Proffesional Experience Nitai Drimer

NAMCO – Naval & Mechanical Engineering Company Ltd.

Designer 1984-2014, director and owner 1998-2014
NAMCO is a private design firm for Naval Architecture and Ocean Engineering, specialized in the design of unique offshore structures and vessels such as: Offshore Fish Farms, Work and Patrol Boats, Undersea Observatories; Founded on 1965 by Moshe Drimer, Naval Architect and Marine Engineer.

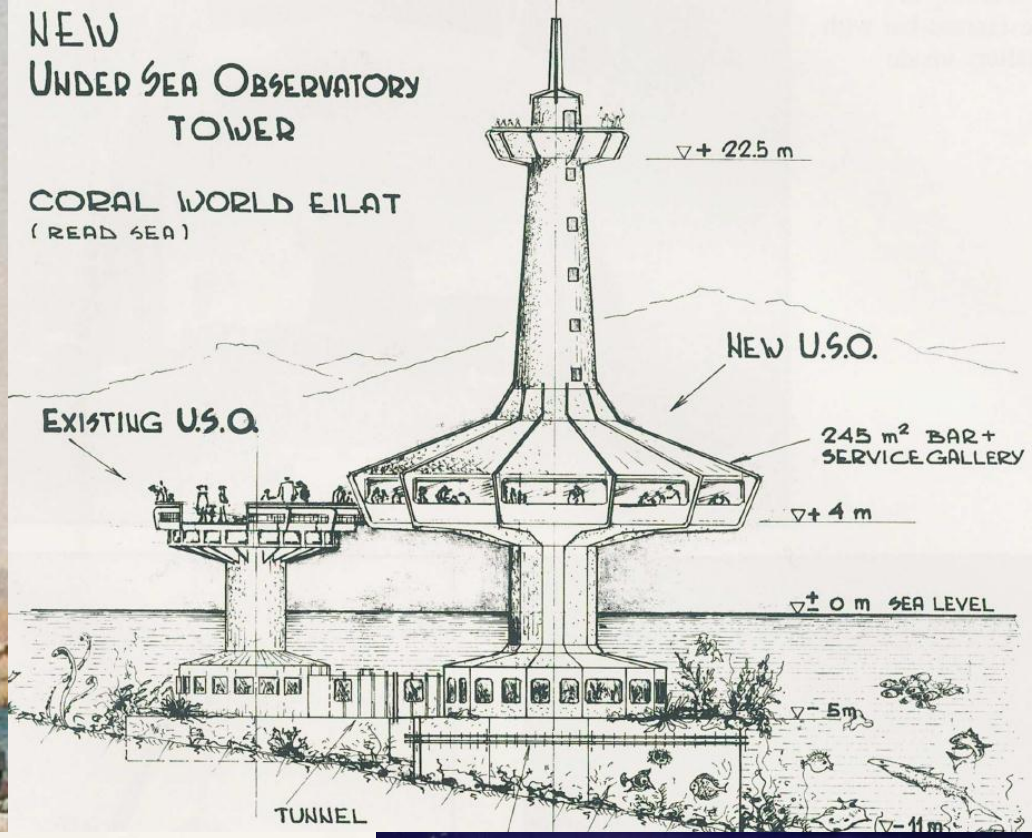
CAMERI – Coastal and Marine Engineering Research Institute

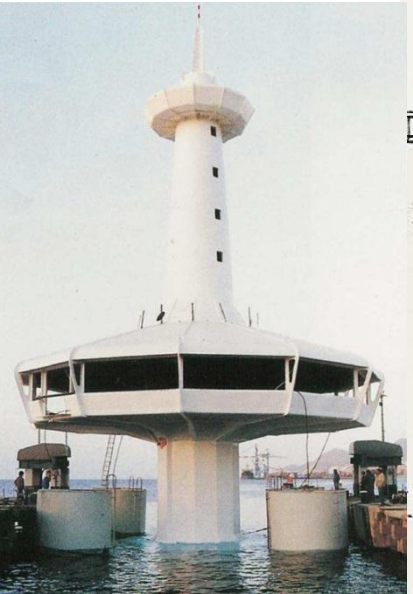
Research Engineer 1994-1999, Director and Research Engineer 2000-2012.

