



**DIV
M.E.S.**
Marine and Energy Solutions

MARINE AND ENERGY SOLUTIONS DIV LTD

DESIGN IN SHIPBUILDING

VESSEL DESIGN



ABOUT US

Marine and Energy Solutions DIV Ltd is a ship design and engineering company.

We specialize in concept, basic and detail design of vessels, interior design, Finite Element Method (FEM), techno-economic feasibility studies, 3D modelling, site supervisions and engineering services.

We provide support services of the shipbuilding process throughout the entire production cycle ranging from initial negotiations with the client and definition of conceptual and main designs, supervision of building at the shipyard, engineering and technology transfer.

We offer a range of services, based on expertise and innovation utilizing our experienced team of Naval Architects, Industrial Designers, Mechanical, Electrical and Welding Engineers and state of art software in-house.

With our services, we are capable of supplying complete design packages meeting owners' requirement at all phases of the ship design and ship building process.

SERVICES

- Vessels initial and basic design (Naval architecture, Weight control, Structural & Hull Design, Outfit Arrangements, Propulsion system design, Engine room Arrangements, Auxiliary System Design, Electrical System Design)
- Interior design
- HVAC design
- Ship equipment design (doors, platforms & gangways)
- Testing programs
- Workshop documentation
- Design of shipyard facilities
- Site supervisions & project management
- Engineering
- Technology transfer
- Education and specialization of ship designers

PATROL VESSEL 43M



Length overall	43,16 m
Breadth, max.	8,00 m
Draught	2,70 m
Continous speed, max (90% MCR)	>27,0 kn
Max. speed (100% MCR)	>28,0 kn
Complement	14+3
Shipyard	Brodosplit DIV, Croatia



Ship design/Technical documentation/Interior design: M.E.S. DIV
Design/shipbuilder contractors: M.E.S. DIV/Brodosplit, Croatia

PATROL VESSEL 43M

For the Croatian Navy – concept design, basic class documentation, workshop documentation

Basic class documentation according to CRS Rules (Naval architecture, Weight control, Structural & Hull Design, Outfit Arrangements, Propulsion system design, Engine room Arrangements, Auxiliary System Design, HVAC, Electrical System Design).



Ship design/Technical documentation/Interior design: M.E.S. DIV
Design/shipbuilder contractors: M.E.S. DIV/Brodosplit, Croatia

OCEAN GOING PASSENGERS VESSEL THREE MAST SCHOONER KLARA



Length	62.29 m
Beam	10.00 m
Draft	3.60 m
BT	<500
Sleeping Guests	36
Crew	9
Cruising Speeds	11 kn
Shipyard	Brodosplit, Croatia



Ship design/Technical documentation/Interior design: M.E.S. DIV
Design/shipbuilder contractors: M.E.S. DIV/Brodosplit,Croatia

CONCRETE PRODUCTION SHIP PLOVPUT SPLIT



Length overall	48.20 m
Breadth	11.00 m
Height	4.00 m
Design draft	3.20 m
Speed, max	10 kn
Autonomy, days	7
Crew	8+6
Construction material	steel
Fully automated concrete production plant	



*Ship design/Technical documentation/Interior design: current members of M.E.S. DIV design team
Design/shipbuilder contractors: Brodarski Institut/Brodosplit, Croatia*

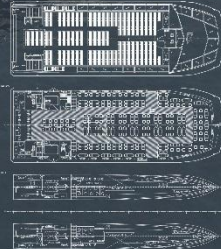
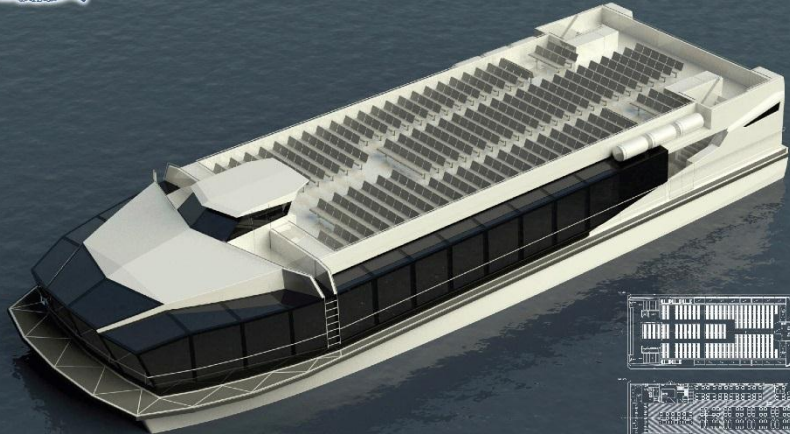
RIVER PASSENGER CATAMARAN MILLENNIUM DIAMOND



