

An aerial photograph of a busy port. A large container ship is docked at a pier, surrounded by several gantry cranes. The water is a deep blue-green color. The ship's deck is visible, showing rows of colorful containers. The cranes are blue and white, with their long jibs extending over the ship. The overall scene is one of industrial activity and global trade.

Welcome to the World of Trelleborg

Intermodal Africa 2023

April 2023



Trelleborg Group —

A world leader in engineered polymer solutions



Reference - Trelleborg Annual Report 2022.

<https://www.trelleborg.com/en/investors/reports-and-presentations/annual-reports>

Trelleborg Group segments



Aerospace



Agriculture & Forestry



Automotive



Building & Construction



Material Handling



Oil & Gas



Printing Equipment



Construction & Mining Equipment



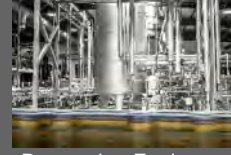
Healthcare & Medical



Manufacturing & Machine Tools



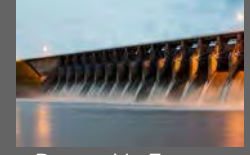
Marine Equipment



Processing Equipment



Rail & Mass Transit

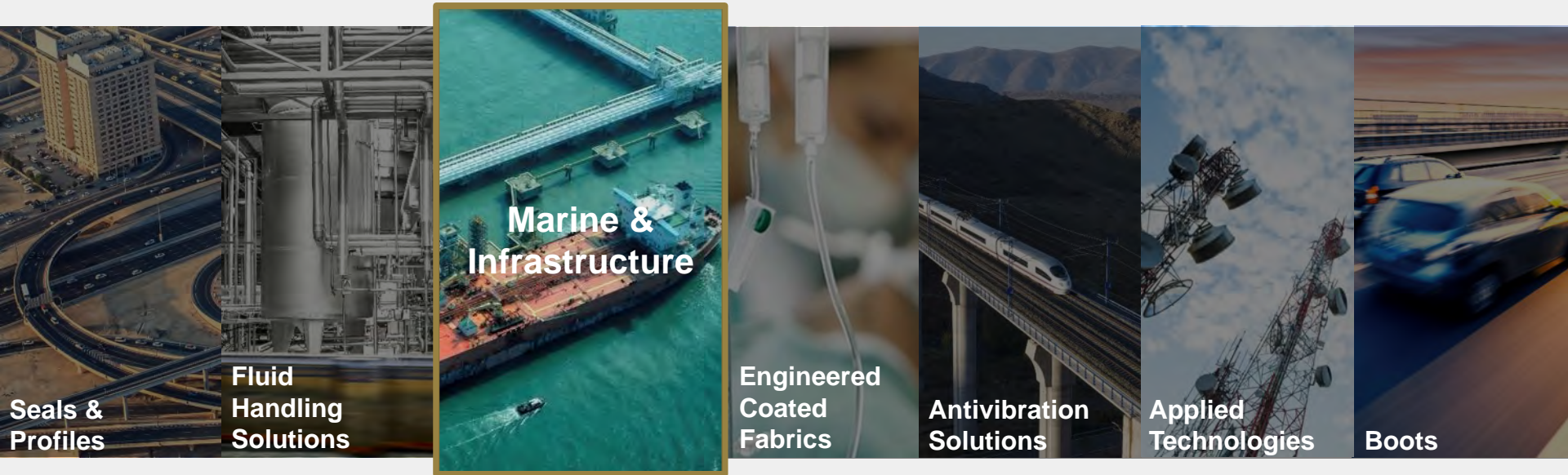


Renewable Energy



Trelleborg Industrial Solutions

Business units



Trelleborg Group segments



Aerospace



Agriculture & Forestry



Automotive



Building & Construction



Construction & Mining Equipment



Healthcare & Medical



Manufacturing & Machine Tools



Marine Equipment



Material Handling



Oil & Gas



Printing Equipment



Processing Equipment



Rail & Mass Transit



Renewable Energy

Marine & Infrastructure segments



Marine Equipment & Construction



Renewable Energy & Power Generation



Building & Construction



Oil & Gas

Trelleborg Marine & Infrastructure

