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MARCH 2020

Shipyards and Maritime Industry in Turkey



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Front Cover: 'Stena Europe' after almost complete refurbishment and life-extension program in Gemak Shipyard
Photo Credit: Gemak Group

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Back Cover: View from the Osmangazi Bridge of Yalova Shipyards
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Dear Readers

This special issue is dedicated to **Shipyards and Maritime Industry in Turkey.**

In the first article Mehmet Avcı provides an overview of services offered by Türk Loydu within the framework of internationally recognized accreditations and authorizations. Türk Loydu is an international classification society which was established in Turkey in 1962 by the Turkish Chamber of Naval Architects and Maritime Engineers and is an institution providing classification, inspection and certification services having many valuable shareholders in Turkey.

The next article was written by Kaya Yasar of Gemak. Since 1969, Gemak Group has maintained steady growth, and today is noted in Turkey and around the world for its wide range of skills and technical expertise. With its advanced manufacturing infrastructure, the company is positioned as a leading company in shipbuilding and high quality large steel constructions. In the article, recent activities and achievements are described.

The NB72 SOV vessel for Offshore Wind Farm Maintenance is described in the third article which was prepared by Sinan Kavala and İrem Ünal of Cemre Shipyard where the vessel is built. Conceived by DEME and further designed in close co-operation with Vuyk Engineering Rotterdam and Marin, this innovative vessel significantly improves safety, comfort and workability for wind farm technicians even in the roughest sea conditions.

Marine Construction, Towage, Salvage and Wreck Removal are the core sectors in which Aras Marine provides its services. Naci Hoşcan, Deputy Operations Manager of Aras Marine, has prepared a brief overview of their recent projects.

On the following pages, you can also find abstracts of already published articles especially about three major bridges in Turkey with links to relevant issues of **e-mosty** and **e-maritime** magazines, information on our plans and more information on both magazines and also our Partnership offer.

I would very much like to thank all people and companies who have helped me prepare this issue; David Stork - thank you for reviewing this issue and for your valuable comments and your assistance; Guillermo Muñoz-Cobo Cique (Arup) - thank you for your final check of the articles; Fatih Zeybek – thank you for your final review and assistance.

We are also happy that Richard Martin agreed to cooperate with us – he will proof-read the articles to ensure their language correctness. Richard worked as a senior manager with the Port of Liverpool and has recently written a book about the history of shipbuilding on the Dee estuary in the UK. Thank you for your assistance with this issue.

We welcome your ideas, comments, articles and participation in the preparation of e-maritime magazine, you can contact us here.

Magdaléna Sobotková

Chief Editor



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The magazine e-maritime is an international, interactive, peer-reviewed magazine about vessels, ports, docks and maritime equipment.

It is published on www.e-maritime.cz **three times a year**: 30 March, 30 June and 30 November.

September Issue is shared with the magazine e-mosty (“e-bridges”): “Bridges, Vessels and Maritime Equipment” which is published on 20 September on www.e-mosty.cz.

It can be read **free of charge** (open access) with possibility to subscribe.
The magazines stay **available on-line** on our website. It is also possible to download them as **pdf**.

The magazine brings **original articles about design, construction, operation and maintenance of vessels and maritime equipment, docks and ports from around the world.**

Its electronic form enables publishing of high-quality photos, videos, drawings, links, etc.
We aim to include all important and technical information and show the grace and beauty of the vessels and structures as well.

www.e-maritime.cz



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e-mosty

The magazine e-mosty (“e-bridges”) is an international, interactive, peer-reviewed magazine about bridges. It is published on www.e-mosty.cz and can be read free of charge (open access) with possibility to subscribe.

It is published quarterly: 20 March, 20 June, 20 September and 20 December.
The magazines stay **available on-line** on our website. It is also possible to download them as **pdf**.

The magazine brings original articles about bridges and bridge engineers from around the world.
Its electronic form enables publishing of high-quality photos, videos, drawings, links, etc.
We aim to include **all important and technical information** and show the grace and beauty of the structures.

We are happy to provide media support for important bridge conferences, educational activities, charitable projects, books, etc.

Our Editorial Board comprises bridge engineers and experts from the UK, US and Australia.

The readers are mainly bridge engineers, designers, constructors and managers of construction companies, university lecturers and students, or people who just love bridges.



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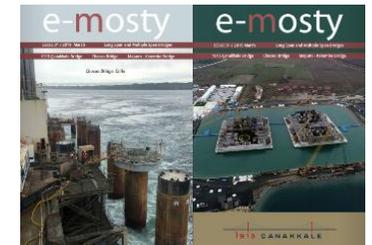
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e-mosty

Bridge Design, Construction, Maintenance

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Vessels, Ports, Docks, Maritime Equipment

The magazine [e-mosty](#) was established in April 2015. Its first issue was released on 20th June 2015 as a bilingual English – Czech magazine aimed mainly for Czech and Slovak bridge engineers.

Very quickly it reached an [international readership](#).

In 2016 we extended the Editorial Board by two bridge experts from the UK, and since then four more colleagues – from the USA, Australia and The Netherlands – have joined us.

Since December 2016 the magazine has been published solely in English.

Each issue now has [thousands of readers worldwide](#).

Many of our readers share the magazine in their companies and among their colleagues so the final number of readers is much higher.

Most importantly the [readership covers our target segment](#) – managers in construction companies, bridge designers and engineers, universities and other bridge related experts.

The magazine [e-maritime](#) was established in 2018 and its first issue was released on 30th March 2019.

The magazine is published in English. It is going to cover a vast range of topics related to vessels, maritime equipment, ports, docks, piers and jetties – their design, construction, operation and maintenance, and various maritime and construction related projects.

The Editorial Board already has two members – from the UK and the Netherlands.

Both magazines are with [Open Access with possibility to subscribe](#) (free of charge).

In January 2019 we established their own [pages on LinkedIn](#) with constantly increasing number of their followers. Number of [subscribers](#) of both magazines is also increasing.

We also know that the readers usually go back to older issues of both magazines.

TÜRK LOYDU = INTERNATIONAL CLASSIFICATION SOCIETY OF TURKEY

Mehmet Avcı, External Affairs Manager

INTRODUCTION

Türk Loydu is an international classification society which was established in Turkey in 1962 by the Turkish Chamber of Naval Architects and Maritime Engineers and is an institution providing classification, inspection and certification services having many valuable shareholders in Turkey.

Since the time when Türk Loydu was founded by association of Turkey's most important industrial organizations, it has been steadily expanding its service area.

It has continued to follow technological developments, whilst leading the improvements in all sectors they serve.

WORLDWIDE RECOGNISED SERVICES

Türk Loydu is providing a wide range of services including ship classification, statutory certification, industrial product and personnel certification, inspection services, third party controls, surveillance, certification and training services with their expert technical staff in many different industrial fields.

Türk Loydu is providing its services within the framework of internationally recognized accreditations and authorizations.

Türk Loydu has applied to become a member of International Association of Classification Societies and the membership process is advancing positively.

IACS membership is considered as the primary strategic goal for Türk Loydu.

Türk Loydu is at a very advanced level, both in terms of its technological infrastructure and quality standards.

The Turkish maritime sector has become very strong in world markets and Türk Loydu, when it becomes a member of IACS, will make more positive contribution to this situation.

IACS membership criteria, which are well integrated into its quality systems, are now Türk Loydu's criteria which means the quality of the services provided is improved.

Türk Loydu hopes to become a member of IACS before the end of 2020.

Additionally, Türk Loydu, which has been authorized by the European Commission as a Notified Body, is providing CE mark conformity assessment services.



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Türk Loydu is also under the recognition process of the European Commission according to REGULATION (EC) No 391/2009 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 April 2009 on common rules and standards for ship inspection and survey organisations.

The Türk Loydu classed fleet is one of the best performing fleets in the scope of Port State Control inspections all around the world.

Türk Loydu has been declared a “High Performance” Society by the Secretariat of Paris Memorandum of Understanding on Port State Control by taking into account the inspection results on its fleet for the last 13 years.

The Paris Memorandum of Understanding on Port State Control is a regional organization; it consists of 27 participating maritime Administrations and covers the waters of the European coastal States and the North Atlantic basin from North America to Europe for the purpose of coordinating Port State Control inspections in the region.