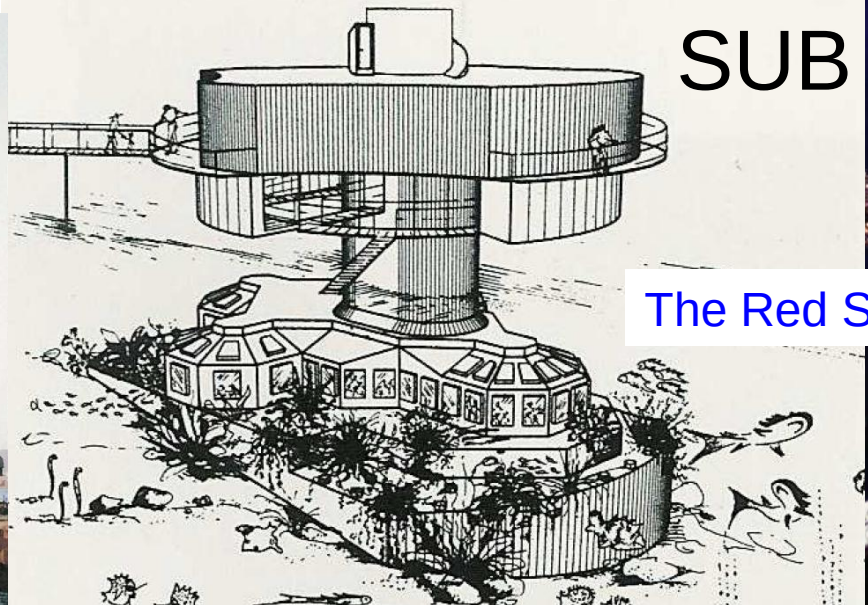
Technion – Israel Institute of Technology

Since October 2012 associate Professor, Faculty of Mechanical Engineering, Head of Naval Architecture and Ocean Engineering Major.

The following pictures present some selected projects, designed by NAMCO and modeling projects with CAMERI