Business unit overview



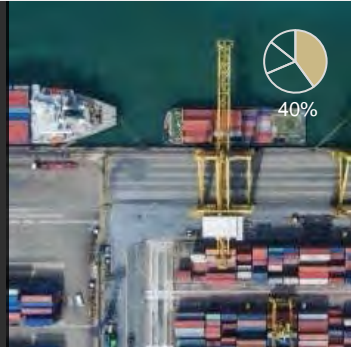
6
Factories



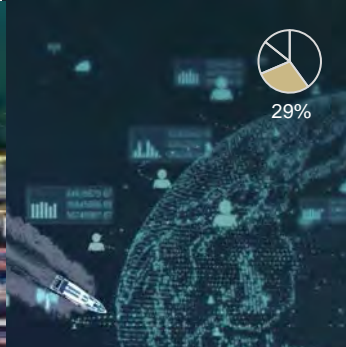
5
Technical
Centers



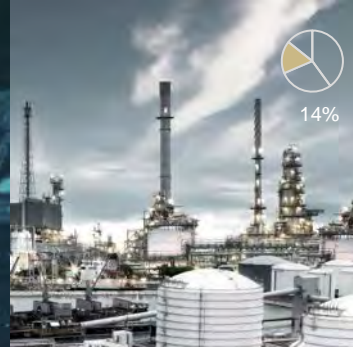
~1000
Employees



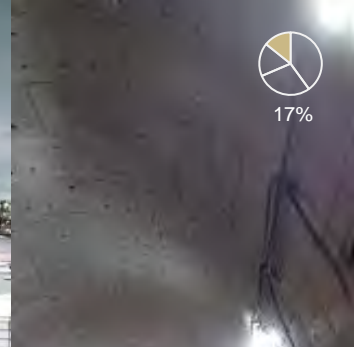
Marine Fenders



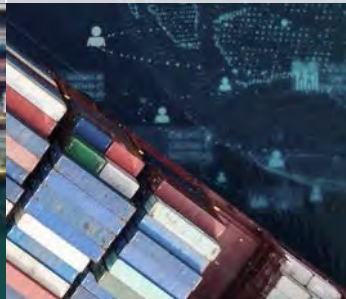
Marine Technology



Marine Construction



Infrastructure



Marine Fenders



3
Manufacturing
locations

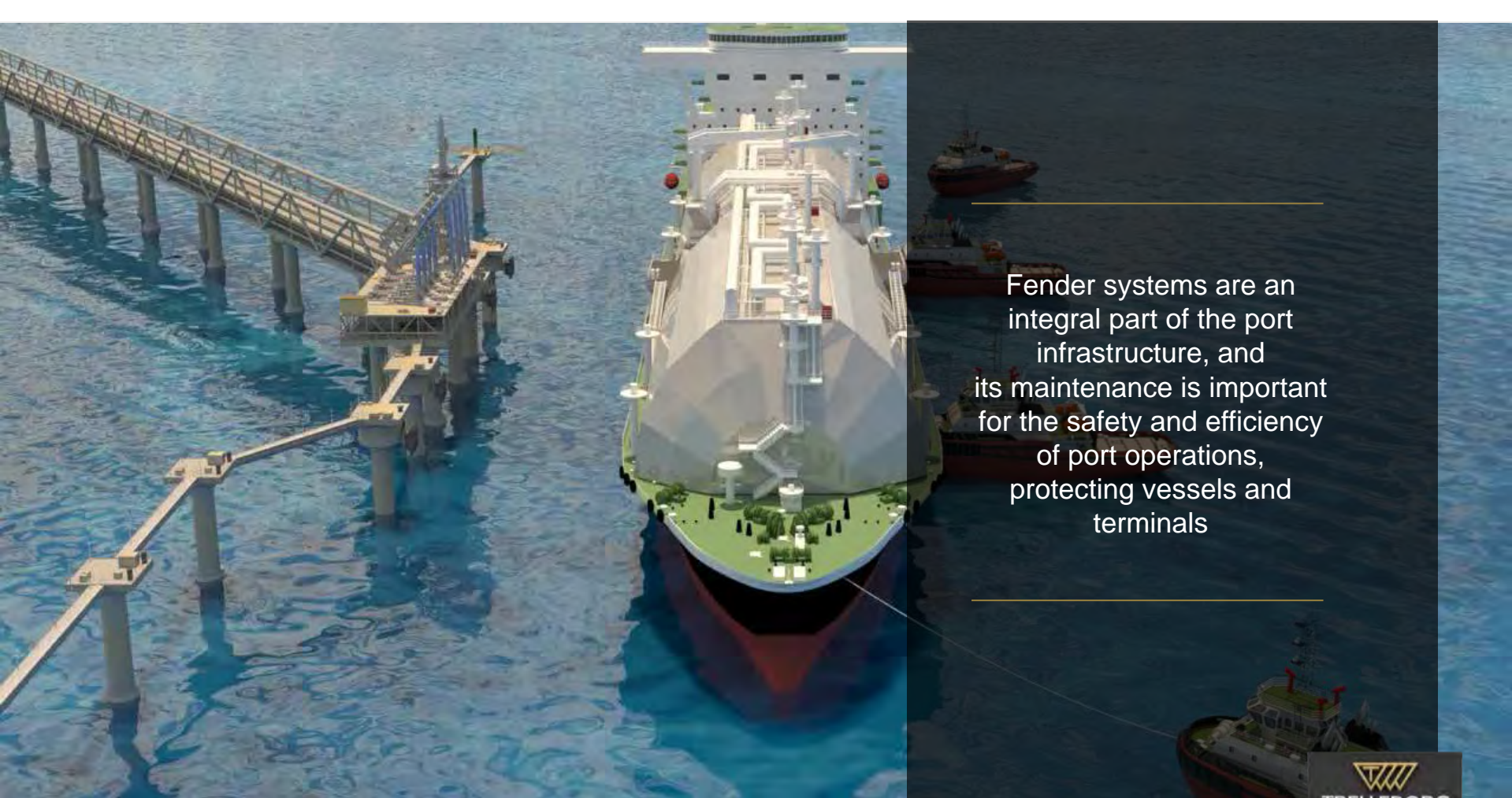


1
Design
centre



11
Regional
offices





Fender systems are an integral part of the port infrastructure, and its maintenance is important for the safety and efficiency of port operations, protecting vessels and terminals

At Trelleborg we take a Whole System Approach to maximize fender durability



2

Detailed fender system design

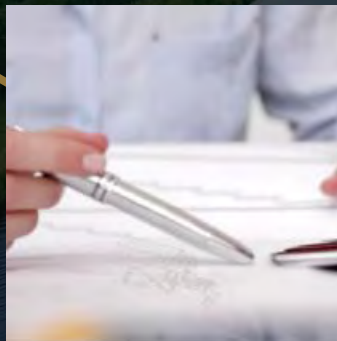
Assurance that the system performs well in given site conditions throughout its design life



4

Installation, operations and maintenance

Complete support for fender system installation, operational and maintenance requirements



3

Fender production & quality control

Manufacturing and testing of all fender system components to optimize performance



1

Application engineering

Engineering best-fit fender systems to better protect today's modern ports and terminals

Types of Fender Systems

Fixed Rubber Fenders

Floating Fenders



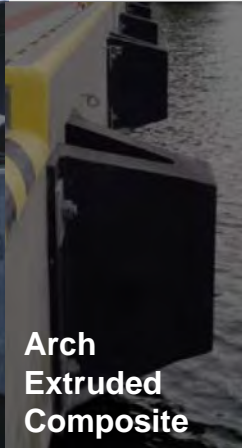
Cone



Cell



Unit type
(Leg type)



Arch
Extruded
Composite



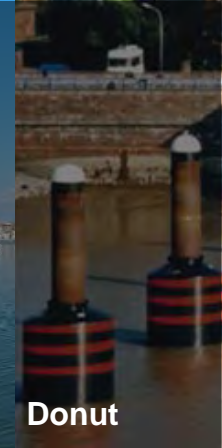
Pneumatic



Hydro-
Pneumatic



SeaGuard
SeaCushion

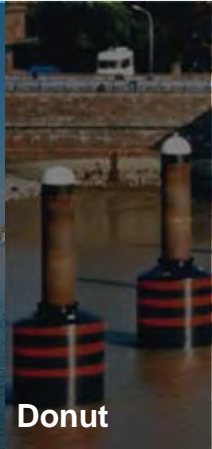
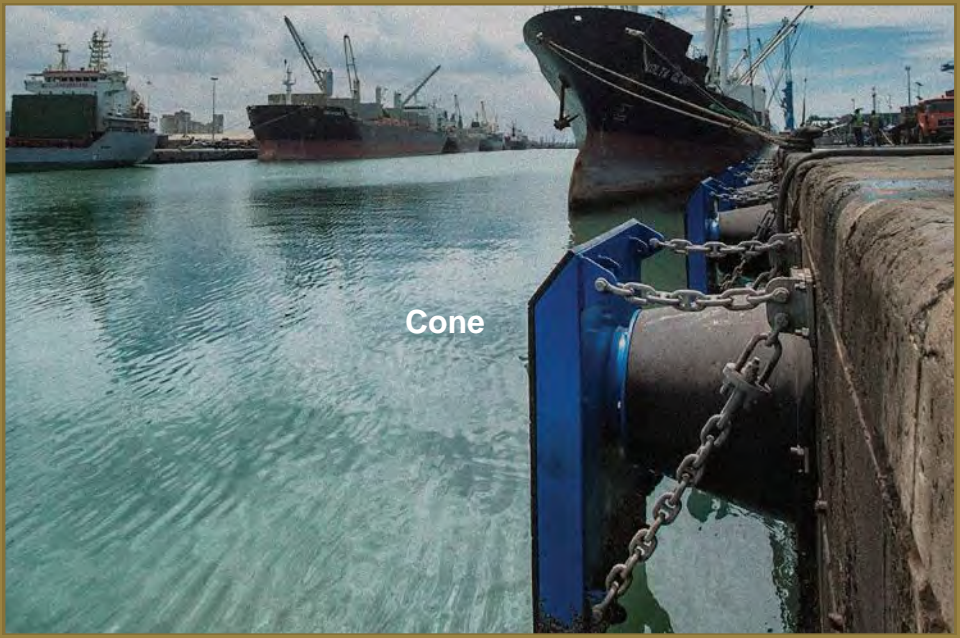