Similar success has been achieved on USCG, Tokyo, Mediterranean, Indian and Black Sea Memorandum of Understanding on PSC. The Türk Loydu classed fleet had no detentions in those regions in the scope of PSC inspections.

LEADER IN NAVAL SHIP CLASSIFICATION SERVICES

In recent years, with the support of the realization of many national naval ship projects, it has provided great support to the ship building industry

in Turkey which has created a large business volume and opportunities.

Türk Loydu has become the leader in naval ship classification which has now classified nearly 150 naval ships in Turkey and abroad over more than 20 years.



← ↓ *Figures 1 and 2: Drilling ship 'Fatih'*

Length: 229m Beam: 36m
GT 51,283t NT 15,385t DWT 34,250t

Keel Laying Date: 11 January 2010

Shipyard: Hyundai Heavy Industries Co. Ltd,
Ulsan / South Korea



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Foto Credit: Fatih Zeybek

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Türk Loydu have successfully completed major projects such as MILGEM (National Military Vessel Project), Amphibious Landing Ships, Rescue and Towing Ships, a Submarine Rescue Ship and other naval ships.

The classification activities continue with the classification of an Emergency Response and Diving Training Ship, Logistics Support Vessels and a Test and Training Ship of which the construction is ongoing.

Also the Multipurpose Amphibious Assault Ship 'TCG Anadolu' will be the pride of the Turkish defence industry and will be the largest warship in Turkey.

The MILGEM project is a national warship program of Turkey. Managed by the President's Office for Defence Industry, the project aims at developing multipurpose corvettes and frigates designed, constructed and equipped with Turkey's local resources.

The MILGEM project covers the construction of four Ada class anti-submarine warfare corvettes and one ELINT corvette, four Istanbul class multipurpose frigates and four TF2000 class anti-air warfare frigates destined for the Turkish Navy, as well as four Jinnah class corvettes for the Pakistan Navy.

After the success of the MILGEM project, a number of new projects have been initiated by the President's Office for Defence Industry at different shipyards in Turkey.

Türk Loydu was also contracted as the Classification Society for all these projects.

Anadolu Shipyard was awarded a contract to construct two Bayraktar-class tank landing ships for the Turkish Navy.

↓ Figure 3: 'TCG Heybeliada' (F511) and 'TCG Buyukada' (F512) are "Ada class" anti-submarine warfare corvettes built in scope of MILGEM National Warship Program of Turkey

Specification of the ships:

Length: 99.56m Beam: 14.40m Speed: 15 knots

First Ship Launched: 27 September 2008

Total number of ships launched: 4

Shipyard: Istanbul Tersanesi Komutanligi, Turkey



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The two amphibious vessels of the class were built to meet the sea-keeping and stability requirements of the Turkish Navy and will have an anticipated service life of 40 years.

The ships comply with the IMO MARPOL 73/78 and Safety of Life at Sea (SOLAS) regulations. Each vessel has an overall length of 138.75 metres, and a beam of 19.60 metres. Their draught is less than 2 metres forward and 5 metres aft when fully loaded.

The displacement of the vessels is 7,239 long tons and the load carrying capacity is 1,200 tons, including a mix of vehicles or cargo on open decks.

Turkey's biggest warship 'TCG Anadolu' will be an amphibious assault ship that will also be able to function as a light aircraft carrier.

Construction of the vessel began in 2016 at Sedef Shipyard in Istanbul and the delivery phase for the ship began recently, about a year before the originally planned 2021.

The 'TCG Anadolu' will be able to transport a force the size of a battalion without needing home base support.

She will carry four mechanized, two air-cushioned and two personnel landing vehicles as well as aircraft, helicopters and unmanned aerial vehicles.

Türk Loydu is Vice-Chair of the international Naval Ship Classification Association (NSCA) and a Council member at the International Naval Safety Association (INSA) in scope of naval ship classification.

↙ ↓ *Figures 4 – 5: 'TCG Anadolu'*

Specification of the ship:

Length: 232m Beam: 32m Height: 58m
Displacement: about 27,000 tons
Speed: 21 knots

Shipyard: Sedef Shipbuilding, Istanbul



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Figure 6: Keel Laying of Multipurpose Amphibious Assault Ship TCG Anadolu

Türk Loydu's classification rules have been confirmed to be in compliance with IMO Goal-based Standards at the historical 100th session of the IMO Maritime Safety Committee.

Türk Loydu has become the only Non-IACS Classification Society whose rules have been verified by IMO MSC.

Because of this decision, Türk Loydu have been authorised to provide new construction

classifications of Oil and Chemical Tankers and Bulk Carriers over 150 meters.

Türk Loydu has significant experience in the new construction classification of passenger boats, tugboats, barge-hopper barges and dredgers.

In addition to the classification of conventional ships, Türk Loydu continue to work on the development of rules concerning innovative projects such as battery-operated ships which are generally known as electric ships.

Türk Loydu is generally known in the maritime sector, but it is also very active on the non-maritime sectors.

These include Energy, Construction, Defence Industry, Logistics and other similar industries and within the scope of Industrial Conformity Assessment services, Türk Loydu provide services in industrial fields.

These industries include steel and reinforced concrete structures, buildings, stadiums, shopping malls, residences, cultural centers and similar structures, bridges, viaducts, rail systems, nuclear and all types of power plants, wind turbines, chemical and petrochemical plants, pipelines,

shipyards as well as industrial inspection services for coastal structures including ports and storage facilities.

Türk Loydu is authorized by Turkish Atomic Energy Authority as a Nuclear Power Construction Inspection Body since 2016 in order to provide conformity assessment (test, inspection and certification) services for safe installation and operation of nuclear power plants in our country including the Akkuyu Nuclear Power Plant in accordance with the applicable legislation and standards.

The Akkuyu Nuclear Power Plant is a nuclear power plant under development at Akkuyu, in Büyükeceli, Mersin Province, Turkey.

It will be Turkey's first nuclear power plant. The USD20 billion project to build the four-unit, 4,800MWe plant is intended to reduce Turkey's dependence on energy imports.

The first unit is scheduled to start operations in 2023, with the other three units following by 2025.

The plant is expected to meet about 10% of Turkey's electricity needs.

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Türk Loydu is providing steel structure inspection services for the 1915 Çanakkale Bridge in Turkey across the Dardanelles Strait.

The construction is advancing and when completed, the bridge will hold with its 2023m span, the new world record span for suspension bridges.

The bridge is situated near the historic site of Gallipoli, about 250 km south west of Istanbul.

It will connect the Asian and European continents and is part of the new highway between Kınalı and Savaştepe.

Inspection of a total of 30,000 tons of pile pipes production was performed in accordance with EN 10219 standard.

Türk Loydu inspects the production of 6,000 tons of steel structures in accordance with EN 1090-2 standards and EXC3 class and performs conformity assessment of main cable production made in China, in accordance with customer's technical specifications.

➤ → Figures 7 and 8: 1915 Çanakkale suspension Bridge



*For further information
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Türk Loydu External Affairs Division*

*Mr. Mehmet AVCI
External Affairs Manager*

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SHIP BUILDING, SHIP REPAIR AND MAINTENANCE, SHIP CONVERSION AND STEEL STRUCTURE FABRICATION

Kaya YASAR, Sales Manager (New building and Special Projects), Gemak

INTRODUCTION

Since 1969, Gemak Group has been maintaining its reliable position, and is noted in Turkey and around the world for its wide range of skills and technical expertise.

In 50 years of experience in engineering solutions, Gemak is proud of being of service to its clients.

Gemak has the vision to be the best in class and preferred partner on a worldwide basis for demanding projects in the steel fabrication industry, marine and offshore vessel building, marine conversion projects, marine vessel repair and maintenance.

Gemak's standard is well-proven and known to its clients.

It is based on innovation, excellent use of technology and engineering capability.

Among its strengths are: experience in managing complex and sophisticated ship building, ability to provide solutions with well experienced, multi-disciplinary engineering capacity and well organized & automated large scale fabrication facilities.

Gemak Group activities are spread over the Gemak Tuzla Shipyard, Gemak TGE Shipyard, Neta Steel & Pipe Fabrication and Gemak Altnova Shipyard with a total of 336,000m² of fabrication space.