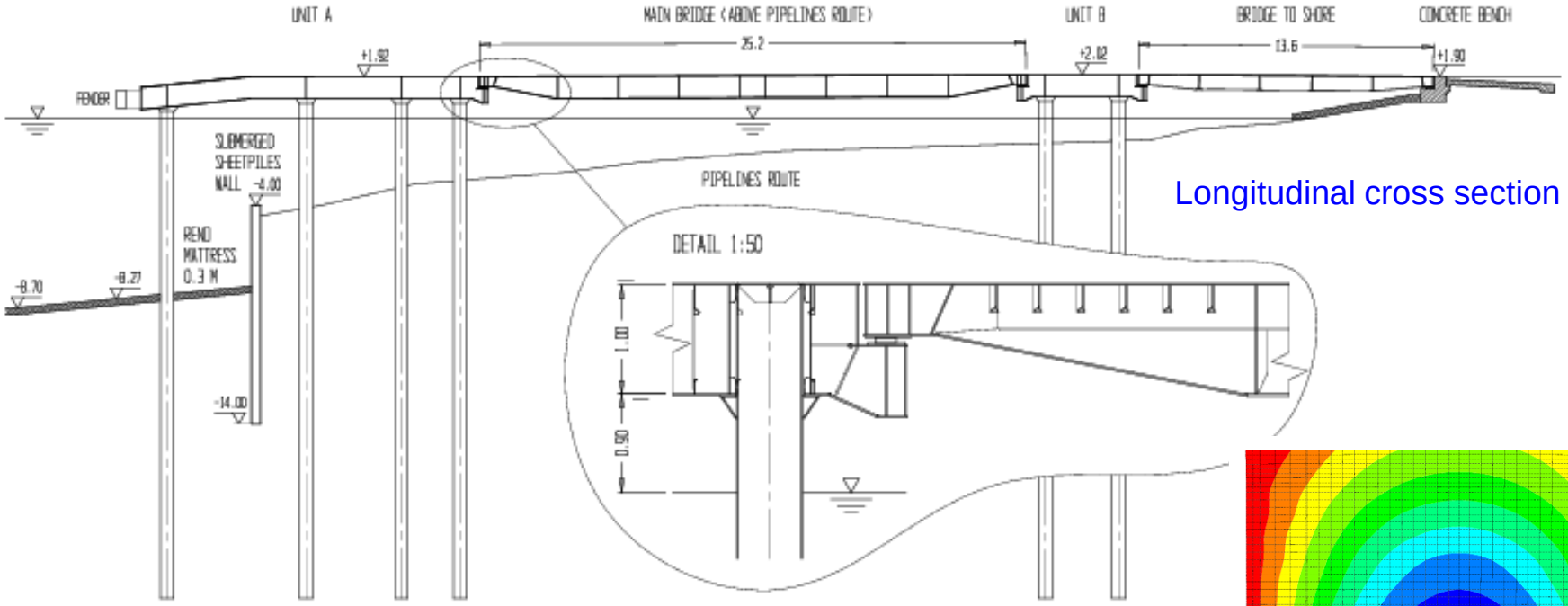




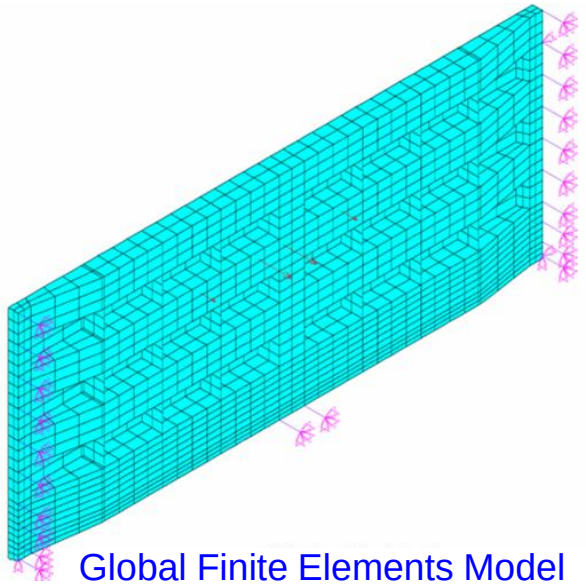


SUB SEA Structures

The Red Sea Star