Donut

Types of Fender Systems

Fixed Rubber Fenders

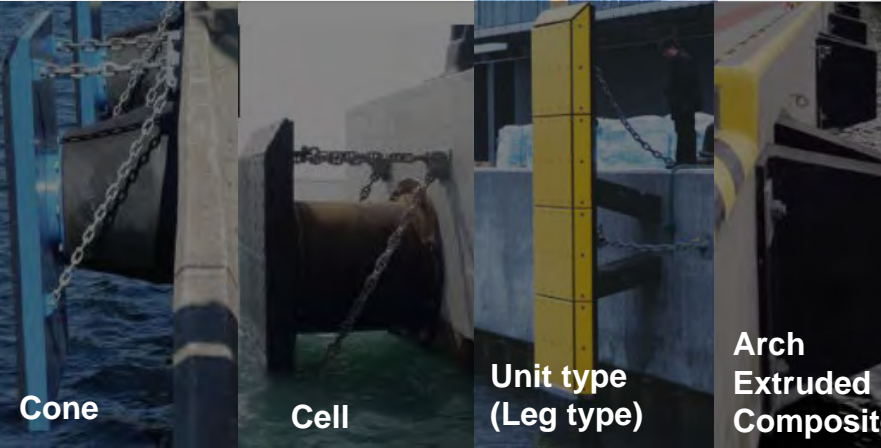
Floating Fenders



Types of Fender Systems

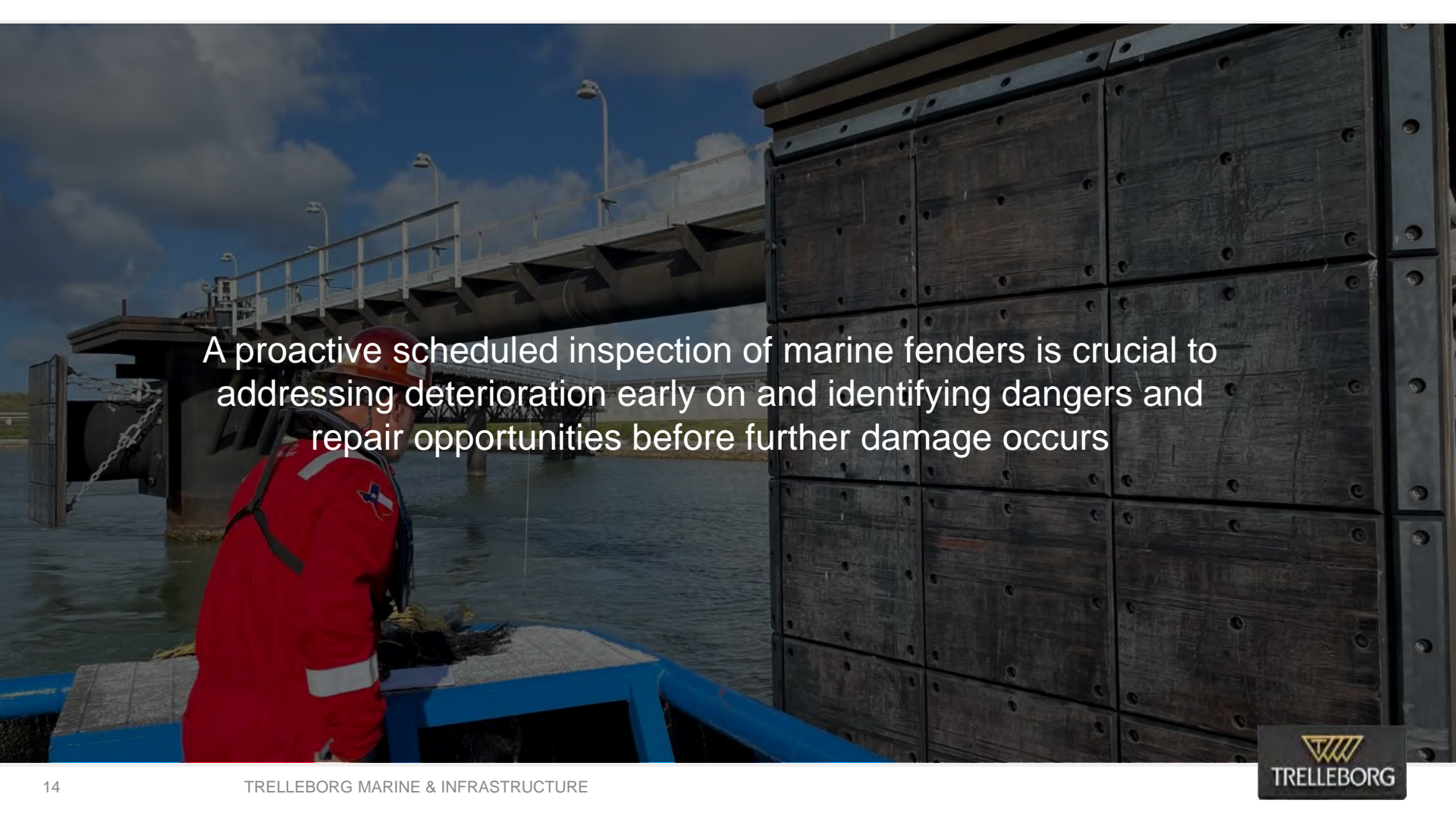
Fixed Rubber Fenders

Floating Fenders



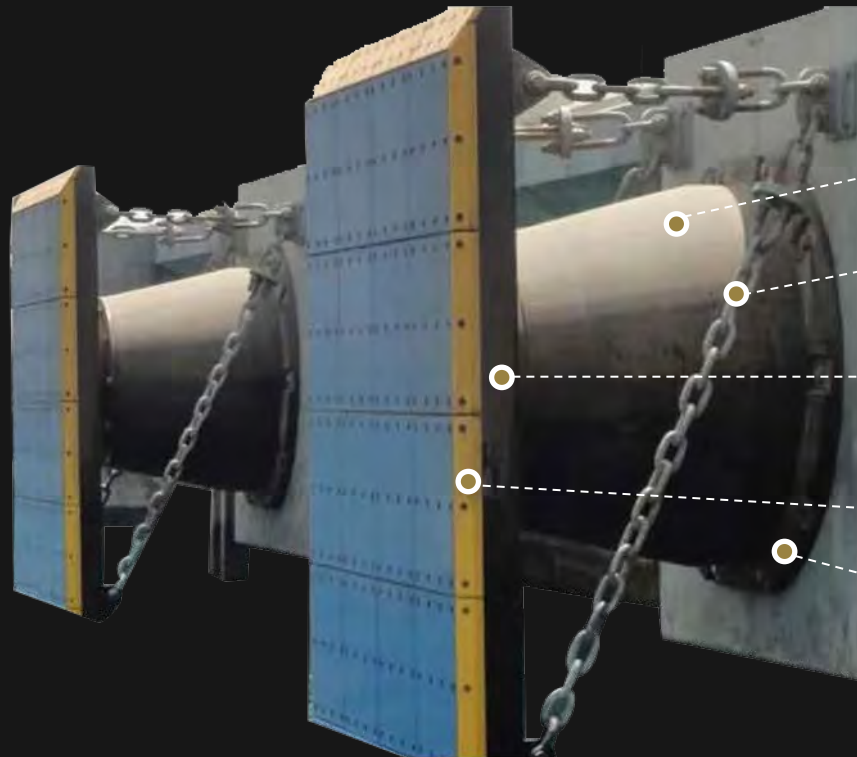
Fender failures can occur due to various reasons like fatigue, chemical, and external force factors, and can cause serious problems such as damage to berthing vessels and port infrastructure, operational delays, and safety hazards





A proactive scheduled inspection of marine fenders is crucial to addressing deterioration early on and identifying dangers and repair opportunities before further damage occurs

Components to inspect a Modern Fender System



Rubber Fender

Chains and accessories
(U-anchors, brackets & shackles)