RECENT SHIPBUILDING & INDUSTRIAL PROJECTS

With its advanced manufacturing infrastructure, the company is positioned as a leading company in shipbuilding and high quality large steel constructions.

Having built up a new client portfolio of foreign ship owners together with good experience in building customized and sophisticated ships to a high quality standard, Gemak is confident of meeting the most demanding requests and requirements in ship building.

Moreover, 50 years of vast experience in various fields related mainly to the shipping industry has positioned Gemak Group as a major player in the region for large scale steel construction projects.

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Figures 1- 3: Ship Building Activities

- ↑ M/T Trans Fjell, a 2.900DWT chemical tanker with teflon coated cargo tanks and cargo lines, carrying aggressive cargo such as Methanol and Hydrochloric Acid
- ↗ M/V Tenace, a 14.400DWT general cargo vessel with two cargo holds and a moveable grain bulkhead in each hold
- M/T Maria Laura, a 17.000DWT chemical tanker with coated cargo tanks

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THE YAVUZ SULTAN SELIM BRIDGE – FABRICATION AND TRANSPORTATION OF STEEL DECK SEGMENTS

In 2013 Gemak were actively trying to expand their business in the industrial market.

In the same year the Group won a contract for fabrication of steel decks for the 3rd Bosphorus Bridge, lately officially named The Yavuz Sultan Selim Bridge, for the Hyundai Engineering and Construction Company.

The bridge has a highly sophisticated and complex structure due to its hybrid design comprising both cable stayed and suspension parts.

Gemak fabricated and transported to the erection site about 50,000 tons of steel decks in a record breaking time for such a large structure.

All fabrication works were executed according to EN 1090-2 standard Execution Class 4 as the most stringent and demanding classification for such complex structures.



Figures 4 - 6: Industrial Projects

Yavuz Sultan Selim Bridge

↖ *Deck Segment Fabrication*

↑ *Deck Segment Transport and Lifting*

← *Official website of the bridge – click on the image to visit it*

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THE OSMANGAZI BRIDGE – STEEL SHAFTS

Construction of steel shafts for Osman Gazi Bridge was executed for IHI Corporation.

It consisted of four units of steel shafts each about 550 tons carrying the weight of the bridge under the towers.



*Figures 7 - 10: Industrial Projects
Steel Shafts for Osmangazi Bridge*



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VESSEL LENGTHENING

The Group has recently lengthened four RORO vessels for UN RORO / DFDS Group; UN Akdeniz, UN Cuneyt Solakoglu, UN Karadeniz and UN Cemil Bayulgen. Two vessels were delivered in 2017, one in 2018 and the last in 2019.

The vessels were lengthened in the cargo area by a mid-ship section of 30m; increasing the length overall from 193m to 223m.

The new 1,150tonnes mid-ship section was outfitted in advance.

After the cutting operation the skidding system, designed and developed by the Gemak R&D Team, was used for moving forward part of the vessel weighing more than 4,000tonnes.

The Gemak designed and developed high precision positioners was also used.

The time available for the conversion works was considerably limited.

Ship lengthening projects require a high level of engineering, technical expertise and advanced planning skills.

By executing multiple lengthening projects within a very short period, Gemak Group ensures its customers that such sophisticated & high-engineering projects are delivered on time and are properly handled at Gemak.



Figure 11: UN Akdeniz after lengthening during operation



Figure 12: UN Cuneyt Solakoglu after lengthening during operation

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← Figure 13: UN Akdeniz during lengthening at shipyard



→ Figure 14: UN Cemil Bayulgen during lengthening at shipyard



Figures 15 and 16: Industrial Projects / RoRo Ship Lengthening

← UN Akdeniz being lengthened by inserting new midship section after cutting the vessel in two

→ The vessel in operation after lengthening



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POWERSHIP CONVERSION

Another major and recent project executed within the industrial projects segment is Powership Conversion. Two cape size bulk carriers have been converted to powerships for Karadeniz Holding within 2018 and 2019.

Each cape size bulk carrier has been converted to a giant powership having 420 MWe of electric power production capacity by executing a comprehensive engineering and fabrication scheme.

Within the conversion scope of 'KPS Orka Sultan' and 'KPS Ela Sultan', the following range of works a total of 7,250 tonnes of steel work have been

executed in accordance with the EN 1090-2 EXC3 standard:

- To modify the ship's hull for the purpose of creating holds to accommodate 21 new dual fuel gen-sets as the main source of power and their supplementary systems and equipment;
- To develop new fuel tanks to extend ship's fuel carrying capacity;
- To install exhaust towers and platforms and a switchboard structure to accommodate the transfer of the generated electricity to the onshore grid.

A total of 1,600 tonnes of piping work for powership systems and equipment were fabricated, installed and tested as per Bureau Veritas Rules and Regulations for such sophisticated power ship.

Due to the excessive size of the vessel and the high complexity of the project, in-house developed designs and solutions by Gemak Engineering and R&D Team were implemented during the execution phase to achieve the performance demands of the project.



Figures 17 and 18: 'KPS Orka Sultan' before and after conversion

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CO₂ TANKER CONVERSION

The world's largest food grade CO₂ tankers were converted from 3 sister General Cargo vessels, all delivered to Owners in a row.

Each vessel was fitted with a CO₂ tank having Ø7m x L50m dimensions, 470 tons of weight and operating at 19 bar pressure and -40°C.

The tanks, with 45mm thick shell of P355LN2 low temp steel, were fully fabricated in-house by Gemak Group.

The tanks were then placed and secured on the fabricated bed plates inside the box shaped cargo holds, with DBWBT (Double Bottom Water Ballast Tanks) structures strengthened to sustain the loads, with additional buoyancy tanks fitted for stability purposes.

The hatch covers were sealed permanently for the purpose of serving as a cargo deck equipped with a high end cargo pump room and auxiliaries.



Figure 19: Typical cargo hold with power generators after conversion



Figure 20: CO₂ Tank installation in drydock by using 2x150t, 2x125t and 2x110t overhead cranes



Figure 21: CO₂ Carrier after tank installation into the hold and hatch covers' permanently fixed on the main deck

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OFFSHORE

The Group has also currently been executing panel and block fabrication for a module of the DOLWIN 6 Offshore Connector Platform.

The platform will operate in the North Sea to transform incoming power from the wind turbines as 155 kV AC to 320 kV DC and export it to the converter station onshore.

Gemak Group's work scope includes the development of workshop drawings, steel structure fabrication works, steel outfitting works and final coating works.



Figure 22: DOLWIN 6 Offshore Platform overview

A total of about 2,500 tons of steel blocks are fabricated in accordance with DNVGL Offshore Standards and coated in accordance with Norsok Standards.

The Group now plans to increase its ship building activities commencing from 2020 in addition to current industrial and conversion projects.

The state of the art Gemak Altinova Shipyard in Yalova will be the center of activity with its extended capacity and capability which ensures high quality standards for sophisticated new building projects.



SHIP REPAIR AND MAINTENANCE

In its three yards, the company handled over 165 repair projects in 2019, covering various ship types and sizes, including gas carriers, bulkers, containerships, ro-ro vessels and car carriers.

Its customer base is from a wide geographical range, with owners from Singapore, the Netherlands, Cyprus, Germany, Greece and Italy.

← Figure 23: Typical topside block for the platform, during loading to the transportation vessel after completion of fabrication and coating

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One of the biggest projects for Gemak in 2019 was the undertaking of extensive docking and repair work for the ro-pax vessel, 'Stena Europe', which spent around three months in Turkey earlier 2019 for an almost complete refurbishment and life-extension program.

One of the most significant elements of the upgrade was modifications to the deck head levels

on the main vehicle deck to allow for the carriage of full-height trailers across the whole of the main vehicle deck.

Prior to arrival at the Turkish shipyard, 'Stena Europe' was restricted to carrying full-height trailers on its port side only.

Other works included the renewal of the majority of the ship's windows, engine and hull overhauls, including blasting of the whole hull to remove all the existing old paint work to improve fuel efficiency and the ship's appearance.

A series of internal improvements were also made while the vessel was in Gemak's Shipyard.



