
# *ENGINEERED FOR EXCELLENCE*

Marine Fenders International, Inc. • 452 W Valley Blvd • Rialto • California • 92376 • USA
Telephones • 1-310-834-7037 • Fax • 1-310-834-7825 • www.marinefendersintl.com

# QUALTITY

MFI is ISO 9001:2015 certified
for its Quality Management System

Statement of Approval

Approval No: KBZ 1193 HH 1

For the: Production of Foam Filled Floating Fender

the company: Marine Fenders International
909 Mahar Avenue
Wilmington, CA 90744
United States of America

has approved on the basis of the assessed documentation and within the scope as follows:

Type: Ocean Guard (acc. to product catalogue TC04/2011E)

Size: Diameter: 500 up to 2500 mm
Max length: 10 000 mm

Normative Reference: Guidelines for the design of Fender Systems: 2002
Appendix B „Constant Velocity (CV) Method"
Issued by
International Navigation Association (PIANC)

Remarks: None

This Shop Approval is valid until 2017-08-31.

Hamburg, 2014-09-29

Germanischer Lloyd

i.A. Oliver Krömer

i.A. Joachim Rohbein

The “PIANC Guidelines for the Design of Fender Systems: 2002” have introduced a rigorous Approval procedure to determine and report the performance of marine fenders intended to insure that all fender manufacturers will design and test their Fenders in compliance with said rigorous standards, requirements and procedures.

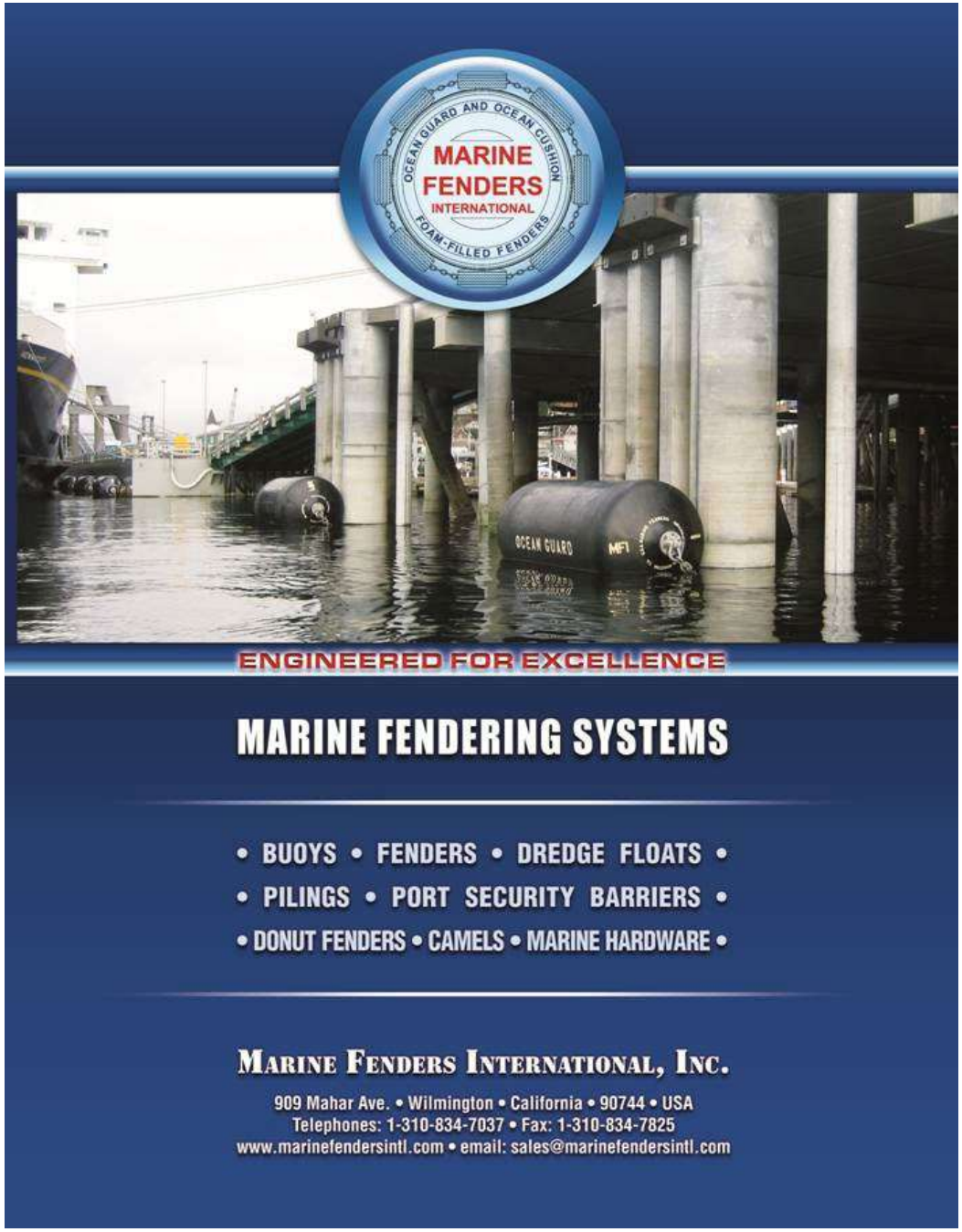
Presently, there are a very rare number of Foam Fender manufacturers worldwide that have passed the rigid requirements to obtain a PIANC Type Approval for their Foam Fenders as well as their other fender product range. **Marine Fenders International (MFI) is one of these approved manufacturers**.