Steel panel painted with
corrosion protection paints

UHMW PE facing

Fender fixing anchors & bolts



Rubber



Rubber



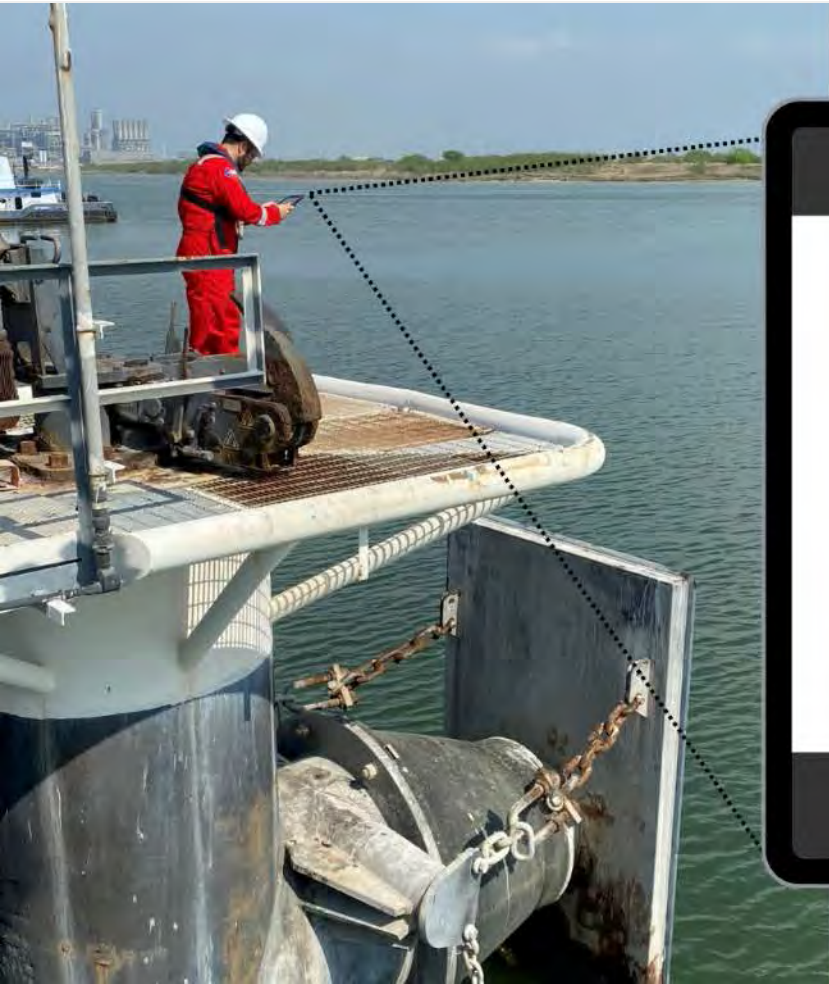
Rubber



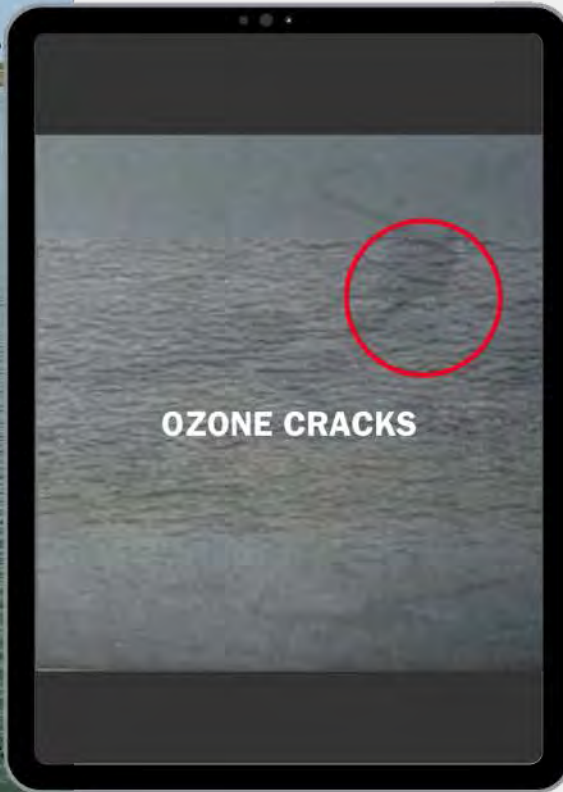
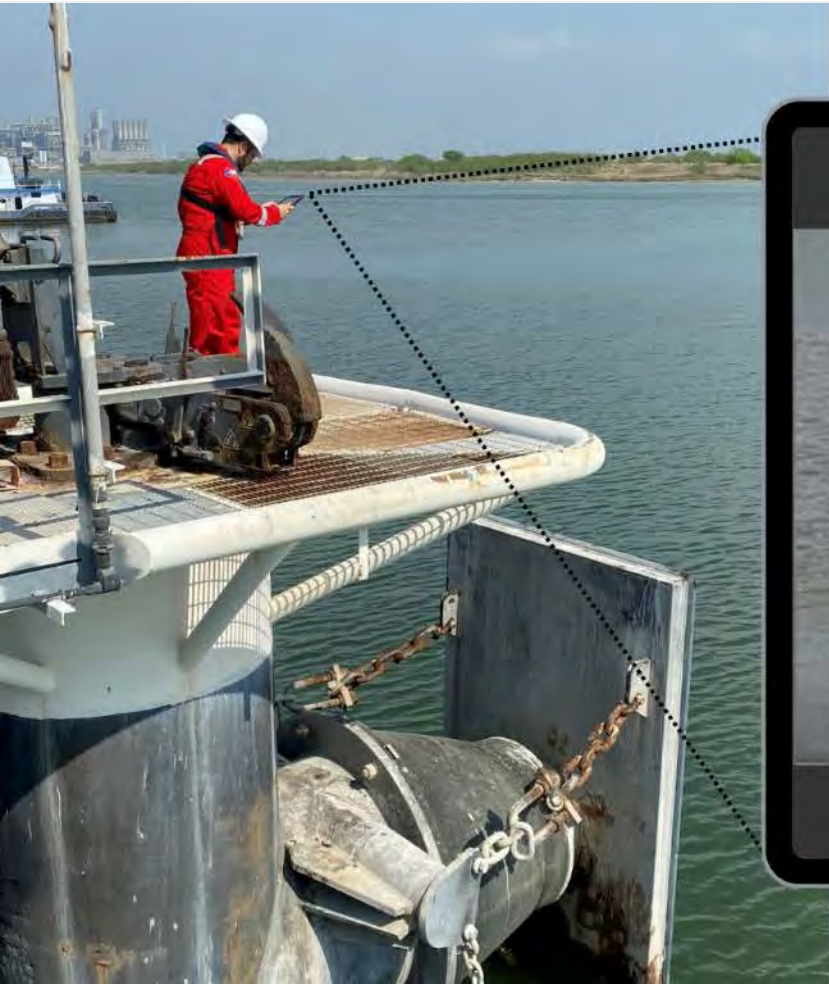
Rubber