MAIN CHARACTERISTICS

Length Overall	37,00 m	Height max.	7,62 m
Length BP	34,50 m	Air gap minimum clearance	6 m
Length Waterline	34,80 m	Fuel	20 000 L
Breadth Overall	14,60 m	Water	24 500 L
Breadth Moulded Hull	4,60 m	Power	2650 kW @ 1100 rpm
Depth Moulded	2,20 m	Speed max.	12,5 kn
Displacement mass Full	270 t	Range @ cruising speed	600 nm
Design max.	120 m	Total passengers and crew	300

3RD GENERATION LINER

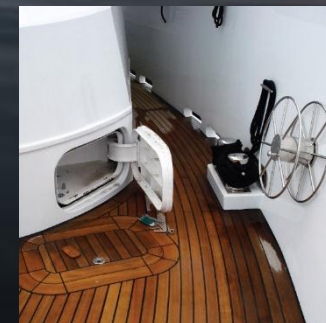


Length over all	37,00 m
Breadth moulded	14,60 m
Draught, max.	1,45 m
Height, max	7,65 m
Speed, max	12,50 kn
Material	hull-steel, superstructure-aluminium

Ship design/Technical documentation/Interior design: current members of M.E.S. DIV design team
Design/shipbuilder contractors: Brodarski Institute/Tehnomont, Croatia

MOTOR YACHT
PEARL

Length over all	21.08 m
Breadth, max.	5.36 m
Draught	1.95 m
Passengers	6
Number of cabins	3
Speed	10 kn
Power	2x153 kW @ 1900 rpm
Material	Steel hull / Aluminium superstructure
Builder	Shipyard „Conrad”, Gdansk, Poland



*Ship design/Technical documentation/Interior design: curent members of M.E.S. DIV design team
Shipbuilder contractors: Conrad, Gdansk Poland*

FISHING VESSELS

TUNA & PURSE SEINER 40M

Length overall	40.15 m
Beam overall	8.65 m
Mean draught, half load	2.75 m
Draught over propellers, half load	3.48 m
Depth, amidships at side	4.20 m
Trial speed at design draught and 100% power	14.50 kn
Range at cruising speed of 13 kn	2500 n.m.
Material	Steel
Builders	Tehnomont, Croatia Vranjic, Croatia



*Ship design/Technical documentation/Interior design: curent members of M.E.S. DIV design team
Design/shipbuilder contractors: Brodarski Institute/Tehnomont,Croatia/Vranjic,Croatia*

FISHING VESSELS

PURSE SEINER 25M

Length overall	25.20 m
Beam overall	7.350 m
Mean draught, full load	2.600 m
Draught over propellers, full load	3.280 m
Max. speed	11.00 kn
Range at cruising speed of 10 kn	1200 n.m.
Material	Steel
Builder	Fran, Croatia



Ship design/Technical documentation/Interior design: curent members of M.E.S. DIV design team
Design/shipbuilder contractors: Brodarski Institute/Fran,Croatia

RIVER SURVEY VESSEL 23M

VUCEDOLSKA GOLUBICA

Length overall	23.00 m
Beam overall	5.70 m
Mean draught, full load	1.20 m
Max. speed	21.00 km/h
Range at cruising speed of 10 kn	1100 km/21 km/h
Material	Steel
Builder	Shipyard Kraljevica, Croatia



Concept design, basic class documentation

Basic class documentation according to CRS Rules (Naval architecture, Weight control, Structural & Hull Design, Outfit Arrangements, Propulsion system design, Engine room Arrangements, Auxiliary System Design, HVAC, Electrical System Design).

Ship design/Technical documentation/Interior design: current members of M.E.S. DIV design team

WORK CATAMARAN 40

Length overall	12.00 m
Beam overall	6.80 m
Max. speed	8.00 kn
Payload	13 tones
Material	Glass Reinforced Plastic - GRP



Main purpose of the catamaran is working on fish farms, fish feeding, catching fish, mariculture support such as maintenance of farming nets, handling the fish cages, pushing and towing of the cages and other maritime works.