# MARINE FENDERS INTERNATIONAL INC.

## OUR PRODUCTS

- MARINE PRODUCTS
  - •OCEAN GUARD NETLESS FOAM FILLED FENDERS
  - •OCEAN CUSHION FOAM FILLED FENDERS WITH CHAIN & AIRCRAFT TIRE NETS
  - •DONUT FENDERS
  - •SSD – SMALL SHIPBOARD FENDERS
  - •PORT SECURITY BARRIER SYSTEMS
  - •BUOYS
  - •COATED PILINGS & TIMBERS
  - •CAMELS
  - •FLOTATION PRODUCTS

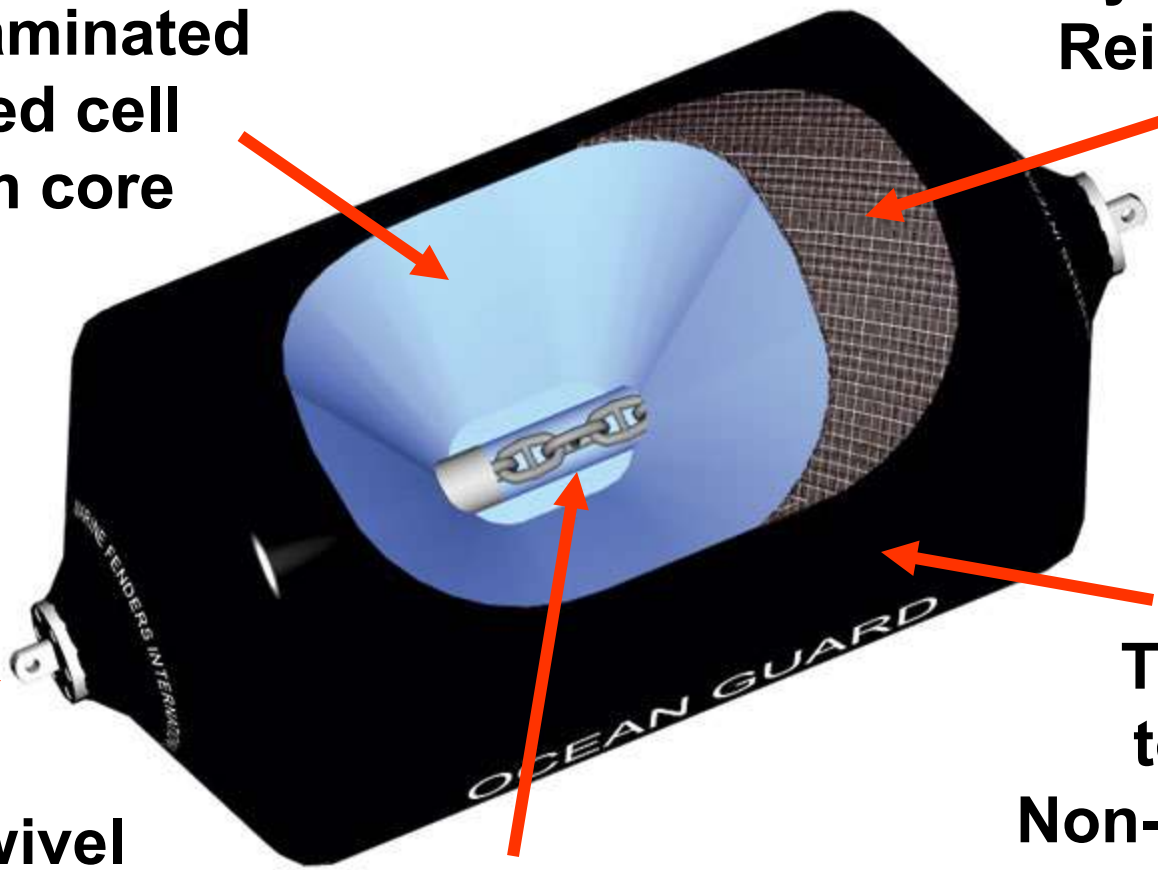
- •CONSTRUCTION PRODUCTS
  - •ELASTOMERIC REFLECTIVE ROOF COATINGS
  - •ELASTOMERIC WALL COATING
  - •FLOOR COATING
  - •CONCRETE REPAIR PRODUCTS
  - •JOINT FILLERS
  - •POLYUREA AND POLYURETHANE ELASTOMERIC SPRAY SYSTEMS