Figures 24 – 26: 'Stena Europe'; complete refurbishment and life extension project

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Another significant Ro-Pax project undertaken by Gemak last year involved the DFDS-owned *Cemil Bayulgen*, which was retrofitted with exhaust gas scrubbers.

Another DFDS vessel, *UN Akdeniz*, returned to the yard for a scrubber retrofit this year, having also been lengthened by 30m by Gemak in 2017.

In addition, Gemak is extremely busy with environmental retrofits, to make vessels compliant with forthcoming IMO regulations. Over 2019 the yard carried out nineteen ballast water treatment system retrofits.

Since it undertook its first ballast water retrofit in 2012, Gemak has completed 50 projects of this

type, making it one of the most experienced in the Mediterranean region.

Demand for scrubber system installation is similarly gathering pace.

Fifteen projects have been delivered and three more have been in progress.

The company has recently signed a number of further contracts with ship owners for scrubber work.

A new team for scrubber retrofit projects has been established. This team is focusing purely on the planning, purchasing, fabrication and installation aspects of this type of work, to ensure the company always meets clients' requirements.

In another important initiative, Gemak has recently upgraded the capacity of its handy-sized floating dock in Tuzla from 9,000 tons to 14,000 tonnes, extending its length and breadth from 170m x 26.3m to 200m x 32m.

This investment has been made to enable Gemak to accommodate a wider range of vessels in the future.

The company is also taking steps to improve infrastructure and berth facilities at Gemak Altinova Shipyard, which is used for industrial projects and new building projects as well as major ship conversions.



Figures 27 and 28: ↶ DFDS vessels UN Akdeniz and ↷ Cemil Bayulgen being retrofitted with exhaust gas scrubbers

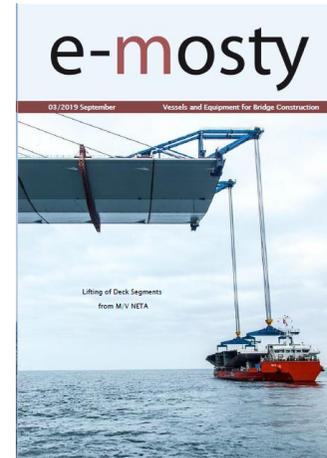
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50 years of Excellence - In 2020, Gemak Group celebrates its 50th year in its business

In 50 years of experience, Gemak is proud of being of service to over 2,800 clients. The Group continues to provide services for ship building, ship repair and conversion, the offshore oil & gas industry and industrial market as one of the most competitive shipyards in the Mediterranean.

With approximately 2,500 employees, 180 of whom are engineers specialized in their fields, Gemak will continue creating progress for the company, supporting change and foresight as in the past.



Read about FABRICATION AND TRANSPORTATION OF THE ORTHOTROPIC DECK SEGMENTS FOR YAVUZ SULTAN SELIM BRIDGE (THIRD BOSPHORUS BRIDGE)

Transport and Positioning of Deck Segments were executed by DP Vessel "M/V Neta"

Click on the image to read the magazine as pdf



Read about DESIGN AND CONSTRUCTION OF THE YAVUZ SULTAN SELIM BRIDGE and OSMANGAZI BRIDGE

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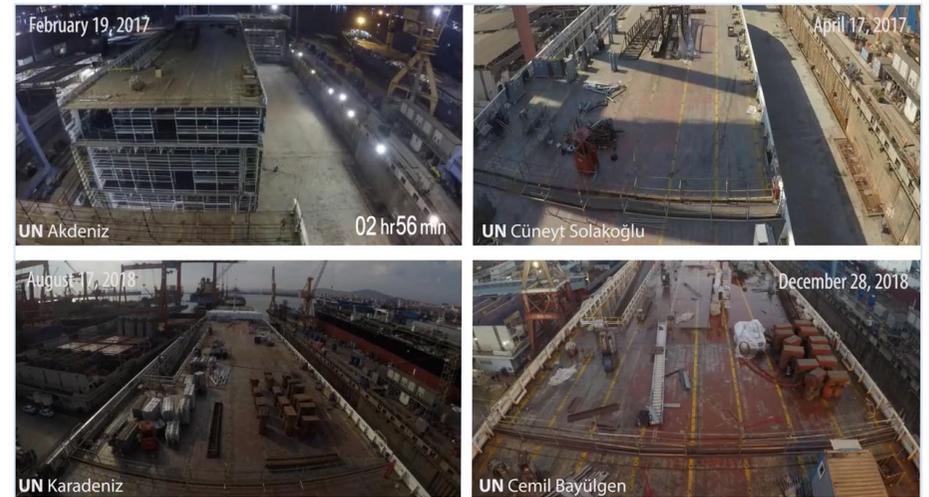
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VIDEOS

Click on the image to play the video



Video 1: Block Fabrication for Topside Module of the DolWin6 Offshore Platform



Video 2: Lengthening operations carried out by Gemak Group for four sister Ro-Ro Vessels of UN Ro-Ro (DFDS)



Video 3: "Stena Europe Life Extension Project"



Video 4: Gemak Shipyard

March 2020

NB72 SOV for Offshore Wind Farm Maintenance

Sinan Kavala, İrem Ünal, CEMRE SHIPYARD

To be able to offer the total package of services to the offshore wind industry - from installation to maintenance - DEME is investing in its first Service Operation Vessel (SOV) for wind farm maintenance.

Conceived by DEME and further designed in close co-operation with Vuyk Engineering Rotterdam and Marin, this innovative vessel significantly improves safety, comfort and workability for wind farm technicians even in the roughest sea conditions.

The keel laying ceremony took place on 13th December 2019 at **CEMRE SHIPYARD** in Yalova, Turkey.



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The SOV will feature a Small Waterplane Area Twin Hull (SWATH) design, which ensures low wave impact on movements when approaching the wind turbines, compared to a mono-hull SOV.

The vessel will enable safe crew transfers in significant wave heights of up to 2.5 m, and will be the first DP2, twin-hulled, SOV in the world.

At 60 m long, the SOV will be equipped with a motion-compensated gangway and daughter craft to safely transfer technicians to the wind turbines, increasing the flexibility and logistics capabilities of the vessel.

It is also designed according to the latest standards, allowing the vessel to be a comfortable offshore base for up to 24 technicians and a nautical crew.

Environmental considerations are an important element of the vessel design with, amongst other features, a waste heat recovery system and a Clean Design notation.

With the provided DP2 technology the vessel can hold its position in rough sea conditions but still operate with lower fuel consumption when compared to traditional SOVs.

“This project is a milestone in the Offshore Windfarm Industry for the sector’s long-lasting environment-friendly future plans. In terms of the vessel’s design and efficiency it can be clearly seen its twin-hull design is quite different.

Along with the DP2 technology and motion compensated gangway, SWATH Service Operation Vessel NB72 is going to be a pioneer for the future of the Offshore Wind Market...” says Orhan Gulcek, Chairman of the Board, Cemre Shipyard.

“We believe the twin-hulled design, a motion compensated gangway, together with dynamic positioning is a winning combination.

It will further reduce the costs of wind farm maintenance, especially compared with large monohulls reaching similar operational flexibility,” says Michael Glavind, Business Unit Director DEME Offshore.

“With this first SOV joining our fleet, we are further strengthening our capabilities to offer the full offshore wind package, from installation to maintenance.”



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ABOUT CEMRE

Cemre Shipyard, with its modern facilities, is one of the leading new building shipyards located in Turkey.

Considering the interest in diversity, Cemre has the ability to build different types of vessels such as fishing, offshore and passenger.

These technologically advanced, eco-friendly and innovative projects need flexibility and intense care; besides that, tailor-made projects like these are among the principal reasons for Cemre's success.

Cemre Shipyard has 3 slipways which enable the building of 8 to 12 vessels at the same time according to their sizes; in other words, 8 vessels can be and are delivered annually.

Investments never end here. A second Shipyard area has an equipped closed space that improves the quality and capacity of steel processing.

From the beginning till now all of the delivered and ordered vessels are exported and are built for European customers in Norway, Iceland, United Kingdom, France, Ireland, Belgium, Denmark, etc.

As a consequence, Cemre Shipyard is at the top of the exporters of Turkey.