Longitudinal cross section

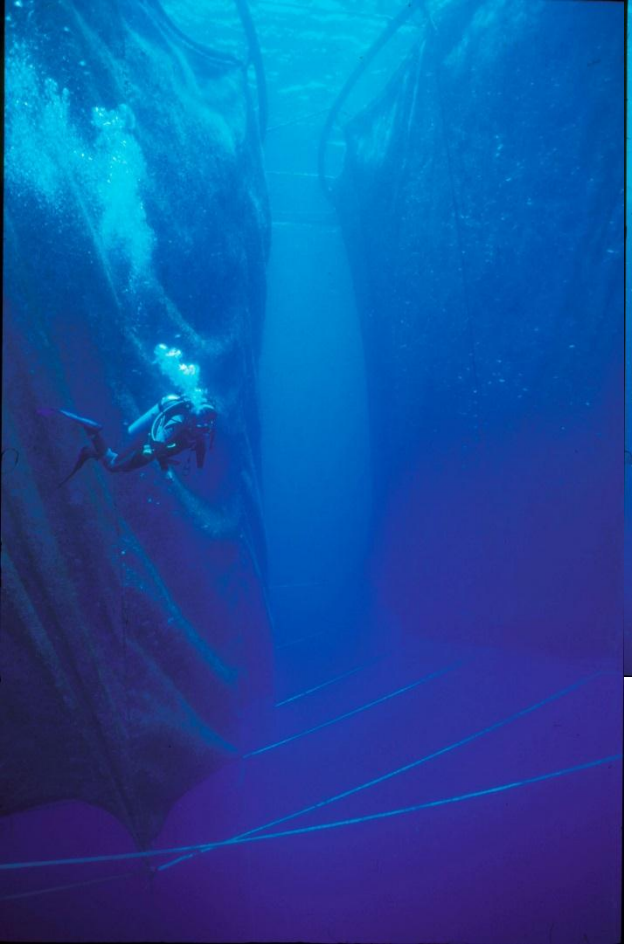


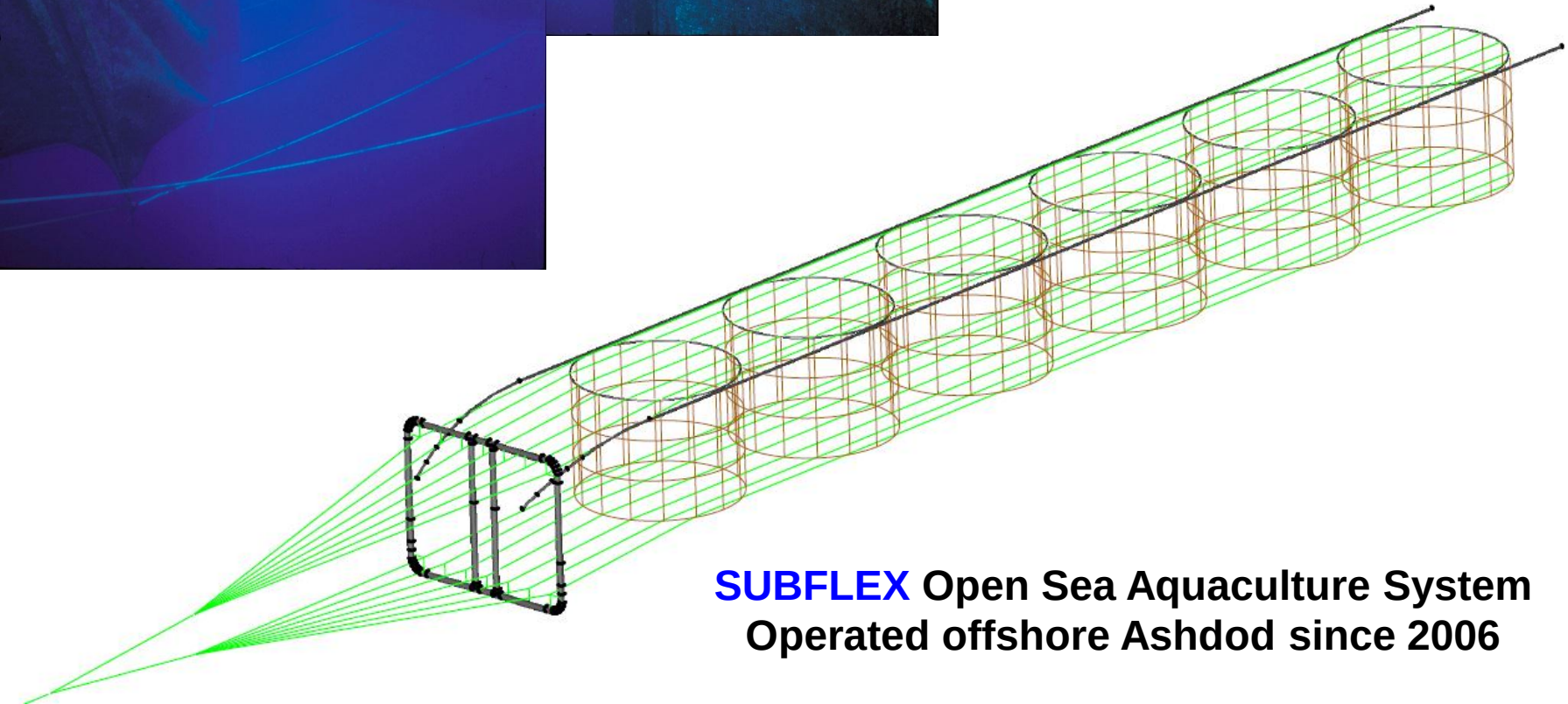
Global Finite Elements Model of the Bridge