# 2010 CATALOG

# NEW FENDER CAPACITIES

# OCEAN GUARD™ NETLESS FOAM FILLED FENDERS




Heat Laminated
Closed cell
Foam core

Nylon filament
Reinforcement

Integral swivel
End fitting

Heavy Duty
Stud link
chain

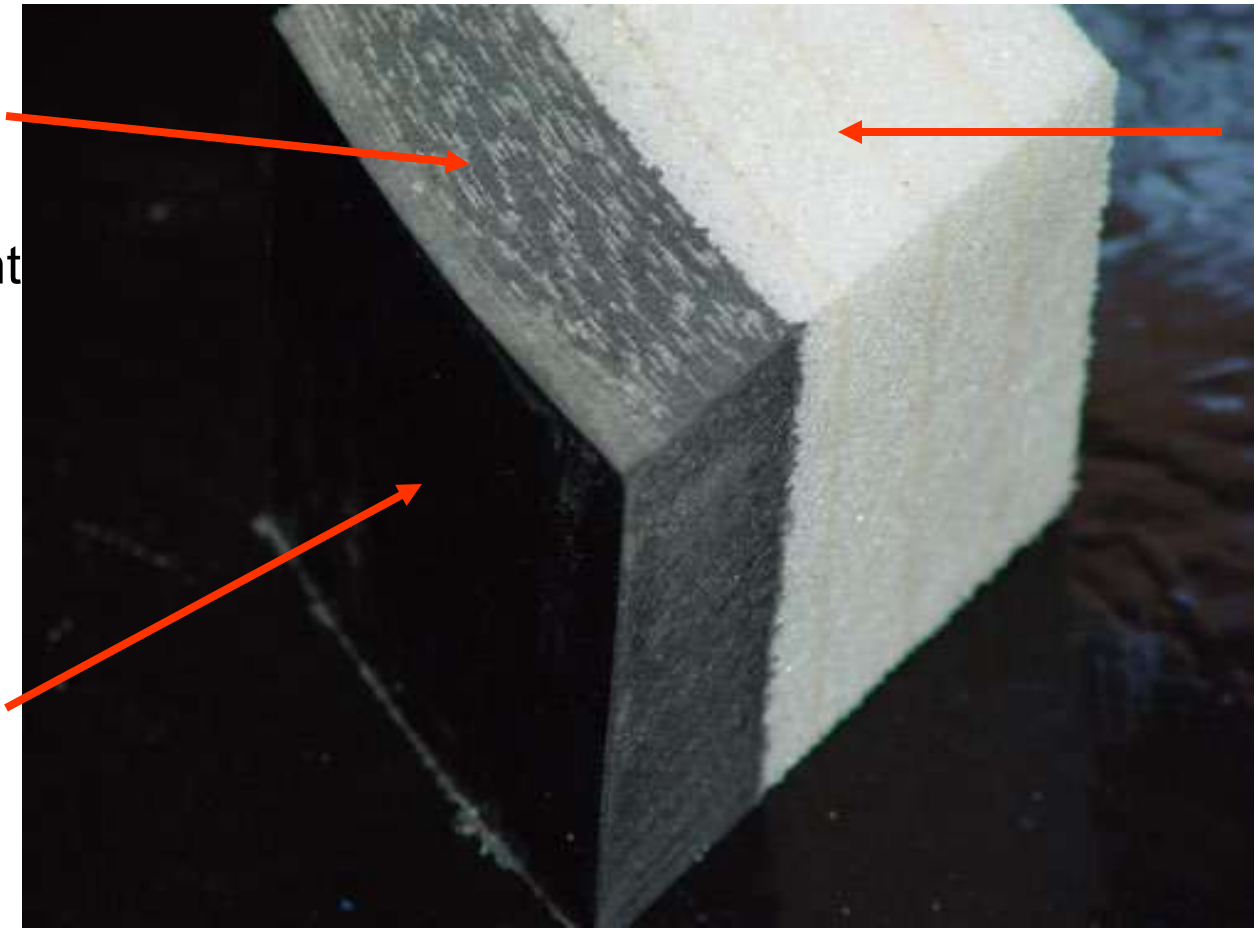
Thick,
tough
Non-marking
urethane skin

# OCEAN GUARD™ NETLESS FOAM FILLED FENDERS


Integral swivel end fittings internally connected with heavy duty stud-link chain