With this responsibility, Cemre works harder for a sustainable organization.

ABOUT DEME

DEME is a world leader in the highly specialized fields of dredging, marine engineering and environmental remediation.

The company can build on more than 140 years of know-how and experience and has fostered a pioneering approach throughout its history, being a front runner in innovation and new technologies.

DEME's vision is to work towards a sustainable future by offering solutions for global challenges: a rising sea level, a growing population, reduction of CO2 emissions, polluted rivers and soils and the scarcity of natural resources.

Although DEME's activities originated with the core dredging business, the portfolio has diversified substantially over the decades, to include dredging and land reclamation, as well as solutions for the offshore energy market, and resolving infra marine and environmental problems.



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↓ Read about NB57 SOV 'WIND OF CHANGE'

By Samet Cirlak – Project Coordinator - Naval
Architect and Marine Engineer
CEMRE Shipyard

Click on the image to open the magazine as pdf

↑ Latest video of Cemre Shipyard: NB69 Grip – Passenger Vessel for Fjord1 ASA. Design by DNV-GL.
Length: 95.6m, width 14.8m, draft 3.6m.

The vessel is equipped with a battery system with a storage capacity of approx. 2x1,000kWh.

Click on the image the play the video



March 2020

MARINE CONSTRUCTION, TOWAGE, SALVAGE AND WRECK REMOVAL

Naci Hoşcan, Deputy Operations Manager, Aras Marine

Since Aras was established in 1995, it has taken part in various sectors of the maritime industry in Turkey such as Marine Construction, Towage, Salvage and Wreck Removal.

Aras has kept developing in order to become one of the leading companies in the maritime industry by innovating modern technical solutions, being a reliable partner for its stakeholders, investing in staff development and creating new opportunities.

Marine construction is a core business.

ARAS is the leading company in Turkey with more than forty vessels to deliver value for its clients.

As ARAS we have undertaken more than one million cubic meters dredging projects in a year in Turkey with experienced on shore and offshore employees and a modern fleet.



↗↑ Figure 1: Overview of our services

↗↗ Figure 2: Wreck Removal of M/V Dimitrios P.

Figure 3: Assembly of B-312 Oil Rig

Figure 4: DP WORLD Yarimca Container Terminal Project Dredging&Reclamation Works

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We have extended our core business into various countries around the world to become more competitive within the world's large contractors in the Marine Construction sector of maritime industry. We have established branches in Israel, Russia, Libya, Abu Dhabi and Mozambique.

As ARAS we play an active role in the Oil and Gas industry since we expanded our fleet with modern Anchor Handling Tug Supply (AHTS) and Platform Supply type vessels.

Our vision is always to deliver our services with passion and trust to build life-long partnerships with our existing and potential clients.

In order to support our commitment, we have become full members of the IMCA (International Marine Contractors Association) as a marine contractor.

We are the first and only company in Turkey which is a full member of the IMCA.

We have been successful in undertaking seismic research operations, commissioning and decommissioning gas platforms, cable laying and underwater maintenance projects for Government and privately owned organisations.

With more than twenty years' experience in salvage, ARAS has successfully carried out numerous salvage operations within the desired time limits and managing environmental protection and safety issues.



Figure 5: Towing $\Phi 2,000\text{mm}$ HDPE Pipes from Turkey to Libya



Figure 6: Osmangazi Bridge - Caisson Production



Figure 7: Hamifratz Port Project



Figure 8: Two Sister AHTS : Ataman & Cengizhan

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ARAS is an innovative and highly specialized company which brings creative engineering solutions to minimise project time and provide cost effectiveness during salvage and wreck removal operations.

On the following pages we provide a brief overview of our recent projects.



Figures 9 and 10: Marine Environment Services



Figure 11: Assembly of B-312 Oil Rig



Figure 13: Wreck Removal of F/B Rosetti Uno



Figure 12: Wreck Removal of Nova-D

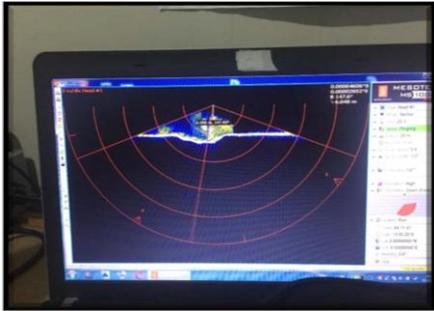


Figure 14: Underwater Technologies

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Repair Project of the Botaş Çanakkale Strait Crossing Line

Project Location	Çanakkale /TURKEY
Scope of Works	Maintenance and repair Project of the Botaş Çanakkale
Employer	BORU HATLARI İLE PETROL TAŞIMA A.Ş. (BOTAŞ)
Main Contractor	ATLAS MADEN ÜRÜNLERİ OTOMOTİV İNŞ. SAN. VE TİC. LTD. ŞTİ.
Project Start	April 25, 2019
Project Finish	Ongoing



Mostaganem - Combined Cycle Power Plant (1,450mW)

Project Location	Algeria – Mostaganem
Scope of Works	<ul style="list-style-type: none">• Installation of HDPE Concrete Collar Blocks and Precast Intake Heads.• Installation of 5 HDPE water intake pipes and manholes, 1,958m long, 2,500mm outside diameter.• Flange connections in the water intake structure and the water intake pump station (including the chlorine HDPE line).
Employer	SAMSUNG C&T CORPORATION
Main Contractor	TML İNŞAAT A.Ş.
Project Start	August 16, 2017
Project Finish	Ongoing

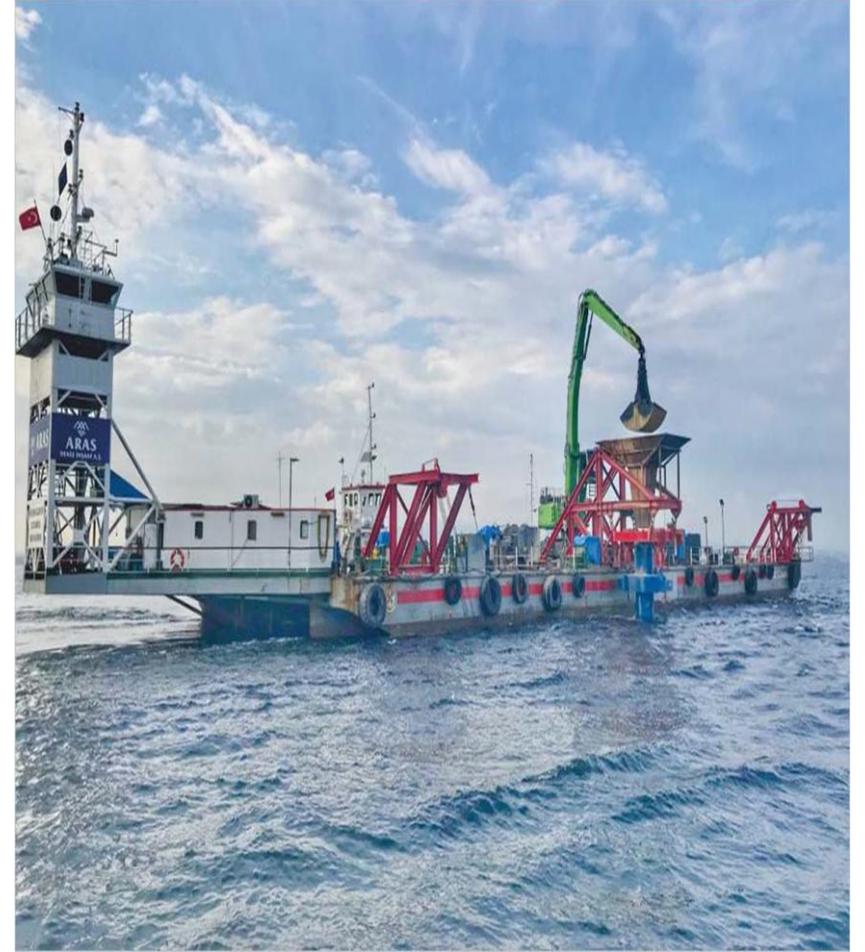


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Çanakkale 1915 Bridge

Project Location	Çanakkale /TURKEY
Scope of Works	1. Gravel Bedding; 85,000m ³ , Levelling of Tower Foundation; 28,800m ² , Scour Protection; 12,000m ³ Fisher Harbour Dredging Works; 43,000m ³ 2. Dredging & Disposal Works; 162,000m ³ 3. Supply & Operation of 4 tugs and 8 Barges for Construction Works
Employer	ÇOKİYİ A.Ş. (Çanakkale Otoyol ve Köprüsü İnşaat Yatırım ve İşletme A.Ş.)
Main Contractor	DLSY Joint Venture DAELIM İnşaat Gelistirme A.S LIMAK İnşaat San. ve Tic. A.S Yapı Merkezi İnş. ve San A.Ş SKEC Anadolu Müh ve Ins. Ltd. Şti SK Engineering & Construction Co. TML İNŞAAT A.Ş.
Project Start	January 29, 2018
Project Finish	Ongoing