PROTECTOR – Unmanned Boat RAFAEL

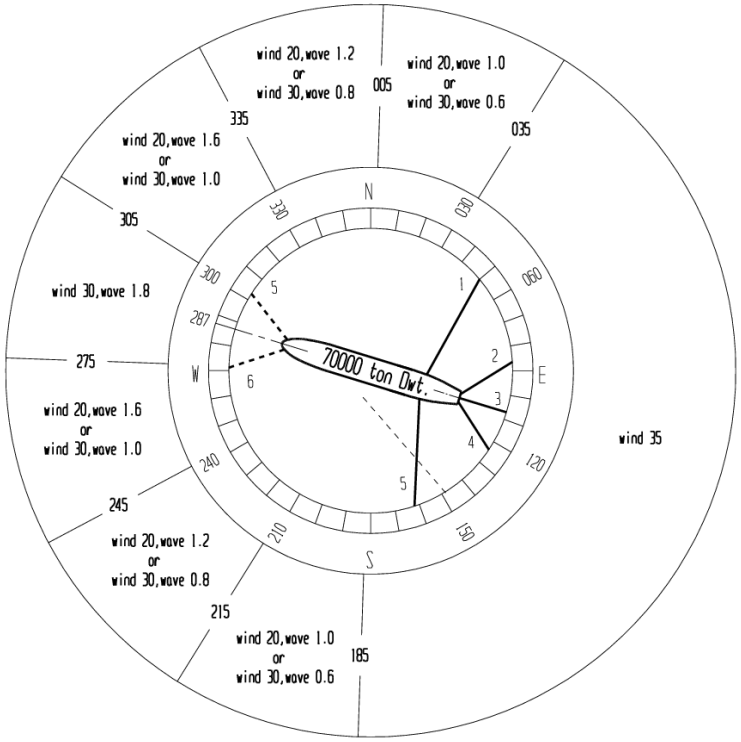
PROTECTOR 4 Unmanned Patrol Boat RAFAEL

Semi-Rigid Aquaculture Farm
ARDAG
The Red Sea

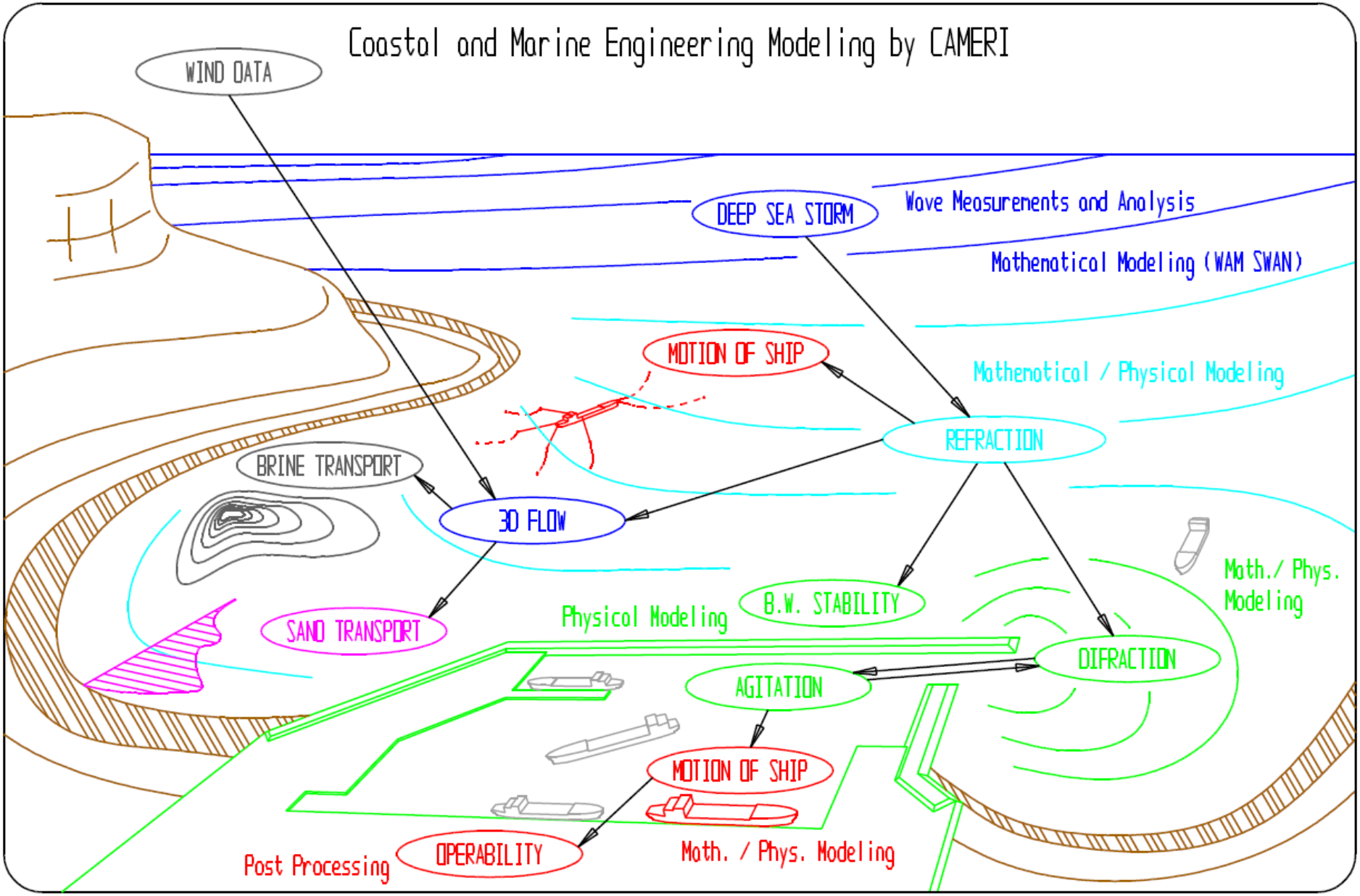




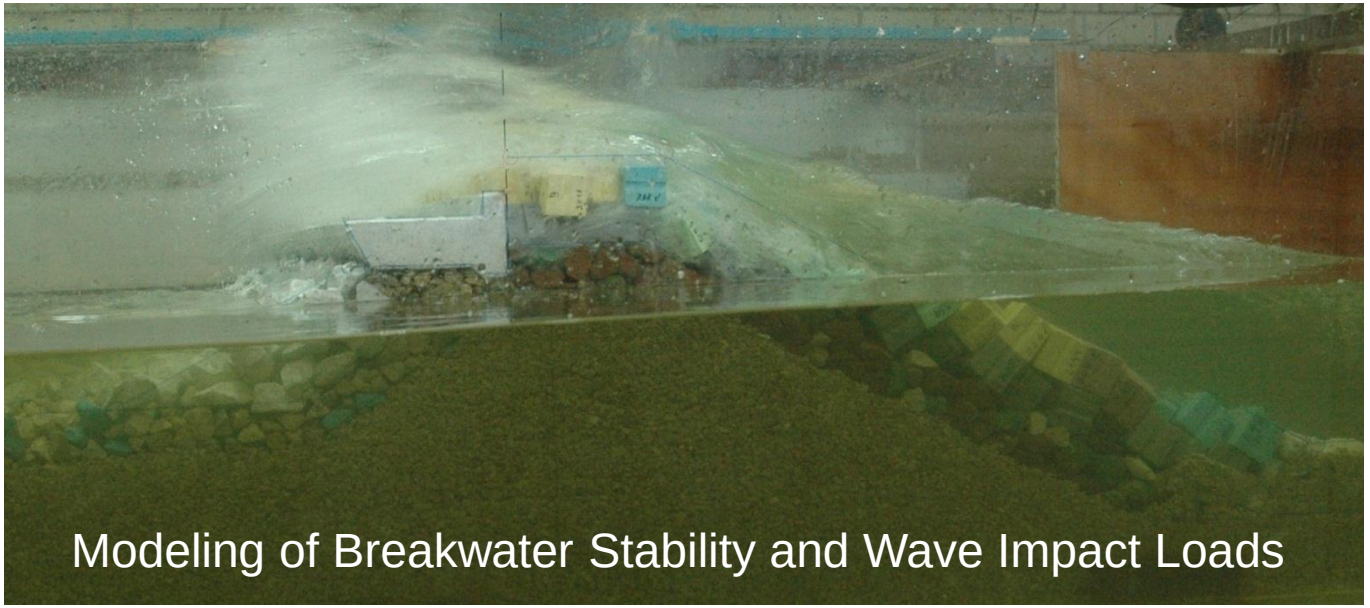
SUBFLEX Open Sea Aquaculture System
Operated offshore Ashdod since 2006