# URETHANE SKIN AND ENERGY ABSORBING FOAM CORE CONSTRUCTION

Continuous
Nylon
Filament
Tire cord
Reinforcement
Urethane skin



Heat
laminated
Polyethylene
foam
Core

Outer wear
Surface of
UV resistant
Urethane skin

# FOAM CORE HEAT LAMINATION PROCESS

The *heat lamination* process and construction of the Ocean Guard and Ocean Cushion foam cores produce a homogeneous, one piece core.

The cross-linked polyethylene foam is continuously and uniformly heat laminated onto a temporary central mandrel, which is removed after the core is complete.  No adhesives, which can break down over time, are used in the construction process.

This state of the art construction process does not allow the use of chip or granulated foam, nor scrap, strips or sheets of foam.

Our state of the art foam laminating method eliminates gaps in the foam core. Additionally our variable thermocouple heat control process insure unmatched foam core bonding even with higher density foam

# HEAT LAMINATION

Ocean Guard and Ocean Cushion foam-filled fenders are constructed with a heat-laminated foam core, the latest in foam bonding and fusion technology.

The heat-lamination process of the foam core provides a bond that is stronger that the foam itself.

This ensures that the foam core construction of the fender will provide years of quality service and performance.

Foam cores bonded with adhesives typically experience bond failure in a relatively short period of time while in use. These voids could allow water to be absorbed into the fender body.

# REINFORCED URETHANE SKIN

Ocean Guard and Ocean Cushion foam filled marine fender are constructed with a non marking nylon filament tire cord reinforced urethane skin.

The fender skin shall be constructed of elastomer and filament reinforcing as specified. Separate filament reinforcing wraps shall be applied as specified under Filament Wrap. The filament wraps are evenly distributed in the inner 80% to 90% of the coasting thickness. The outer 10% to 20% of elastomer have no filament reinforcement.

The elastomer and filaments shall be applied in a continuous manner to assure adhesion between the various layers. There shall be a least one wrap for every 0.116 in (2.9 mm) of skin thickness (rounded to the nearest complete wrap). The fender skin are black in color unless otherwise specified.

# PROCESS & QUALITY CONTROL

An important part of our process and quality control procedures is to insure that each fender conforms to project specifications.

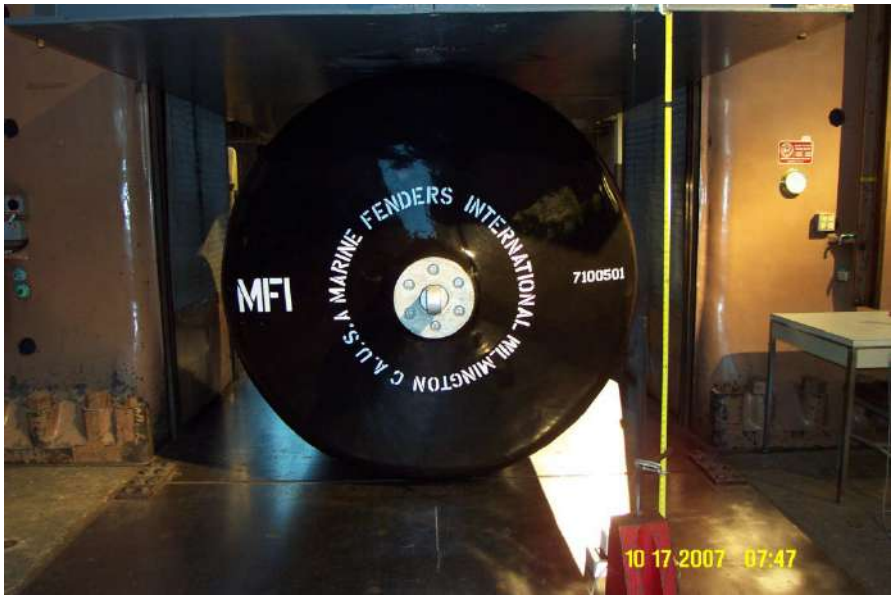
After the fabrication of the foam core, every fender is then placed on a lathe which not only trims the fender to the proper diameter but also ensures that every fender is completely round and uniform.