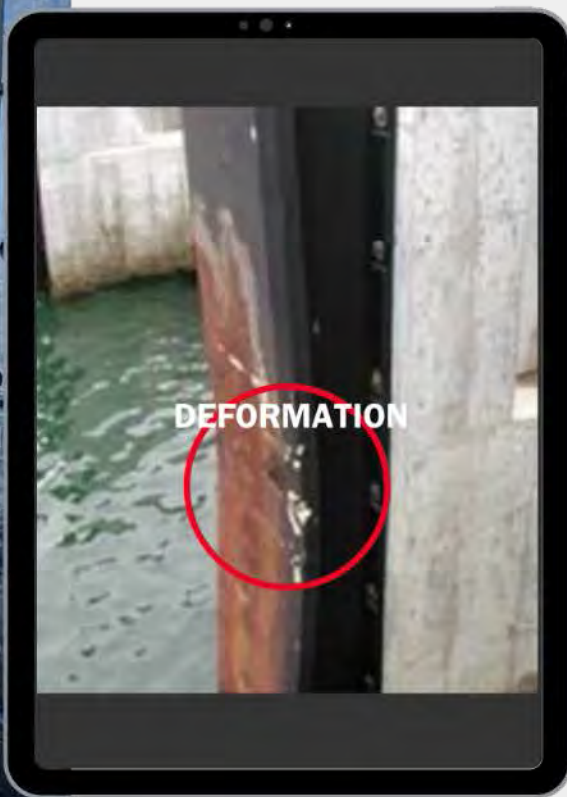
Rubber



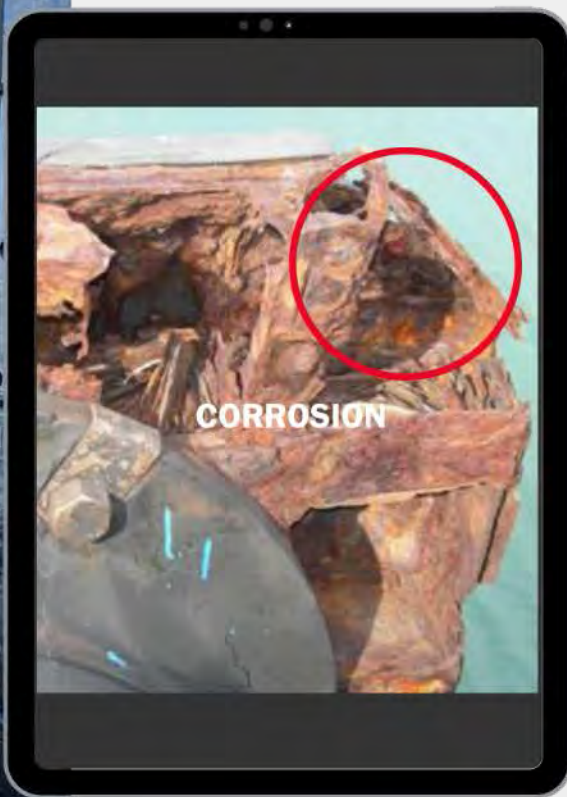
Rubber



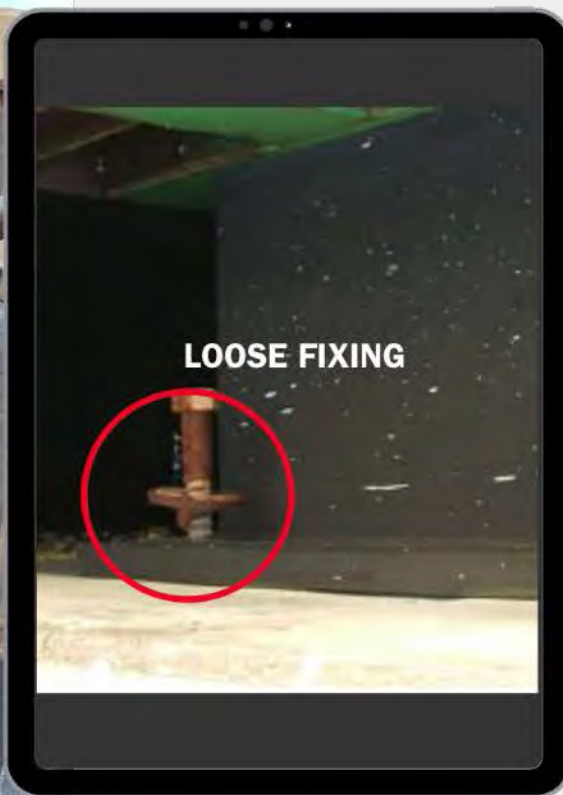
Rubber



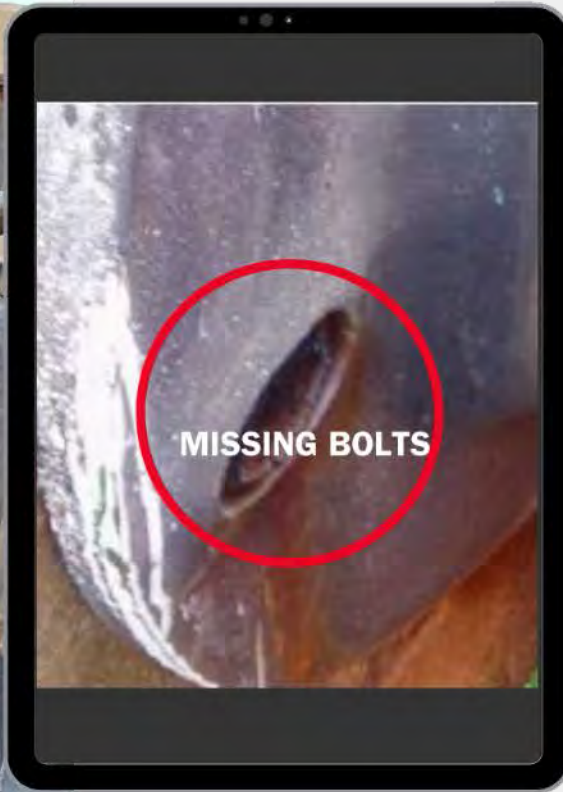