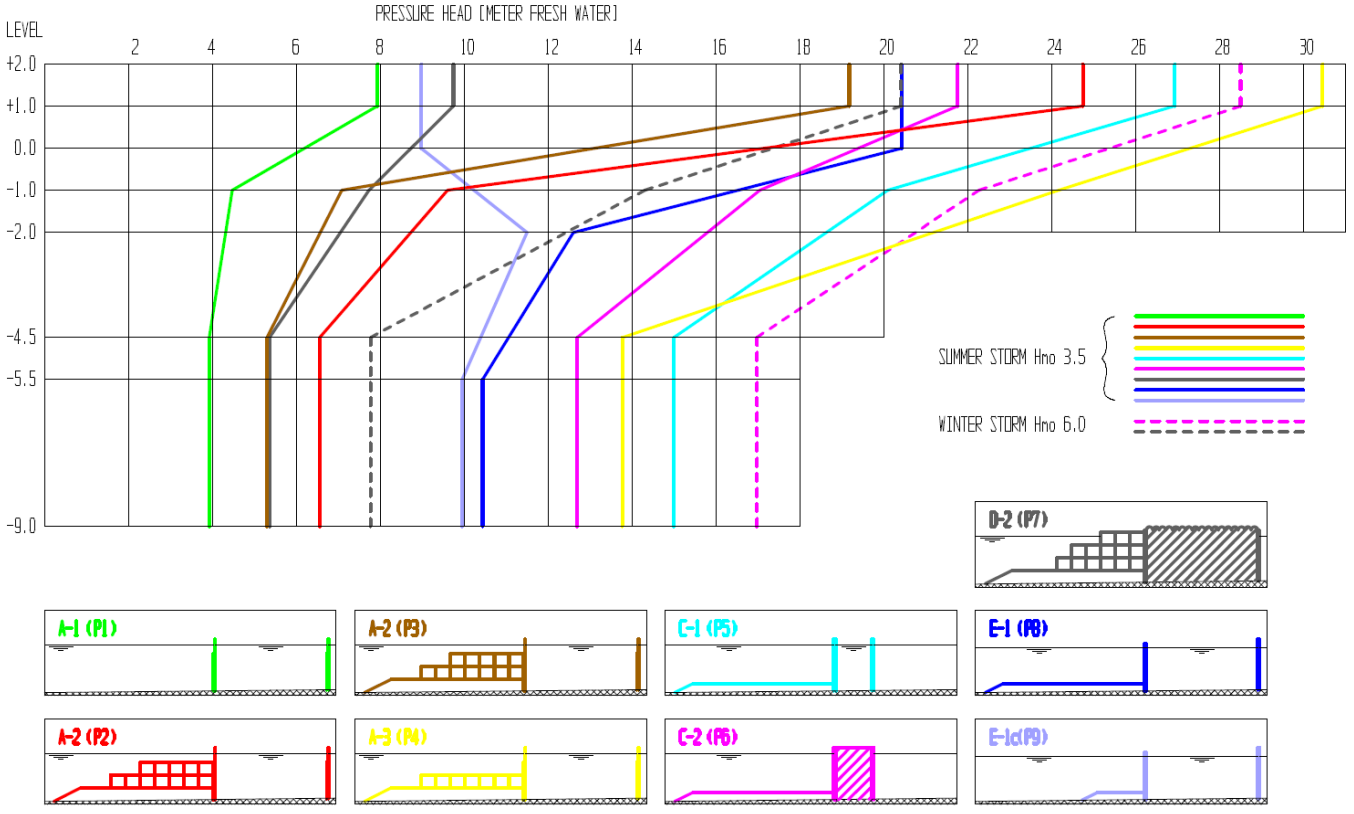
Modeling of Multi Buoy Mooring (MBM) and assessment of operational envelope



Development of Mathematical Model for motion of Vessel in Port (VIP)



Modeling of Breakwater Stability and Wave Impact Loads



Technion
Israel Institute of Technology
Faculty of Mechanical Engineering

הטכניון
מכון טכנולוגי לישראל
הפקולטה להנדסת מכונות

Innovations in ocean engineering for utilization of the open sea

This booklet presents a collection of research projects, which introduce innovations for the utilization of the open sea, in the basic aspects of: Artificial Land for infrastructures or habitation; the Food Industry; Sea Transportation and Coastal Engineering.