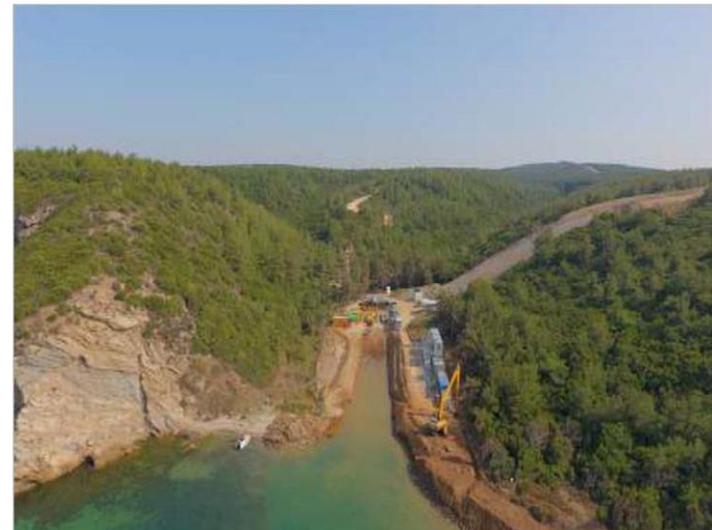
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Trans Anatolian Natural Gas Pipeline Project – TANAP

Project Location	Çanakkale /TURKEY																
Scope of Works	<p>36" gas pipeline and fiber optic cables were installed at sea as part of TANAP project. The sea part of the TANAP Project is divided into five areas A, B, C, D & E about 17.6km long.</p> <p>Aras Marine Construction Co. signed a contract for scouring, excavation, backfilling and rock filling works for A Line (Anatolian) and E&D line (European) coastal areas, as stated below.</p> <table border="1"> <thead> <tr> <th>Parameters</th> <th>Europe</th> <th>Anatolia</th> </tr> </thead> <tbody> <tr> <td>Slope</td> <td>1:60</td> <td>1:10</td> </tr> <tr> <td>Length</td> <td>1,800 meters</td> <td>472 meters</td> </tr> <tr> <td>Volume</td> <td>145,000m³</td> <td>52,000m³</td> </tr> <tr> <td>Max. Digging Depth</td> <td>29.12 meters</td> <td>28.37 meters</td> </tr> </tbody> </table>		Parameters	Europe	Anatolia	Slope	1:60	1:10	Length	1,800 meters	472 meters	Volume	145,000m ³	52,000m ³	Max. Digging Depth	29.12 meters	28.37 meters
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Employer	SAPURAKENCANA TL OFFSHORE SDN BHD																
Main Contractor	SKEAS KALYON ENERJİ ÇÖZÜMLERİ ADI ORTAKLIĞI TİCARİ İŞLETMESİ																
Project Start	March 31,2017																
Project Finish	July 25, 2018																



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Hamifratz Port Project	
Project Location	Haifa – Israel
Scope of Works	Construction of main breakwater; <ul style="list-style-type: none">• Placement of rock type C (3-6 tons)• Placement / dumping of rock type D (1-3 tons)• Dumping rock type E (0-1 tons)• Placement of precast concrete Antifer blocks (4/7/12m³) Construction of East Revetment; <ul style="list-style-type: none">• (Caisson part), including;• Dumping of rock type E1 (0-0,3 tons)• Placement / dumping of rock type E2 (0,3 – 1 tons)• Placement /dumping of rock type E4 (0-1kg) as bedding material under the cassion• Towing and Installation of type 1 and type 2 cassion structures, in total 19 pieces• Installation of toe blocks for cassion structure, (filling the cassions with granullar material and any issue related to this matter is not in the scope of Subcontractor)
Employer	ISRAEL PORTS Development & Assets Com. Ltd.
Main Contractor	Shapir Ashtrom Construction
Project Start	August 11, 2015
Project Finish	Ongoing



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Yarimca Container Port Dredging Works

Project Location	Izmit /TURKEY
Scope of Works	<ul style="list-style-type: none"> • Zone A1 (Preliminary preparation) / Dredging; 50,000m³ • Zone A1 / Opening Channel; 63,323m³ • Zone A1 / Dredging; 132,595m³ • Zone A2 / Dredging; 204,580m³ • Zone A2 / Dredging and stocking; 50,067m³ • Zone B / Opening Channel; 150,000m³ • Zone B / Dredging; 318,587m³
Employer	DP World
Main Contractor	STFA, Jan De Nul N.V.
Project Start	January, 2014
Project Finish	April, 2015



Golden Horn Metro Bridge

Project Location	Istanbul /TURKEY
Scope of Works	Shipping operation for steel decks from Yalova to the Golden Horn
Employer	Istanbul Municipal Railways System Department
Main Contractor	Gülermak
Project Start	October, 2011
Project Finish	February, 2012



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Osmangazi Bridge

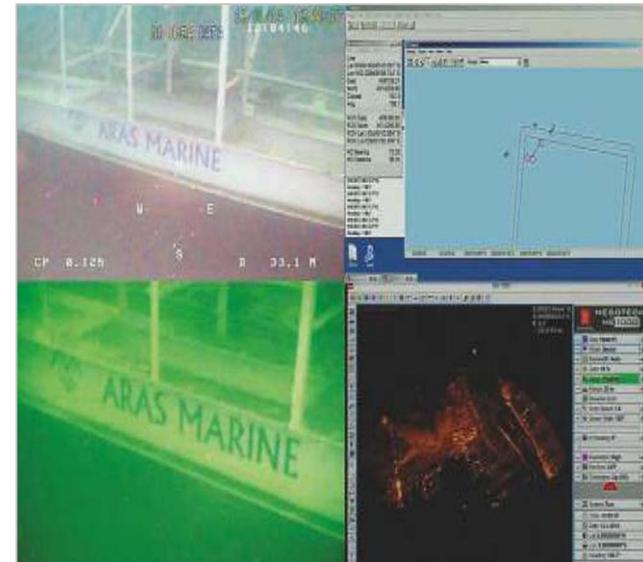
Project Location	Izmit /TURKEY
Scope of Works	<ul style="list-style-type: none">• Performing base scan of the approach channel to -6.0m.• Cable installation works (Carrier-guide cable).• Removal of catwalk.• Deck Assembly Works• Submarine Energy Cable Retraction for Towers• All construction works related to sea Works
Employer	NÖMAYG
EPC Contractor	IHI Corporation
Project Start	January 2015
Project Finish	December 2016



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Osmangazi Bridge	
Project Location	Izmit /TURKEY
Scope of Works	<ul style="list-style-type: none">• Deep dredging under North and South Towers (up to - 43m); 85,000m³• Dry Dock Approach Canal Dredging (up to - 8m); 300,000m³• Rock laying operation under the North and South Towers; 65.000 m3• Fortifications under the North and South Towers; 81,100m³
Employer	NÖMAYG
EPC Contractor	IHI Corporation
Project Start	December, 2011
Project Finish	August, 2013



MULTI-PURPOSE & MODULAR UNDERWATER MACHINERY (MUM) AND ITS USE ON THE 1915 ÇANAKKALE BRIDGE PROJECT

A. Serkan Togay, Aras Marine Construction

ABSTRACT

For many types of marine structures, whose construction has become more numerous with rising demand in recent years, the requirement to obtain smooth foundations on the sea floor brings with it important engineering developments.