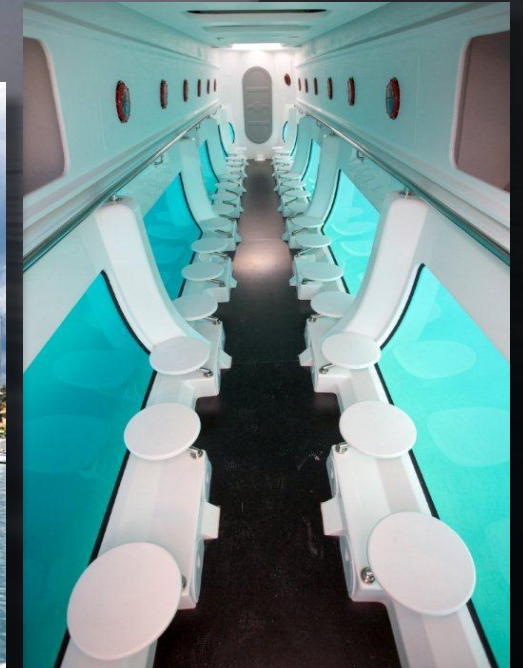
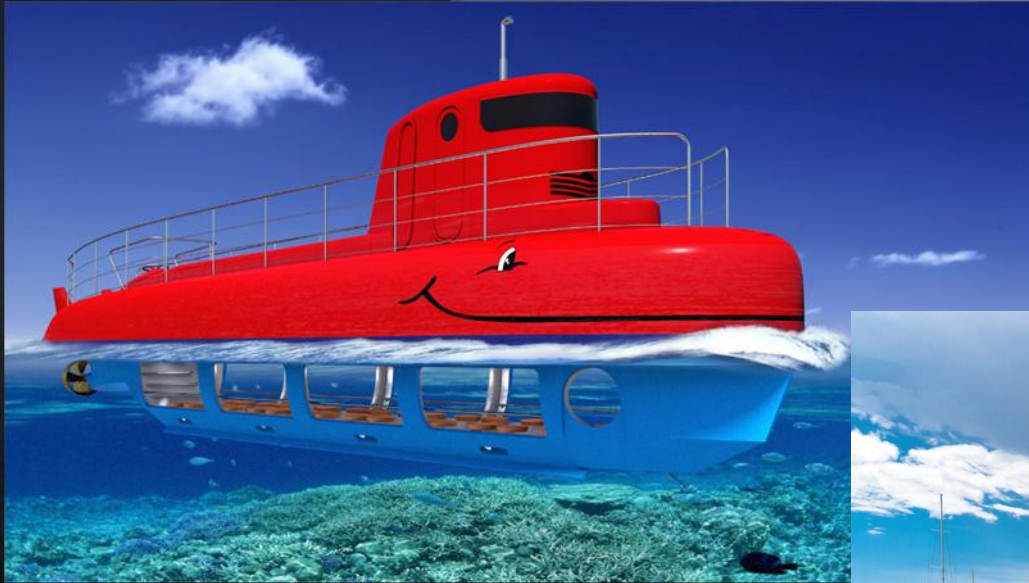
Concept design, basic class documentation

Basic class documentation according to DNV Rules (Naval architecture, Weight control, Structural & Hull Design, Outfit Arrangements, Propulsion system design, Engine room Arrangements, Auxiliary System Design, HVAC, Electrical System Design).

EXCURSION BOATS

SEMISUBMARINE MARLIN 55

Length	17.1 m
Breadth Overall	3.75 m
Draft	1.28 m
Speed at 90% MCR	7.00 kn
Drive	1x62.5 kW at 2600 rpm
Passengers	50
Crew	2
Material	GRP
Builder	Agena Marin, Croatia



Ship design/Technical documentation/Interior design: M.E.S. DIV
Design/shipbuilder contractors: M.E.S. DIV/Agena Marin, Croatia

POLICE PATROL CRAFT

Length overall	13.85 m
Beam, max.	4.50 m
Depth moulded	2.30 m
Speed, max.(half load)	31 kn
Propulsion	2x368 kW, FPP
Crew	3
Endurance	200 n.m/27 knots
Autonomy	4 days
Material	aluminum alloy/GRP



Ship design/Technical documentation/Interior design: curent members of M.E.S. DIV design team
Design/shipbuilder contractors: Brodarski Institute/shipyard Tehnomont, Croatia

YACHTS

MOTOR YACHT ADRIANA 44

Length overall	13.48 m
Hull length	11.98 m
Breadth	4.25 m
No of cabins	3/4
No od beds	6(8) + 1
Passengers, max	12
Speed, max (2 x 320 HP)	28kn
Material	Glass Reinforced Plastic – GRP
Builder	SAS-Vektor, Croatia



*Ship design/Technical documentation/Interior design: curent members of M.E.S. DIV design team
Design/shipbuilder contractors: Brodarski Institute/SAS-Vektor,Croatia*

NEW PROJECT:

MODERNIZATION OF LANDING CRAFT – MINELAYER CLASS *CETINA* (Customer: Croatian Ministry of Defence)

Main characteristics:

Displacement

- light 5906 t
- full 1000 t

Dimensions 49.7x10.2x2.4 m

Propulsion 2 diesel engines, output power 2x1140 kW, 2 shafts,
Max. speed 12 kn

Cargo:

- 300 tons (6 tanks (M 84) and 4 cannons with towing trucks)
- 264 tons (6 tanks M 84 or similar)
- 82 tons (12 cannons 76 mm wit towing trucks)



OFF-SHORE UNITS

SEDU LABIN (Levingston 111-C/Upgraded)

Stability calculation and engineering services/design documentations for repairs, equipment upgrades and modifications

Stability calculation according to ABS Rules

Next engineering services/design documentation for repairs, equipment upgrades and modifications of the drilling rig LABIN:

- a. Bow extension FEM Analysis
- b. Wireline unit
- c. Ventilation below main deck
- d. Raw water reel installation
- e. Air cooled heat exchangers
- f. Lifeboat & Davits Installation
- g. Fast Rescue Boat - launching device installation



*Ship design/Technical documentation/Interior design: current members of M.E.S. DIV design team
Stability calculation: M.E.S. DIV
Design/shipbuilder contractors: Brodarski Institute/Uljanik, Croatia*



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Marine and Energy Solutions

INTERIOR DESIGN



Our interior design department can provide following services:

- Passenger Ships Interiors
- Yacht Interiors
- Interior of Offices and Residences
- Turnkey Project Management
- Planning and Cost control
- Schematic and Conceptual Design
- 3d Renderings
- General Layout Presentation Plan
- Documentation such as Ceiling Plan, Wall and Partition Plan, Floor Plan
- Material Sample Book
- Furniture Detailed Plan
- Workshop Documentation
- On Site Supervision

3 MAST SCHOONER KLARA

Length	62.29 m
Beam	10.00 m
Draft	3.60 m
BT	<500
Sleeping Guests	36
Crew	9
Cruising Speeds	11 kn
Builder	Shipyard Brodosplit. Croatia
Flag	Marshall Islands
Project	MES DIV, Croatia