A new type of Very Large Floating Structure (VLFS) for infrastructures or habitation

A Very Large Floating Structure (VLFS) is a promising concept for the utilization of the sea. Currently, VLFSs are classified into two broad categories: the Pontoon-type, limited to relatively sheltered water, and the Semi-submersible type, for open-ocean. We present a new concept, the Delta-type VLFS, for intermediate open-sea conditions. An essential feature of the Delta type is the formation of a sheltered basin, providing accessibility by ships in most weather conditions. Drimer and Gafter (2017), [1], present the Delta VLFS concept and study its hydrodynamic and comfort aspects. Gafter and Drimer (2021), [2], present a design method to assess the primary strength of this special floating structure. Gafter and Drimer (2021), [3], present nonlinear hydrodynamic analysis of ships moored in the service basin of the Delta VLFS.

Another concept for paving the ocean is Modular Floating Structures (MFS), which is currently limited to more protected water relative to VLFS. Wang, Goldfeld, Drimer (2019), [4], specifies and discuss the design requirements for MFS, merging civil-engineering and naval-architecture aspects. Wang, Rosenfeld, Drimer, Goldfeld (2020), [5], present methodology and design assessment for an offshore dwelling module. Wang, Drimer, Goldfeld (2020), [6], analyses the hydrodynamic and comfort aspects of a MFS neighborhood.

Systems for Open Sea Aquaculture

The Offshore Aquaculture sector is one of the most rapidly developing and promising sector of the food industry. However, the popular design for fish farms for sheltered water cannot survive open sea conditions. In order to move offshore, new designs with the ability to reduce the wave loads are needed. One promising concept, from the structural and hydrodynamic aspects, is a flexible, submerged, Single Point Mooring (SPM) system. Gili-Ocean Technologies developed and launched (2017) such a new SUBFLEX system, which is successfully operated offshore Ashdod. Drimer (2016), [7], presents a first principle approach to the design of flexible open sea aquaculture systems, while Milich and Drimer (2018), [8], present the design and analysis the new SUBFLEX system. Mont and Drimer (2023), [9], present the hydrostatic buckling (a new mode of buckling) of SPM system of fish cages and a design method to prevent it.

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Chairman of the Interdisciplinary Program for Marine Engineering https://graduate.technion.ac.il/en/eng-departments/f520/

A new rational approach to the hull design of fast boats

The dominant load for the structural design of a planing hull is slamming, while sailing fast at head seas. The slamming is a violent fluid structure interaction, where dynamics, hydro-elasticity, and nonlinear structural effects are important. Considering these effects in a rational design may reduce the scantlings as compare to design by rules, which assess the scantlings by applying a quasi-static design pressure and linear beam theory.

Drimer, Moskovits and Neuberg (2016), [10], present a new design method for planing hulls, considering hydro-elasticity and nonlinear dynamic structural response, implementing the Allowable Stress Design (ASD) philosophy.

A more substantial reduction of the scantlings is expected in a limit state design (LSD), where extreme loading conditions increase the importance of hydro-elasticity and non-linearity. While applied rules specify allowable stresses that typically provide a service life of 20 years, without the need to check for fatigue; rational LDS must incorporate the Fatigue Limit State (FLS). Neuberg and Drimer (2017), [11], present a new FLS design method of fast boats, to assess the fatigue service life, based on an operation plan specified by the client.

Hakmon and Drimer (2020), [12], present full scale sea trials of a prototype, which demonstrate the potential of reduction of scantlings while applying our rational design method, as compare to design by rules.

Submerged Breakwaters and Artificial Reefs

Bar and Drimer (2023), [13], develop and validate a new mathematical model called BELWF - Boundary Elements Lagrangian Wave Flume, which solves the fully nonlinear shoaling along sloped beach with submerged impermeable structure at the shallow water. The model is practical for the assessment of the flow and wave loads applied to the structure, for preliminary design.

A new concept of hydraulic actuator for fishlike propulsion

Drimer, Mendelson and Peleg (2016), [14], present the invention and development of a new fundamental type of hydraulic actuator, aimed at delivering better actuation efficiency. The concept is simple to produce, and enables the formation of the desired deflected shape by the design parameters. Among other applications, it is mostly suitable for the activation of fins of nature-like marine robots.