Fender Panel



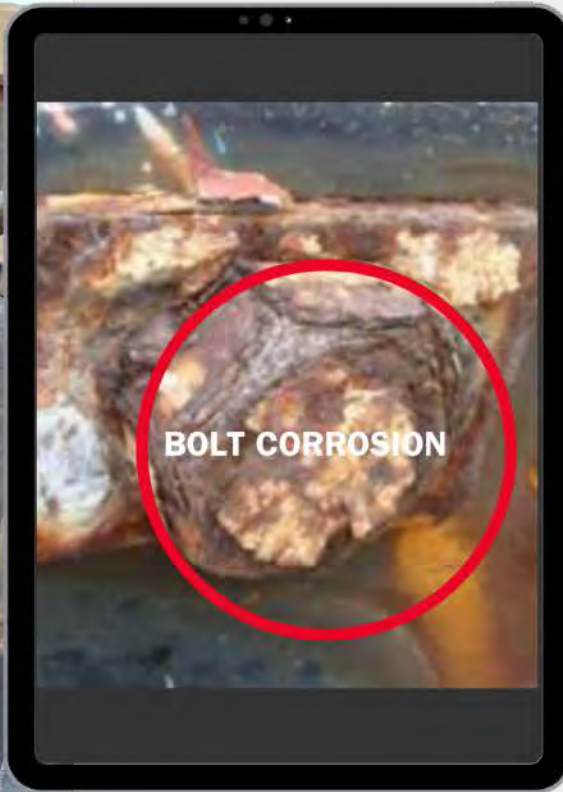
Fender Panel



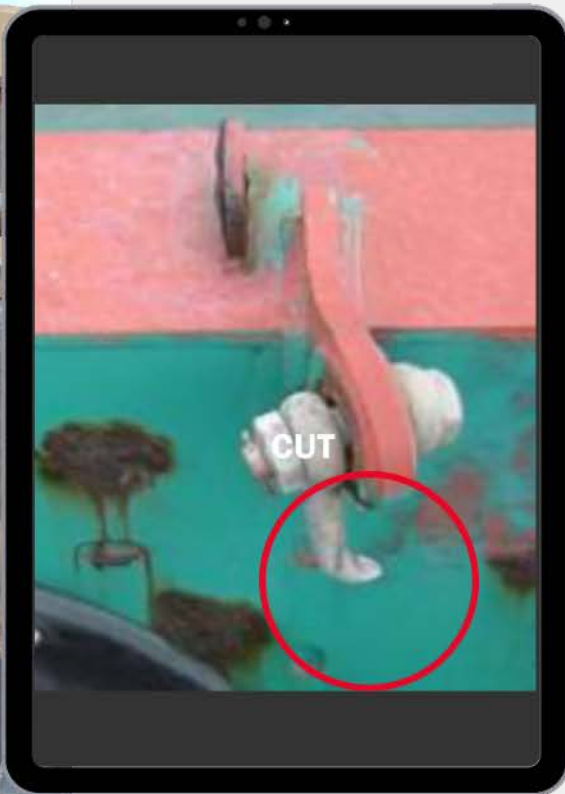
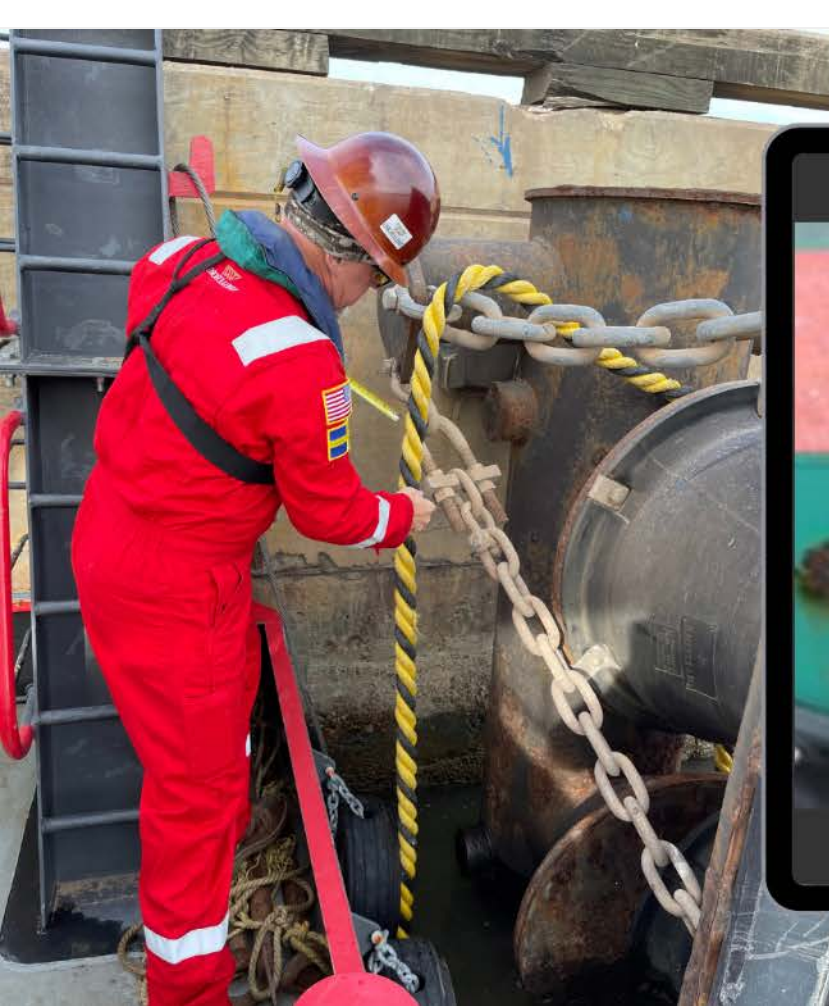
Fixings



