutes)

Josef Ressel, nasce a Chrudim nella Boemia Orientale, appartenente all’Impero d’Austria, nel 1793, da una famiglia di limitate disponibilità economiche. Ha una formazione molto articolata. Frequentava una scuola di artiglieria, passa alla facoltà di Medicina dell’Università di Vienna. Continua con gli studi forestali all’Accademia di Mariabrunn. Nel 1817 inizia il suo servizio con l’Amministrazione Forestale. Dal 1820 è a Trieste, dove riprende i suoi studi sul propulsore a elica, già abbozzati nel 1812. Nel 1827 convince un uomo d'affari, Carlo d’Ottavio Fontana, a finanziare la costruzione di una nave propulsa dalla sua elica, da impiegare in seguito sulla linea marittima Trieste-Venezia. Nell’agosto del 1829 nel corso della prima e unica prova, dopo aver raggiunto la velocità di 6 nodi, il cedimento di un tubo di vapore interrompe bruscamente la corsa della nave e l’Autorità Marittima, prevenuta, ne approfitta per decretare la sospensione definitiva delle prove. Nel 1837 passa dal Demanio Forestale alla Marina da Guerra come agente delle foreste di Venezia e dell’Istria. Oltre all’elica a spirale la sua mente ha partorito moltissime invenzioni, nonostante i suoi contemporanei non siano mai stati né generosi né riconoscenti, nei confronti del Nostro. Altri inventori in Europa e America ottennero maggiori riconoscimenti e fortune. Ressel muore nel 1857. La sua opera è divulgata e apprezzata, solo dopo la sua morte. Per onorarne la memoria sono stati eretti monumenti in Austria, nella città natale e a Lubiana. Al nome di Ressel, nel mondo è spesso associata Trieste, la città dove il Nostro sperimentò la propulsione a elica, ma a Trieste oltre a una sala del Museo del Mare e a una strada secondaria nulla ricorda il Nostro inventore.

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Contribution ID: 47

Type: **extended abstract**

L'evoluzione della capacità di sopravvivenza delle unità navali militari dal secondo dopoguerra ad oggi

Friday, 15 November 2019 16:40 (20 minutes)

Una caratteristica importante di una unità navale militare è rappresentata dalla sua capacità di sopravvivenza (o *survivability*), ossia dalla capacità di continuare ad operare secondo gli scopi assegnati anche quando si trovi oggetto di attacchi ostili in uno scenario bellico o, comunque, in presenza di minacce esterne. La nave militare, infatti, è concepita per operare in combattimento e, in queste circostanze, deve essere in grado di evitare le minacce, sopportarne gli effetti distruttivi, conservando o ritornando il più velocemente possibile alla operatività necessaria. Nel presente articolo, viene fornita una panoramica dei diversi aspetti e provvedimenti che occorre considerare al fine di massimizzare la *survivability* e si vuole mostrare come sia mutato l'approccio nella valutazione di tali aspetti nel corso dei decenni dal secondo dopoguerra ad oggi, in relazione agli eventi bellici e alla parallela evoluzione delle minacce.

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Session Classification: Naval Ships

Track Classification: Naval architecture and marine engineering evolution

Contribution ID: **48**Type: **extended abstract**

L'evoluzione del trattamento sanitario a bordo delle navi militari italiane

Friday, 15 November 2019 16:00 (20 minutes)

Il problema del trattamento sanitario a bordo delle navi militari è stato affrontato in maniera diversa nella storia della navigazione, assumendo un rilievo più o meno significativo nelle varie epoche storiche. Da una visione sintetica delle soluzioni tecnologiche adottate da varie Marine Militari nella storia, per la cura dei feriti e dei malati a bordo, si arriva all'esposizione dei moderni criteri internazionali di classificazione delle capacità di trattamento sanitario, presentando le soluzioni adottate dalla Marina Militare Italiana sia per le ultime unità relative alla Legge Navale del 2014, sia per altre precedenti.

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Session Classification: Naval Ships

Track Classification: Naval architecture and marine engineering evolution

Contribution ID: 50

Type: **extended abstract + paper**

Dredgers and Dredging Design Restraints

Friday, 15 November 2019 12:20 (20 minutes)

Dredging operations require deep maritime culture and experience, nowadays joined to a real environmental integrity. Moreover technological development gives new tools in dredging devices and general equipments, so that dredger evolution is improving and new design solutions are also expected in the near future. Taking into account new upgrades, available in the technical literature, this paper has the aim to analyze some design and operational restraints, both for dredgers hull and for the adopted dredging devices. Finally, a short overview of class rules for dredger ships will be outlined.

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Session Classification: Engineering 2

Track Classification: Naval architecture and marine engineering evolution

Contribution ID: 51

Type: **extended abstract + paper**

Mechanical Behaviour of Strip-Planked Wood for Boatbuilding

Friday, 15 November 2019 12:40 (20 minutes)

The strip-planking technique, which is based on the use of glued-laminated wood, is characterized by many interesting features for wood boatbuilding. The main advantages offered are an easier construction process along with a better exploitation of the mechanical properties of the materials. In order to investigate the response of a particular glued-laminated wooden panel (made by Douglas fir longitudinal strip planks combined with thinner Mahogany veneers at $\pm 45^\circ$), which is quite common for boat construction, a series of experimental tests has been carried out. In the analyzed laminated structure, the Douglas fir strips are the inner layer and give the shape of the hull, whereas the outer Mahogany veneers, in addition to contributing to the overall strength of the structure, give water-tightness to the hull. The results of the tests performed on different specimens are presented in the paper. Specifically, in accordance with the guidelines of the UNI EN standards, bending tests on glued-laminated wooden panels have been carried out. Moreover, tensile and compression tests on specimens made only by Douglas fir strips at 0° or by Mahogany veneers at $\pm 45^\circ$ have also been performed. The aim of this study is to find a reliable approach for the structural boat design, using laminated-wood panels with different layers, and strip-planking technique.

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Session Classification: Engineering 2

Track Classification: Naval architecture and marine engineering evolution

Contribution ID: 52

Type: **not specified**

Leonardo da Vinci e l'acqua

Friday, 15 November 2019 09:00 (30 minutes)

Presenter: Mr ALLEGRENI, Giosuè (Hystoric Office of Italian Navy)

Session Classification: Plenary Session 2

Contribution ID: 53

Type: **not specified**

Contribution from RINA

Contribution ID: 54

Type: **not specified**

Combustibili Alternativi: l'idrogeno

Thursday, 14 November 2019 16:00 (20 minutes)

Presenter: Mr COGLIOLO, Andrea

Session Classification: Engineering 1