RO-RO SHIP
BALEARIA

- Proposal for interior design
- Reception and lobby area
 - Bar and restaurant

YEAR 2017



RIVER PASSENGER SHIP

OMEGA

YEAR 2014



RIVER PASSENGER CATAMARAN MILLENIUM DIAMOND

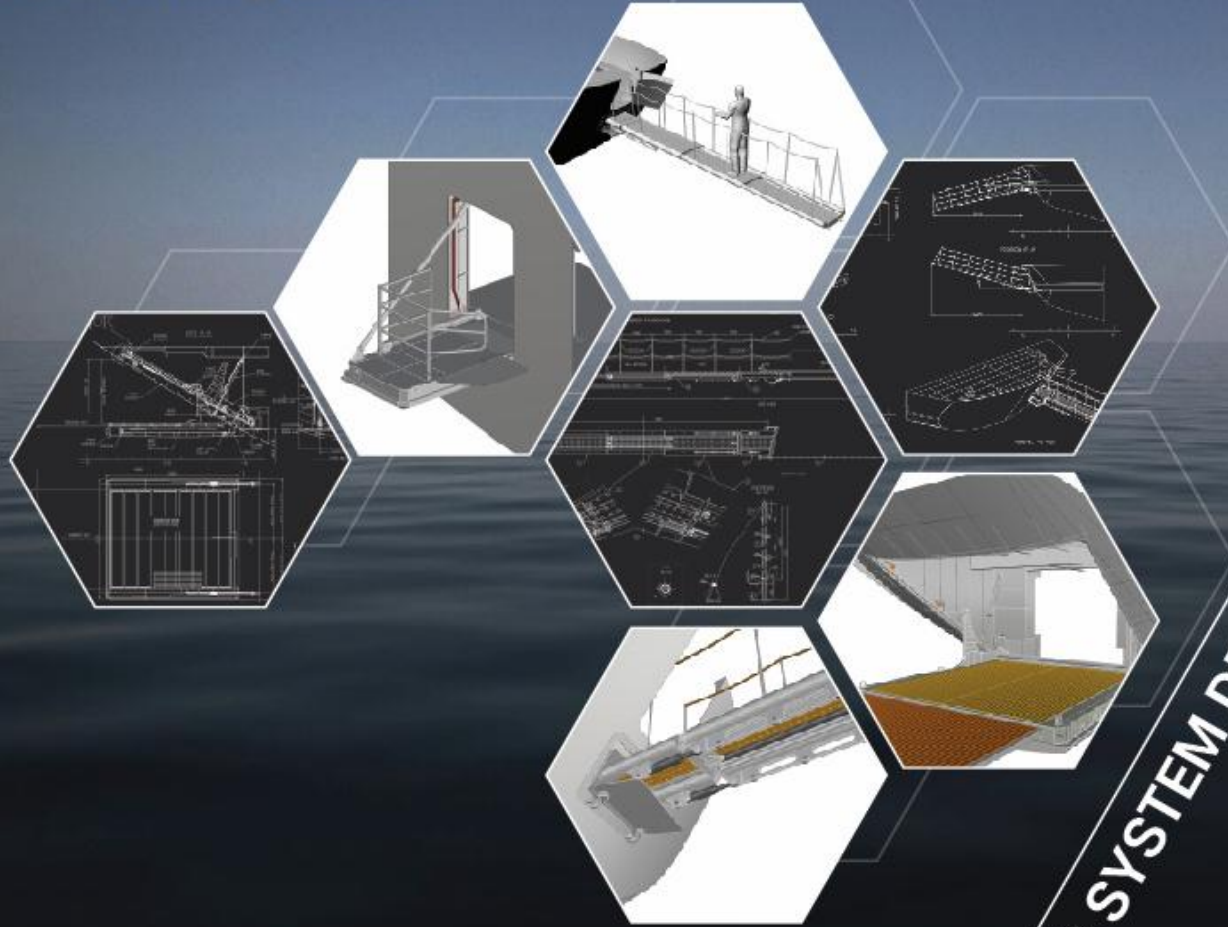