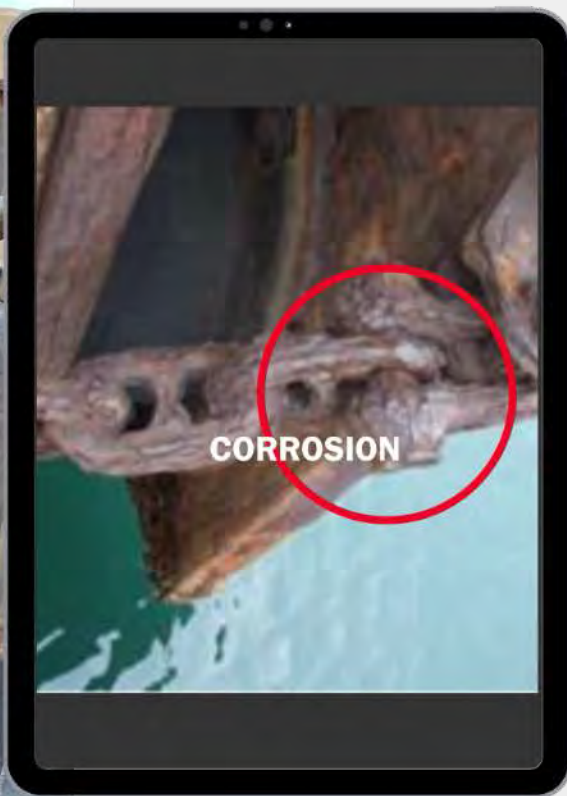
Fixings



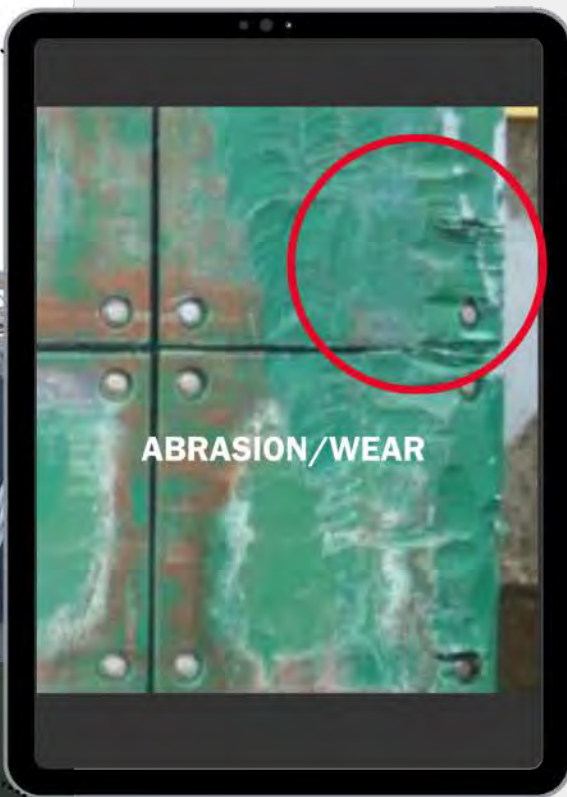
Fixings



Fixings



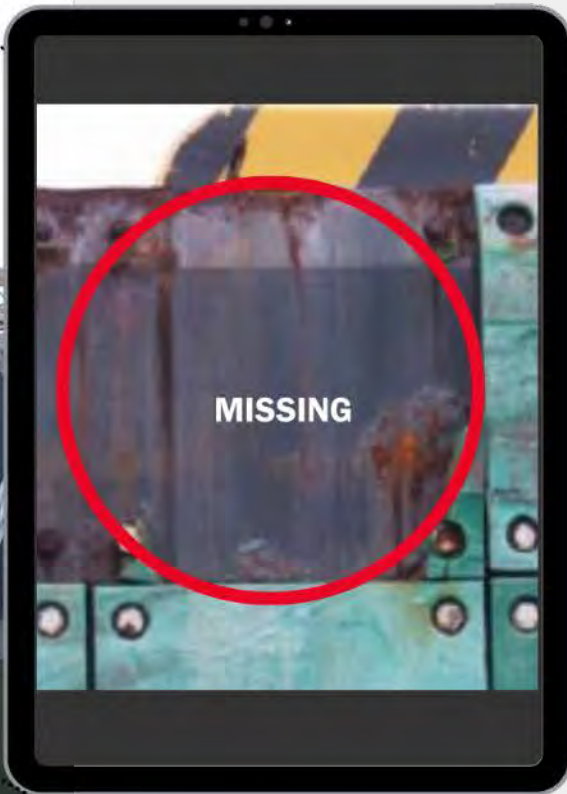
Fixings



UHMW PE



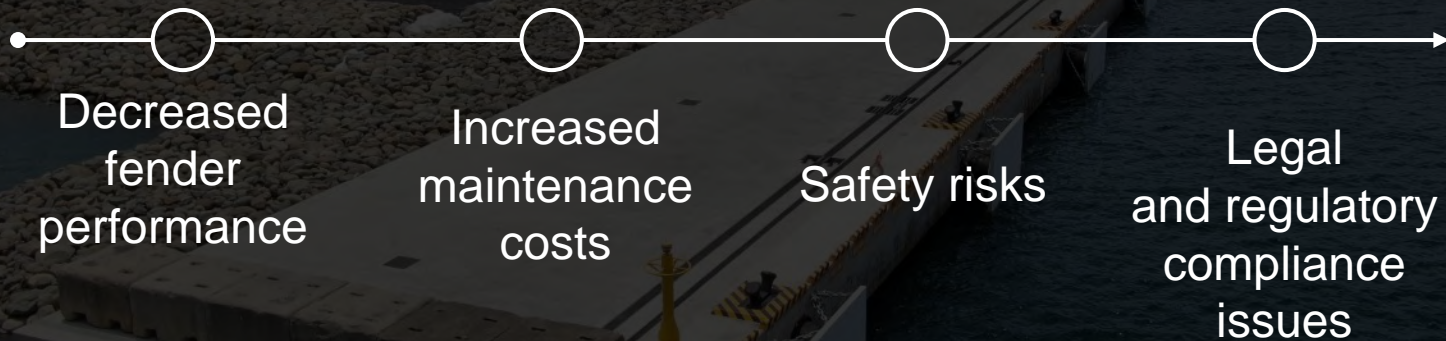
UHMW PE



UHMW PE

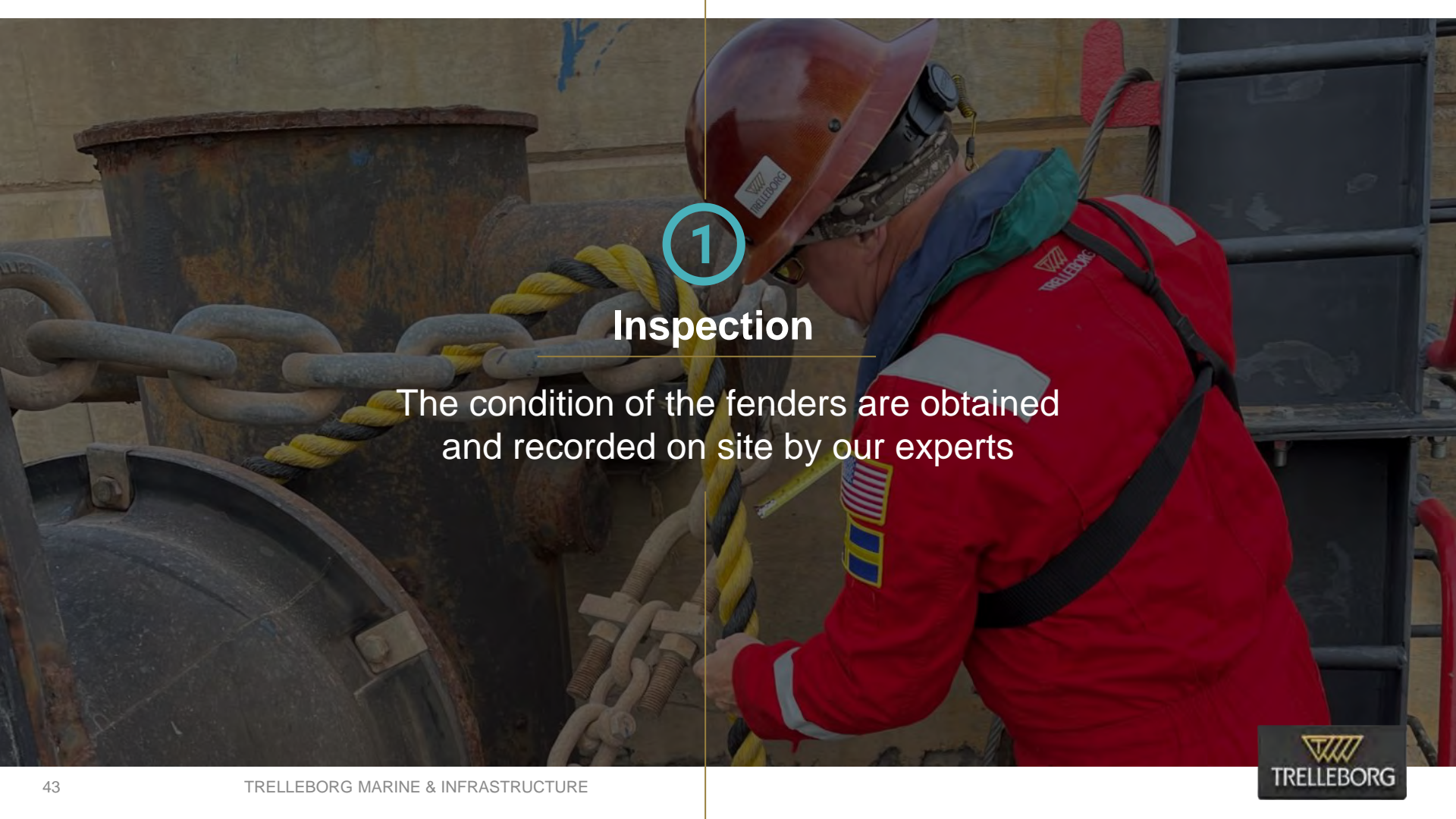


Failure to maintain marine fenders can result in:



Fender Inspection

Trelleborg provides world-class fender inspection services to port and terminal operators worldwide