Additionally, each fender is cored to verify the proper skin construction and thickness.

Independent product inspection is available thru ABS Consultants and or BIVAC N.A. (Bureau Veritas Group)

# INDEPENDENT LABORATORY TESTED


**FENDER TEST AT 60% COMPRESSION**

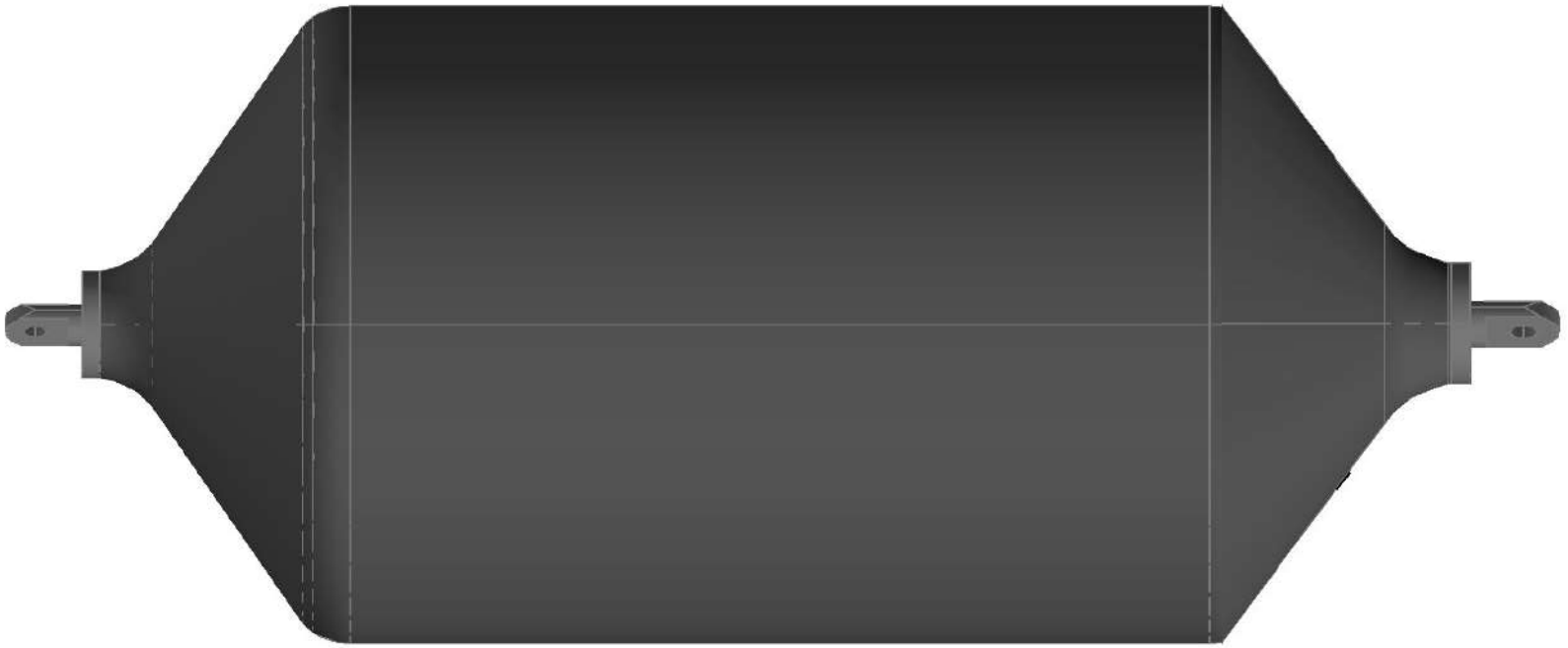



# INDEPENDENT LABORATORY TESTED LEHIGH UNIVERSITY



**FENDER TEST AT 60% COMPRESSION**

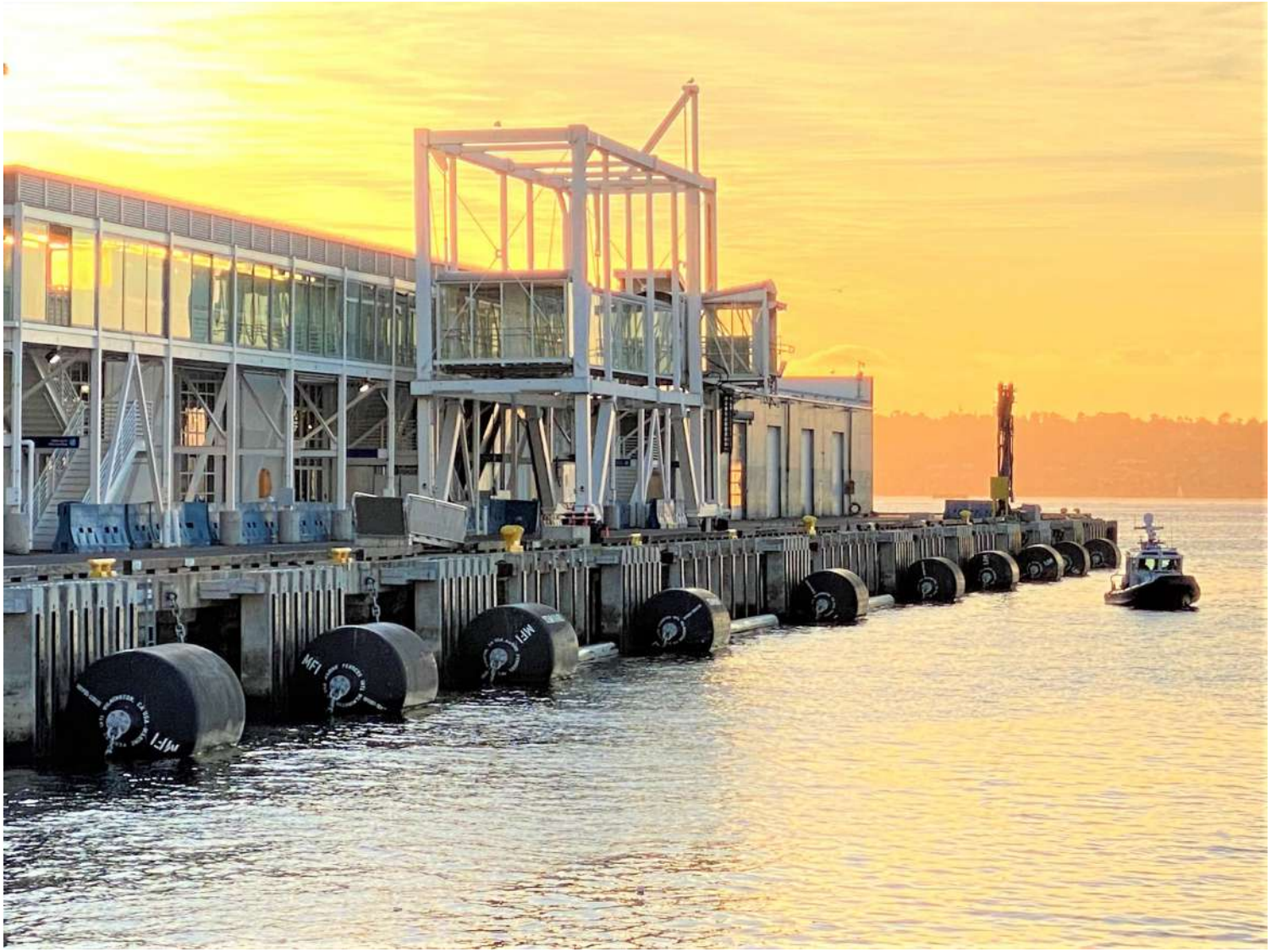