MOTOR YACHT PEARL



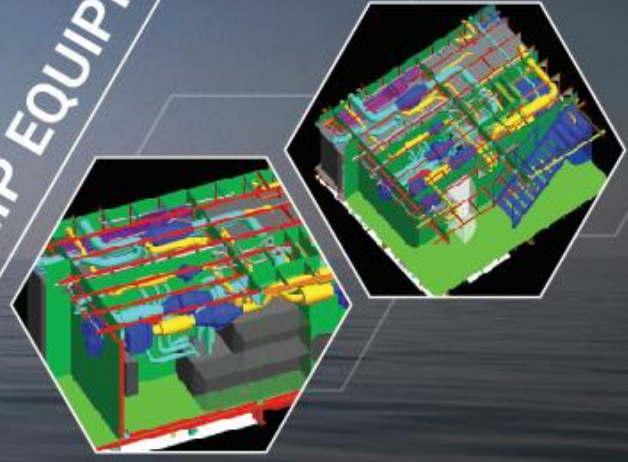


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HVAC SYSTEM DESIGN

SHIP EQUIPMENT DESIGN

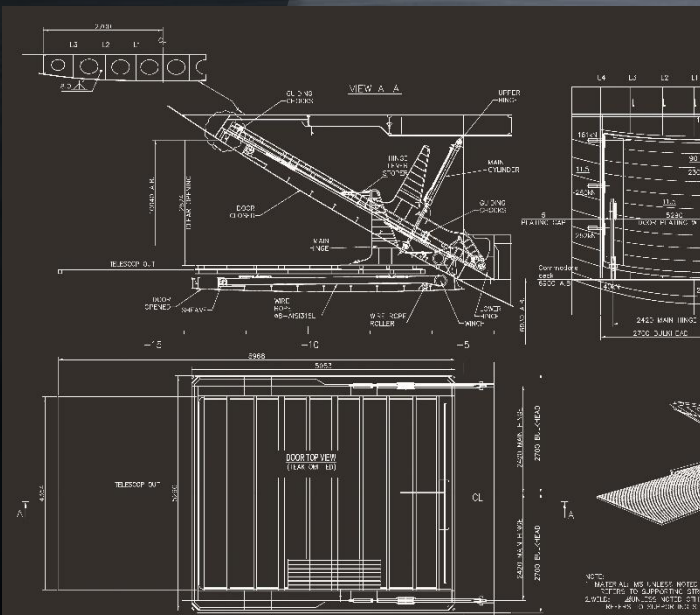
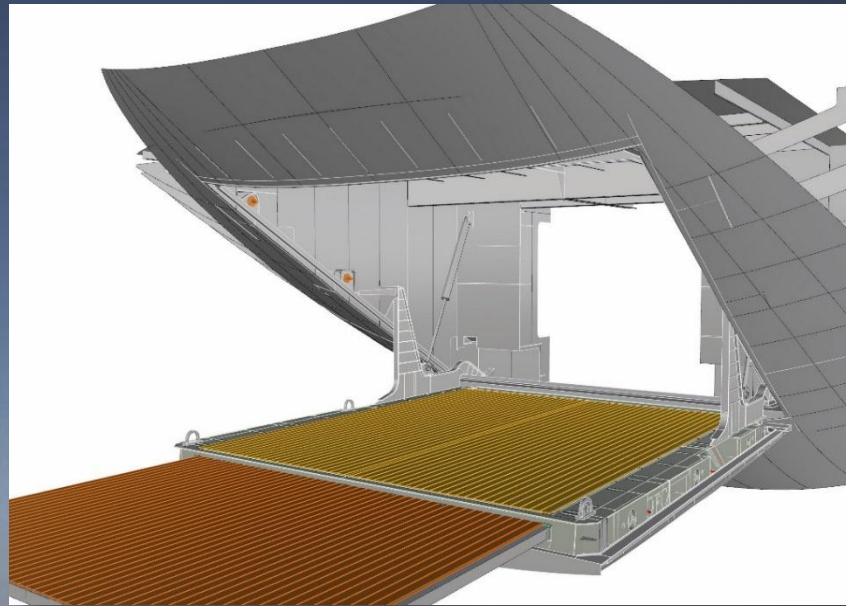