This is achieved with techniques that allow the dredging process and the placing of bearing material for the foundation construction to be levelled as quickly and precisely as possible underwater, which is of great importance for the permanent structure to be installed thereafter.

Increasing the water depth generally increases the size of the equipment to be used, which requires expensive investment, brings high mobilization and port costs and despite this, the desired tolerance criteria may still be difficult to achieve.

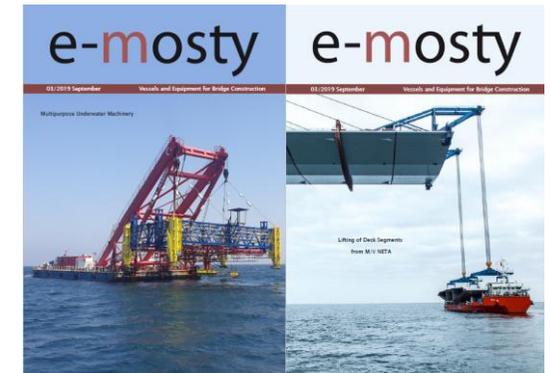
→ MUM in the Dardanelles

In the article, which was published in e-mosty magazine, the Multi-Purpose & Modular Underwater Machinery (MUM) which was used in underwater foundation levelling works of the “1915 Çanakkale Bridge Project” is introduced.

MUM successfully completed its works in April 2019 and in this article the innovative aspects of the product are described.



Read the full text with descriptions and specification of the equipment in e-mosty magazine



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VESSELS AND MARITIME EQUIPMENT FOR CONSTRUCTION OF THE OSMANGAZI BRIDGE

ABSTRACT

The Osmangazi Bridge in Turkey is the fourth longest span suspension bridge in the world, with a main span of 1,550m.

The bridge and the first phase of the 409-kilometer-long tolled motorway between Gebze and Izmir were opened to traffic on 30th June, 2016.

During construction of Osmangazi Bridge, EPC Contractor IHI-ITOCHU Consortium self performed superstructure erection using marine vessels directly hired from Boskalis (sheerleg cranes: Taklift 6 and Taklift 7), ÇİMTAŞ (barge name: GMK-1), CIMOLAI (barge name: Archimedes) and ARAS Marine (barges: Sun Rise and Ayyıldız).

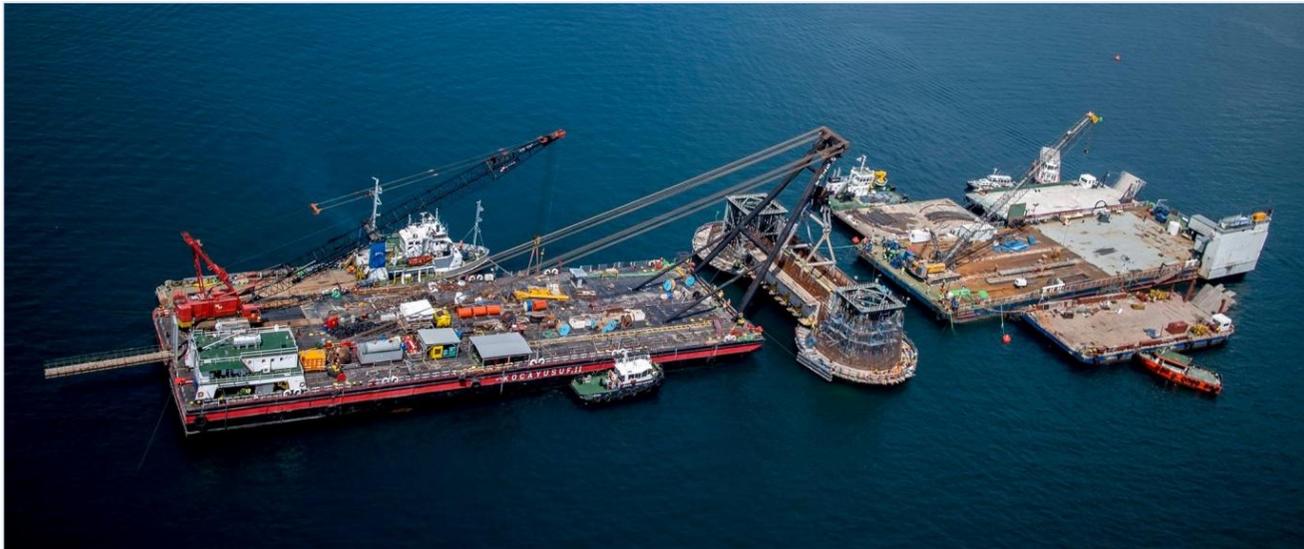
Turkish contractor STFA Construction worked as a subcontractor to IHI-ITOCHU Consortium for substructure works including: dredging of tower foundations, driving of inclusion piles for soil improvement under foundations, laying and leveling of granular material below tower foundations, preparation of caissons and towing and sinking of caissons.

Vessels and marine equipment were carefully studied and selected to achieve the tight schedule for construction of the Osmangazi Bridge.

The main selection parameters were as follows:

- Conditions of the job site, in particular navigational requirements including depth, speed and other constraints.
- Size and weight of modules transported and installed.
- Method of transportation and installation of modules.

Selected vessels and equipment were generally used as planned, however several actions were necessary to compensate for time lost due to poor weather conditions during construction.



Installation of the tie-beam (North Tower Foundation Location)

e-maritime

Although the construction site in İzmit Bay was to some extent protected from adverse effects of the sea; wave heights and wind speeds imposed limitations, especially on lifting operations using floating cranes.

The width and location of the navigational channel changed several times during construction activities, in coordination with the Harbor Master and other maritime authorities.

Self-propelled vessels with DP2 dynamic positioning systems were used to erect the tower and deck segments.

Non-self propelled barges were towed by tug boats and used in secondary works like transportation of temporary elements.

The suspended deck is an orthotropic stiffened steel box girder, 4.75m deep and 30.1m wide with cantilevered 2.9m wide inspection walkways on each side, suspended by the hanger ropes spaced at 25m.

The suspended deck has three traffic lanes in each direction.

The tower is steel construction reaching over 251m above sea level and was constructed using floating cranes for the lower part and a self-climbing crane for the upper part.

Cable erection then followed.

Various equipment, temporary steel structures and elements were used during erection works.



Temporary steel working platforms waiting for erection on barges "SEMA-1", "Rising Sun" and "Ay Yıldız"



250 ton crawler crane installed on South Tower Working Platform by "Taklift 7"

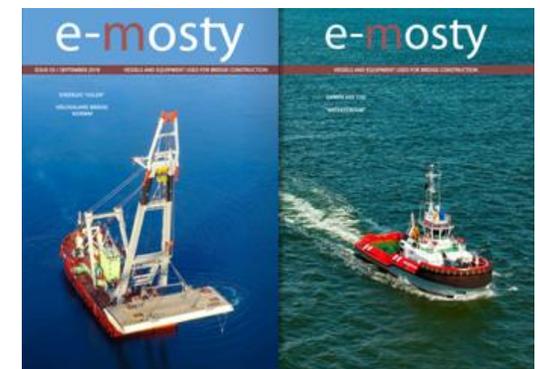
Read the full text with descriptions and specifications (datasheets) of vessels and equipment used for construction of the Osmangazi Bridge in e-mosty magazine

VESSELS FOR SUBSTRUCTURE: INITIAL AND FINAL LAUNCHING OF THE CAISSONS AND THEIR SUBMERGING

Erdal Ergül

VESSELS FOR SUPERSTRUCTURE

Fatih Zeybek



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March 2020

INVITATION TO CONTRIBUTE TO A SPECIAL EDITION OF E-MOSTY MAGAZINE

1915 ÇANAKKALE BRIDGE PROJECT

WITH YOUR ARTICLE

We are planning a special edition of e-mosty magazine dedicated to design and construction, vessels and equipment for the 1915 Çanakkale Bridge Project in Turkey.

It is planned to be published around the completion of the bridge (2022/2023).

We welcome your articles and all additional material which can be published in this special edition.