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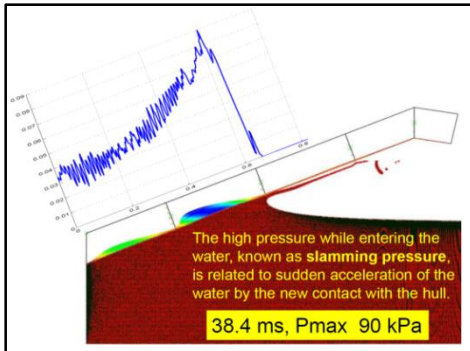
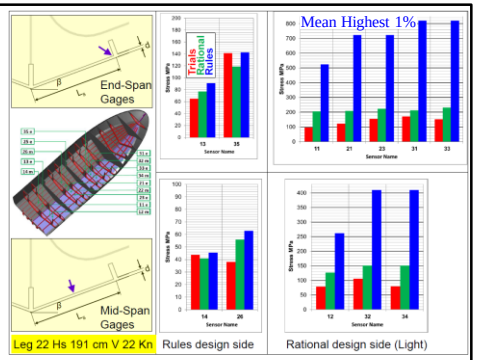
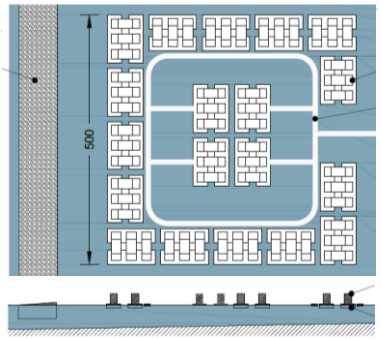
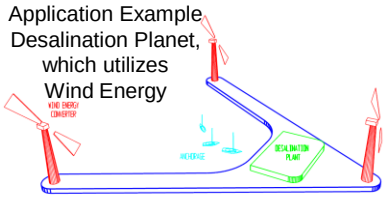
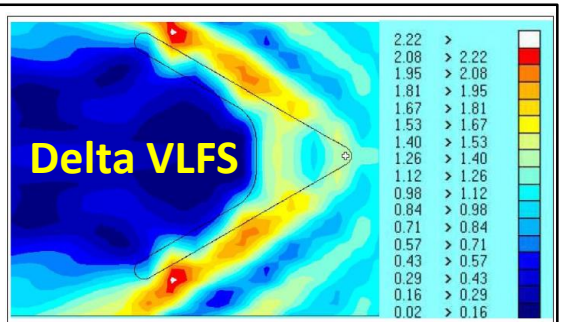


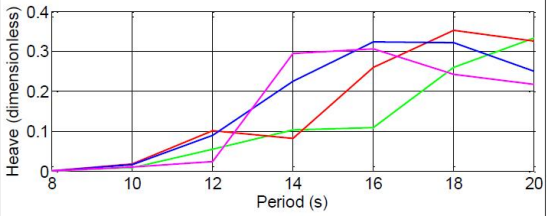




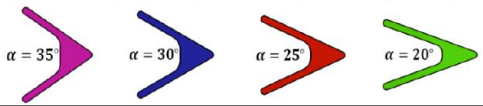


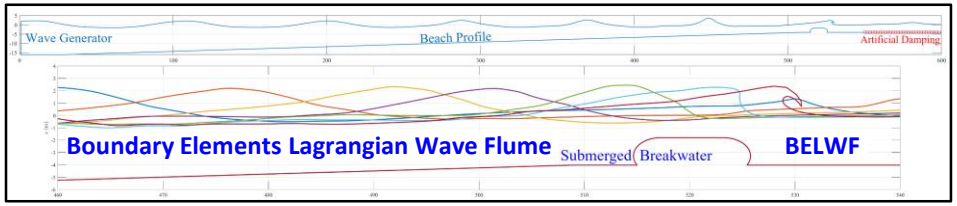


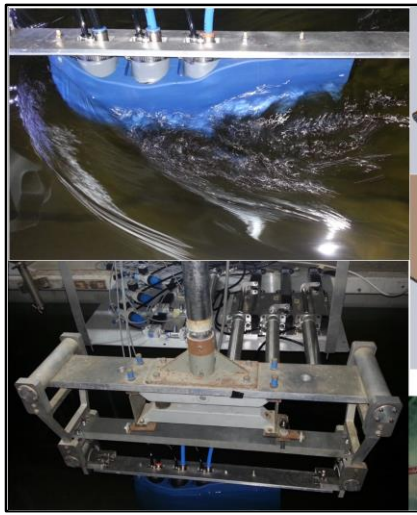
Wave amplification Head Sea 12 sec Free floating

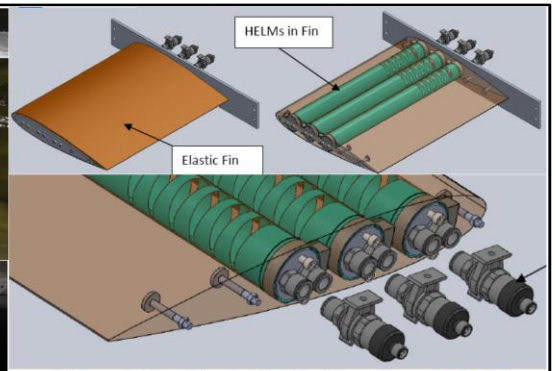


Heave Response Amplitude Operators (RAOs)









Propulsion Fin Activated by three HELMs

Hydraulic
Equal strain
Linear
Muscle