Our Equipment design department can provide complete solution for most complex equipment on your vessel, from your idea through basic design to supervision of production and installation.

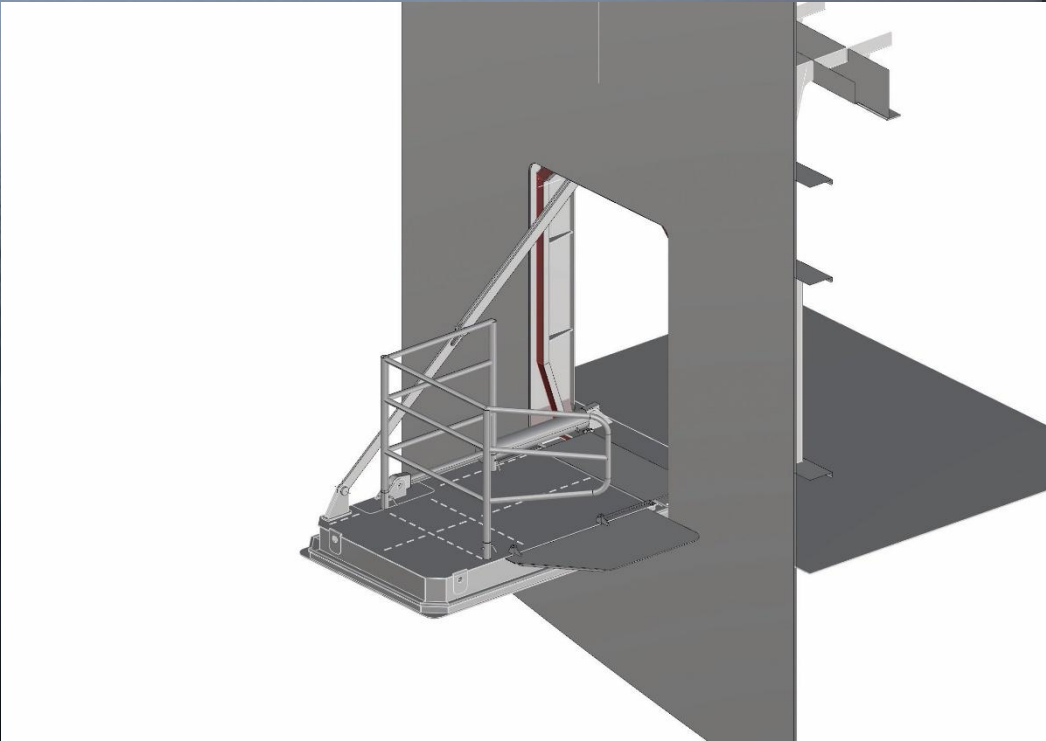
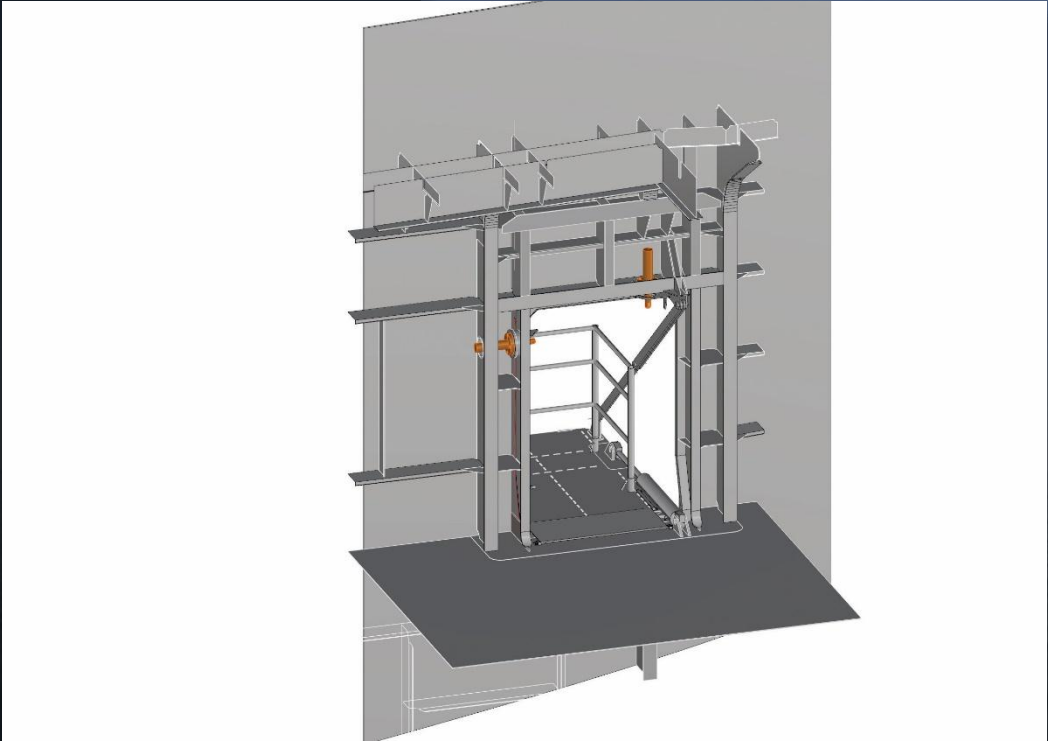
Projects:

- Electric control implementation of existing passenger gangway
- 7m electro hydraulic passenger gangway (basic design, workshop documentation, electro-hydraulic drive design)
- Passenger vessel side door (structural and electro-hydraulic design and calculation)
- Passenger vessel stern door (structural and electro-hydraulic design and calculation)
- Ships cold room (complete design and calculation with structural incorporation in existing vessel)

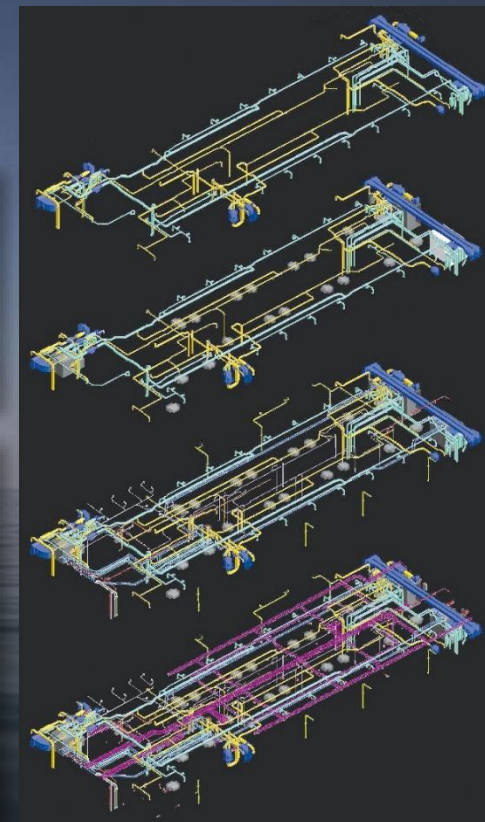
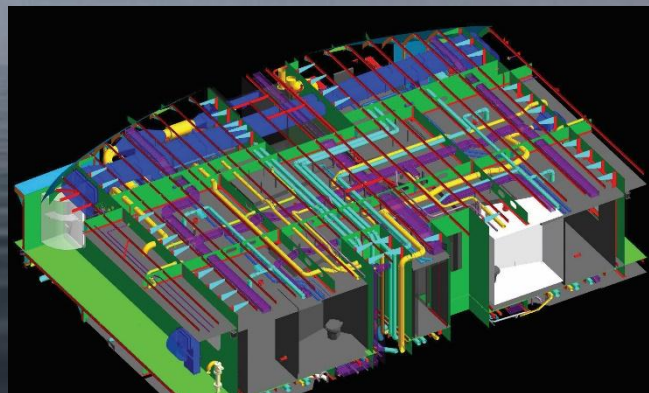
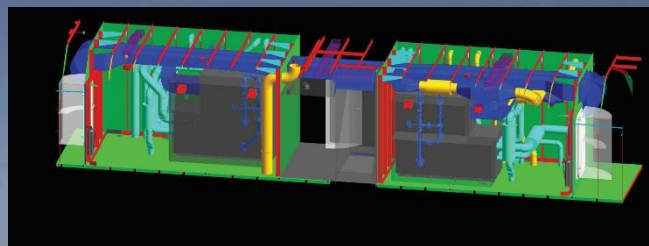
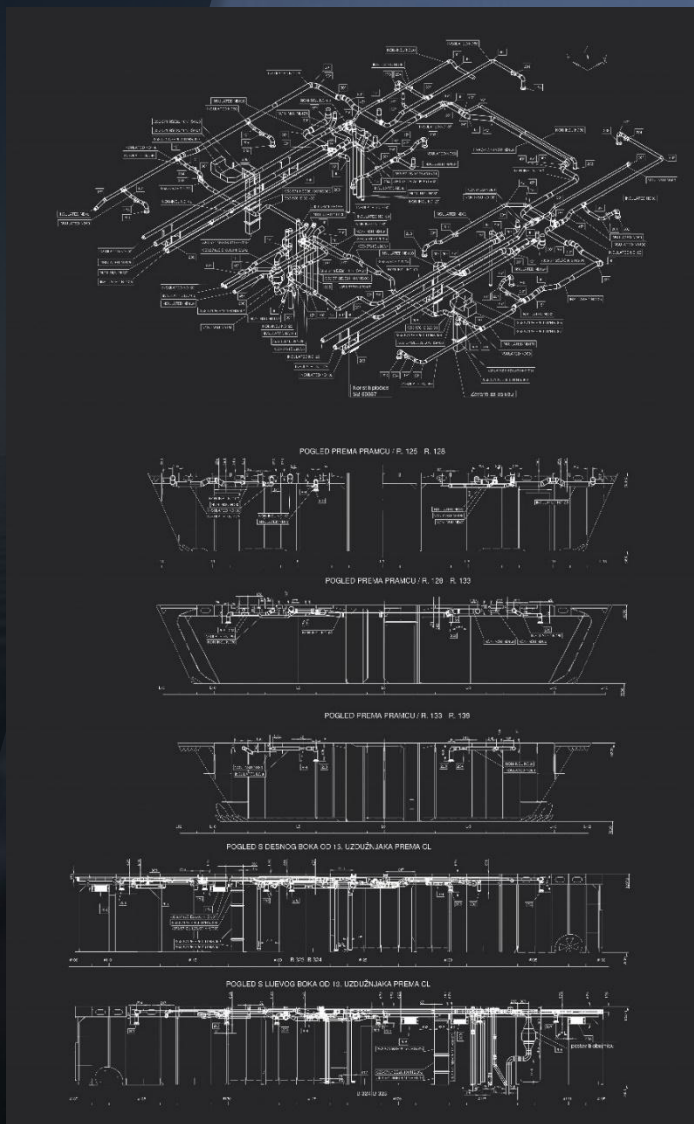
PASSENGER SAILING VESSEL „FLYING CLIPPER” STERN DOOR



PASSENGER SAILING VESSEL „FLYING CLIPPER”
STERN DOORS



Our HVAC design department can provide complete calculation and design of HVAC systems for any kind of vessel.



EXPERIENCE IN DESIGN OF NAVAL VESSELS

MES DIV Team

Marine and Energy Solutions DIV LLC is comprised of experienced professionals, including Naval Architecture Team, Interior Design Team, Hull Equipment Team, Mechanical Engineering Team, Electrical Engineering Team, Energy Facilities Team and Hull Workshop documentation Team. This team possesses an extensive amount of experience and engineering knowledge.

General Manager is Mr. Mislav Brlić. More than 30 years of professional experience in the design of Naval and Civil Vessels. Head of Office in Vessel Design & Development Department in Brodarski Institute, Zagreb from 2004 until 2014. Membership in ISSC (International Ship and Offshore Structures Congress - 2012) Committee V. 5. Naval Vessels (Concern for structural design methods for naval ships and submarines including uncertainties in modelling techniques). He wrote a book: The destroyers and frigates for the 21st century, the library Militaria, Publisher: Croatia Ministry of Defence, 2002

TEAM LEADERS



General Manager
MISLAV BRLIĆ, Nav.Arch.



Naval Architecture Department
Mislav Bezovnik, Nav.Arch.



Interior Design Department
Msc. Ivana Peko, indust. designer



Marine Engineering Department
Pero Miloš, Mech.Eng



Detail Design Department
Juvel Cokić, Nav.Arch.



Ship Equipment Department
Dinko Salopek, Nav.Arch.



Electrical Department
Ivan Rutnik, Elec.Eng



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