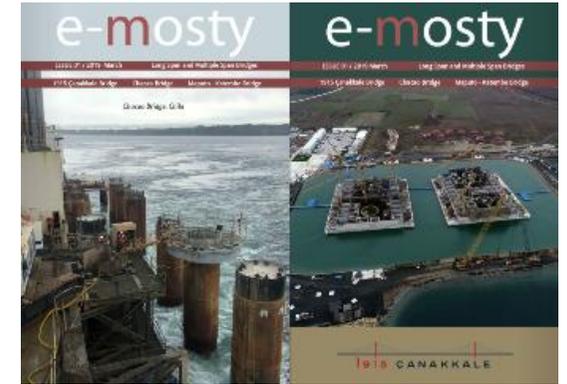
The article shall be technical, descriptive and informative.

The text in MS Word, other content as jpg, png, pdf or video (eg. youtube).

Please [contact us](#) to pre-arrange the cooperation.

Thank you very much / Çok teşekkür ederim.

Read an article about design of the bridge in e-mosty magazine



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MONACO LAND EXTENSION PROJECT

The Principality of Monaco is being extended by an eco-neighbourhood of 60,000m², resting on a 6-hectare underground embankment.

It is located in the area of the Anse du Portier, between the Grimaldi Forum - which will be expanded - and the Hercules Port and will comprise of buildings and luxury villas, shops, services providers, public facilities, and a parking.

Individuals will also enjoy a 30-ring harbour with pedestrian quays and extensive public areas: a 1-hectare park, a coastal promenade as well as a shaded passage in the greenery along the Japanese Gardens.

The caisson belt is a protective barrier-type structure. It is 500m long, comprising of 18 concrete caissons.

Each caisson is formed into a trapezoidal structure, 28 x 33m side, 26m high, and it weighs 10,000 tonnes when empty.

Once ballasted and in their final position, each caisson exceeds 20,000 tonnes.

Approx. 750,000 tonnes of quarry sand is used to fill the space between the caisson belt and the shoreline using two bulk carriers to carry out this operation.

A technical article about the project, dredging, towing, caisson installation, landfilling, vessels and equipment will be published in one of the 2020 issues of e-maritime magazine.

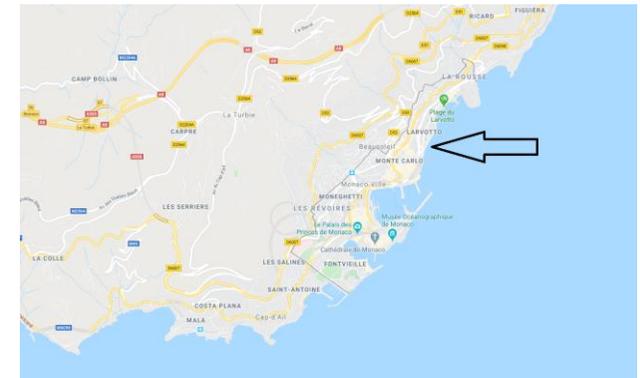


Figure 1: Location of the project on the map
Source: google maps

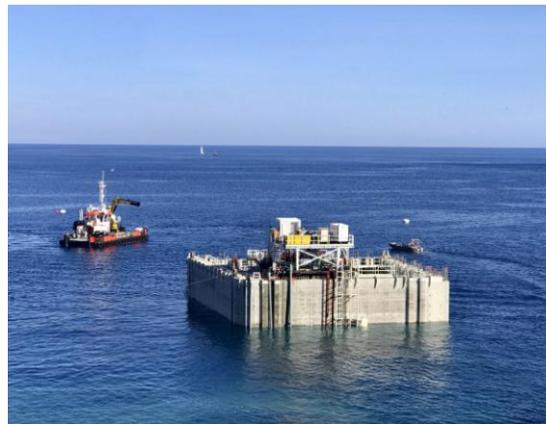


Figure 2: Once the caisson was above its final position, it was ballasted
Photo © SAM L'Anse du Portier



Figure 3: Caisson installation to create a belt
Photo Credit: Bouygues

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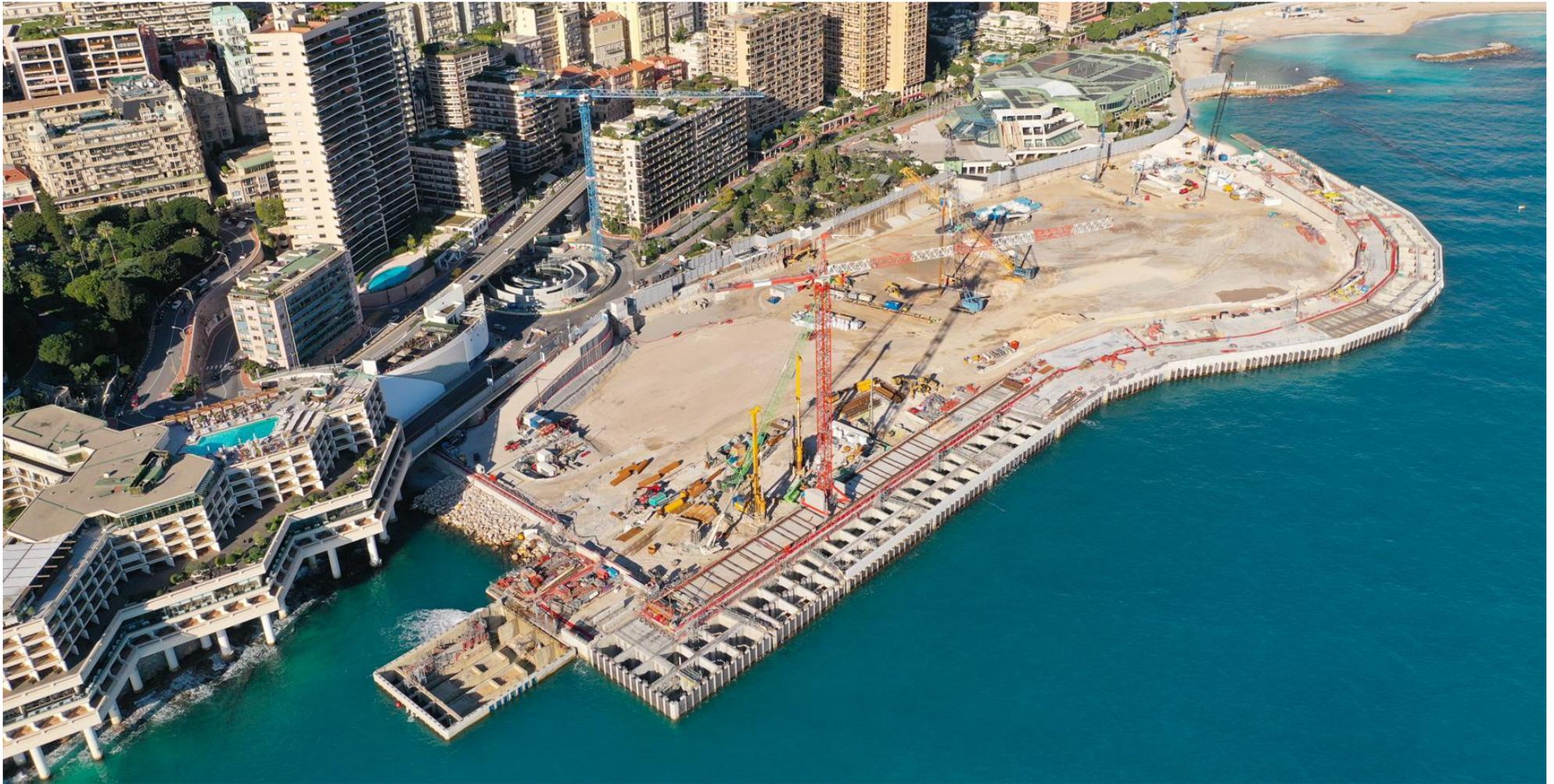


Figure 4: The caisson belt with landfill. Photo Credit: Bouygues

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Figure 5: Project Visualization. Photo: Principauté de Monaco / SAM L'Anse du Portier / Valode et Pistre Architectes / Renzo Piano Building Workshop / Michel Desvigne Paysagiste

March 2020



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Shipyards and Maritime Industry in Turkey

View from the Osmangazi Bridge of Yalova Shipyards