# OCEAN GUARD



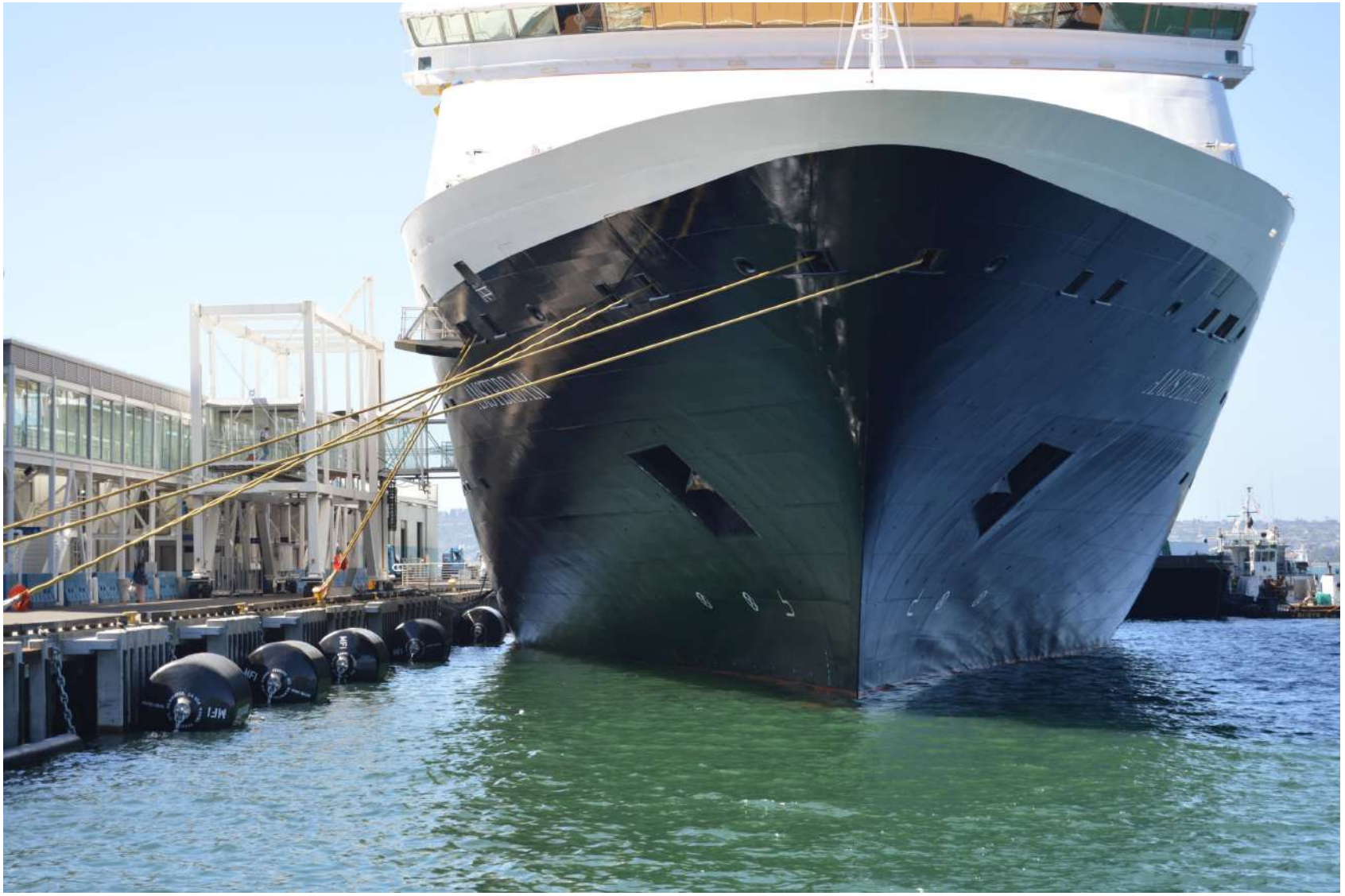
## RECENT CRUISE SHIP TERMINAL PROJECTS


LOS ANGELES, CALIFORNIA
CRUISE TERMINAL


AMADOR
CRUISE TERMINAL
PANAMA



SAN DIEGO, CALIFORNIA
CRUISE TERMINAL



SAN DIEGO, CALIFORNIA
CRUISE TERMINAL

PORT CHARLOTTETOWN
CANADA
CRUISE TERMINAL

SYDNEY NS CANADA
CRUISE TERMINAL

SAN JUAN PUERTO RICO
CRUISE TERMINAL

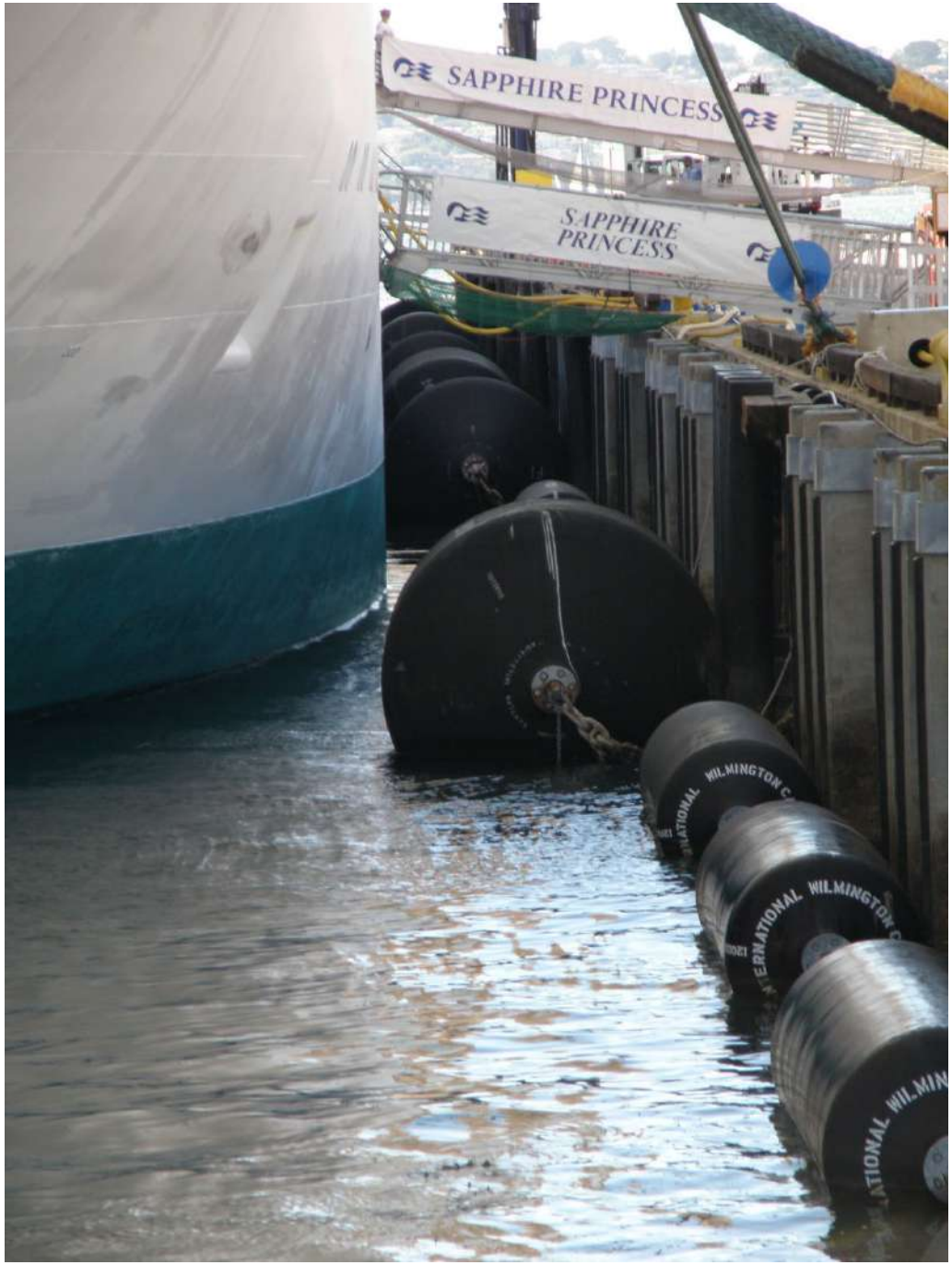

SAN JUAN PUERTO RICO
CRUISE TERMINAL


SAN JUAN PUERTO RICO
CRUISE TERMINAL