1

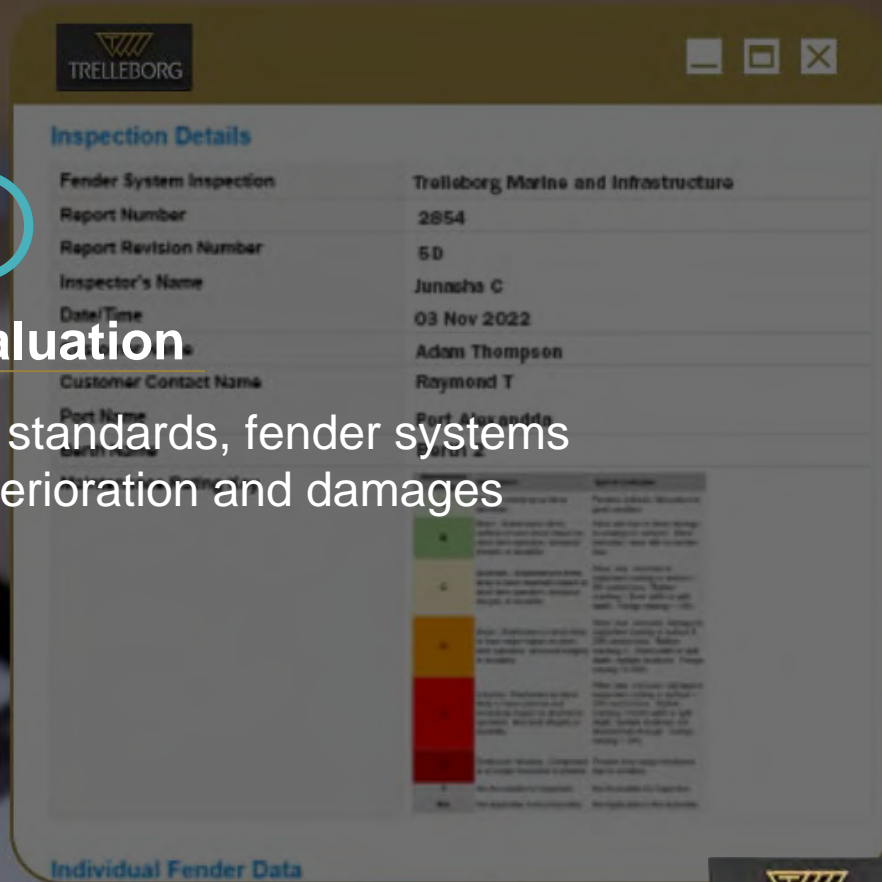
Inspection

The condition of the fenders are obtained and recorded on site by our experts

2

Data Evaluation

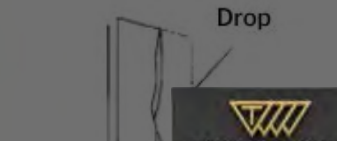
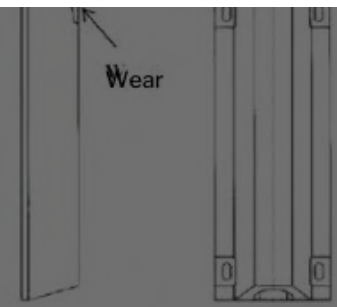
In line with international standards, fender systems are evaluated for deterioration and damages



3

Grading Classification

A fender grading system is used to classify the fenders based on its damage rate & deterioration mode



4

Analytical Report

The findings are presented, and recommendations are made as to whether the deteriorations should be monitored further, repaired, or replaced.

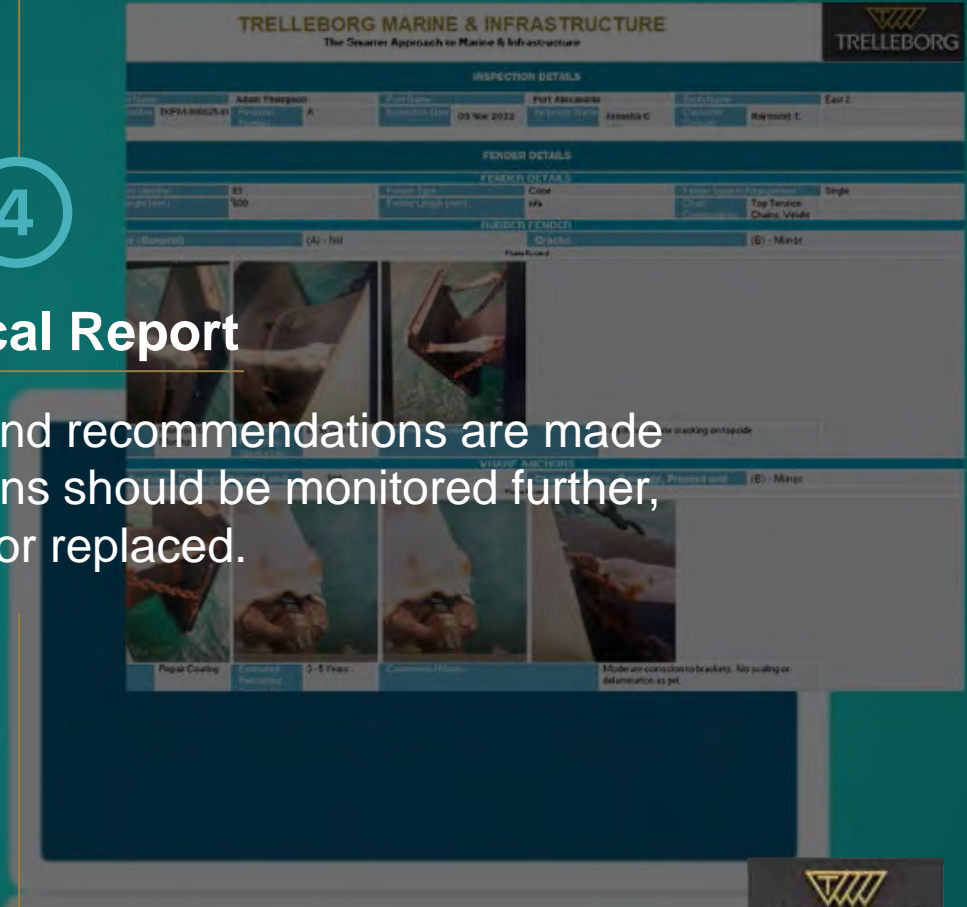


Photo & Matrix Report

Our experts will thoroughly inspect the various components of your system, including the rubber, fender panels, accessories, bolts, steel plate, and resin pad and provide you with comprehensive assessment.



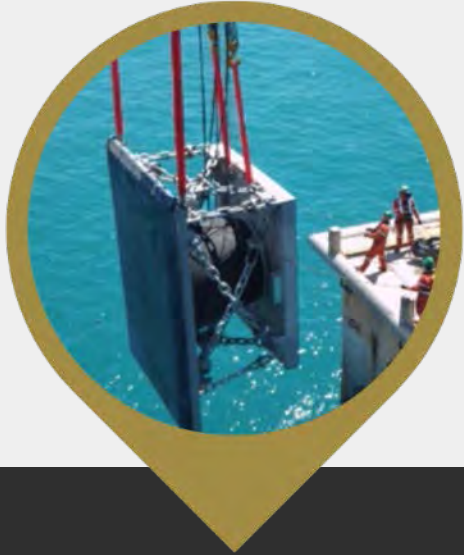
A matrix report is also provided which outlines specific actions that need to be taken, along with their corresponding time frames. By providing such detailed information, port operators can effectively budget their resources. Additionally, the report includes recommendations for the replacement and repair of fenders, which can aid in future maintenance planning.

Fender System Inspection										TRELLEBORG								
Component										Component								
Fender System Details										Rubber Fender		Fender Panel		Steel Plate		Component		
Fender System Details										Rubber Fender		Fender Panel		Steel Plate		Component		
Fender System Details										Rubber Fender		Fender Panel		Steel Plate		Component		
1	A	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
2	B	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
3	C	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
4	D	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
5	E	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
6	F	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
7	G	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
8	H	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
9	I	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
10	J	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
11	K	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
12	L	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
13	M	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
14	N	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
15	O	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
16	P	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
17	Q	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
18	R	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
19	S	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
20	T	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
21	U	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
22	V	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
23	W	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
24	X	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
25	Y	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
26	Z	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK





Fender Inspection



Fenders Installation

Optimize port efficiency



Reduce the risk of downtime



Increase fender durability



Improve safety



A worker in a red safety suit and white hard hat is walking away from the camera on a metal walkway over water. The walkway has railings on both sides. In the background, there is a large industrial facility with many pipes and structures, and a blue and white boat is docked nearby. The sky is overcast.

Take small steps today for a safer tomorrow

*All inspections and maintenance work is performed by trained and qualified Trelleborg experts
and reviewed with you on a regular basis*

Get in touch with the global leader for marine fender solutions



marine_infra@trelleborg.com



+971 4 8086000



Take charge of your
port's safety and inspect
your marine fenders today



TRELLEBORG