# SAN DIEGO CALIFORNIA CRUISE TERMINAL

SAN DIEGO CALIFORNIA
CRUISE TERMINAL

SAN DIEGO CALIFORNIA
CRUISE TERMINAL



SAN DIEGO CRUISE TERMINAL


# SAN FRANCISCO CRUISE TERMINAL


SAN FRANCISCO  CRUISE TERMINAL

SEWARD ALASKA
CRUISE TERMINAL


BERMUDA  CRUISE TERMINAL


BAYPORT TEXAS CRUISE TERMINAL


LOS ANGELES CALIFORNIA CRUISE TERMINAL BERTH 91


Las Palmas (Canary Island)


LOS ANGELES CALIFORNIA BERTH 91

LOS ANGELES CALIFORNIA BERTH 91 - 93

NAPLES ITALY CRUISE TERMINAL

KETCHIKAN ALASKA CRUISE TERMINAL

KETCHIKAN ALASKA CRUISE TERMINAL


VALLETTA MALTA
CRUISE TERMINAL


VALLETTA MALTA
CRUISE TERMINAL

PORT OF LOS ANGELES CRUISE SHIP TERMINAL
BERTHS 92 & 93


MEXICAN CRUISE SHIP TERMINAL


NORFOLK VIRGINIA CRUISE SHIP TERMINAL


PORT OF ROATAN HONDURAS
CRUISE SHIP TERMINAL


# QUALITY

# VALUE

# PERFORMANCE

# TECHNOLOGY

# EXPERIENCE

# SOLUTIONS

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