

SHIBATA**FENDER**TEAM GROUP

GERMANY | FRANCE | AMERICAS | ASIA

Marine Fenders & Products

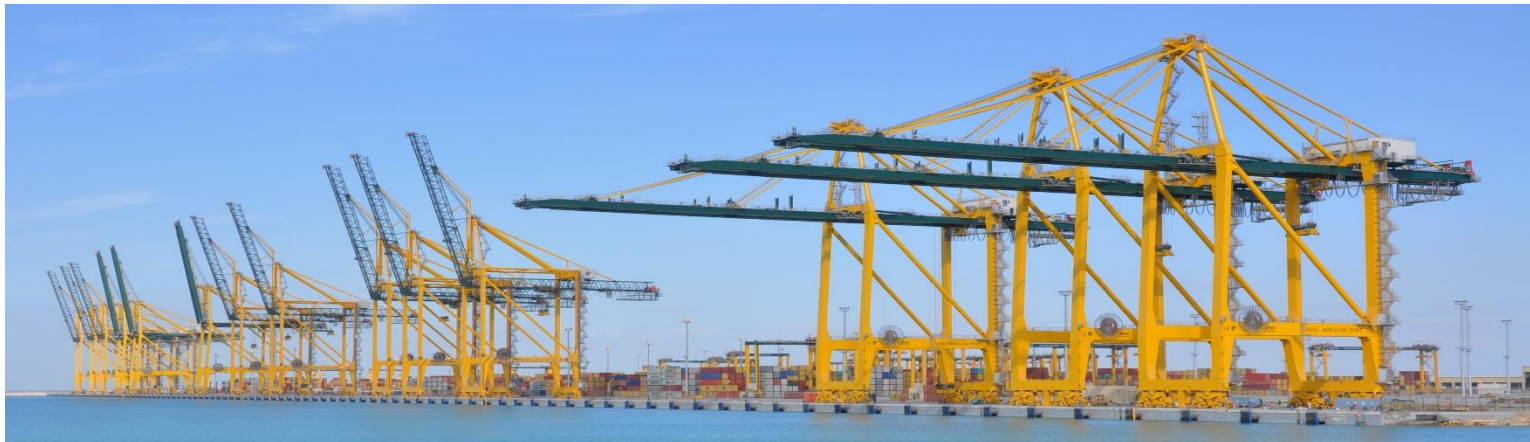
5th Black Sea Port & Shipping 2016 – Constanta, Romania

Presented by: J. Richter



CONTENT

1. SHIBATAFENDERTEAM GROUP
2. PRODUCTS
3. SERVICES





SHIBATAFENDERTEAM GROUP

HEADQUARTERS

Hamburg, Germany

OFFICES + REPRESENTATIVES

Lansdowne, USA

Paris, France

Kuala Lumpur, Malaysia (from 01 June 2016)

Extensive agent's network around the world

PRODUCTION

Rubber fender production in Japan and Malaysia

Own steel fabrication facilities in Germany

Foam Filled Fender production in Germany & USA





SHIBATAFENDERTEAM GROUP

TURNOVER ~ 40 million USD

DELIVERED PROJECTS > 2.800 worldwide since 2006

PROJECT SIZES > 5 million USD / project
> 200 fender systems / project





SHIBATAFENDERTEAM GROUP

ACHIEVEMENTS

ISO 9001
ISO 14001

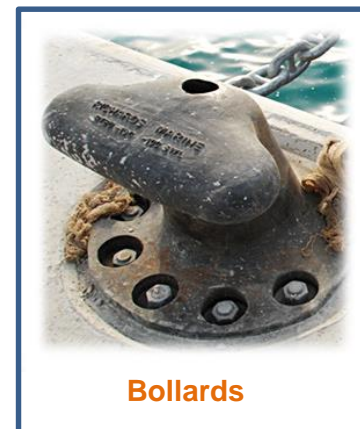
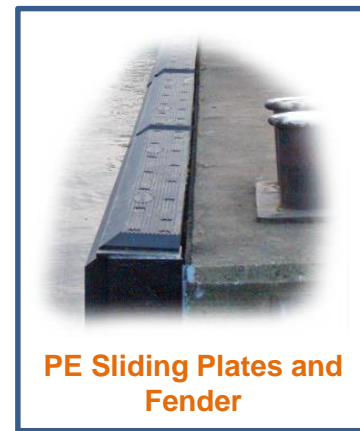
PIANC Type Approval
for standard range



Product Areas



- Fixed Fender
- Foam Fender
- Pneumatic Fender
- Special Solutions
- Tug Fender





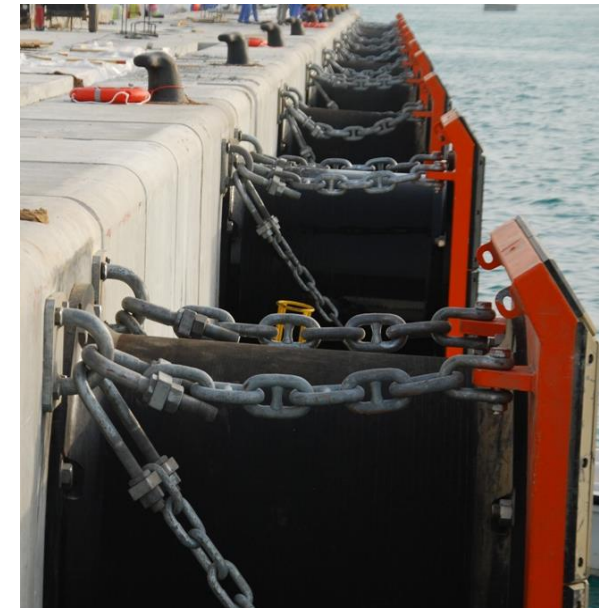
Fender & Fender Systems

➤ SPC-800 Cone Fender Systems for Tema Bulk Terminal, Ghana



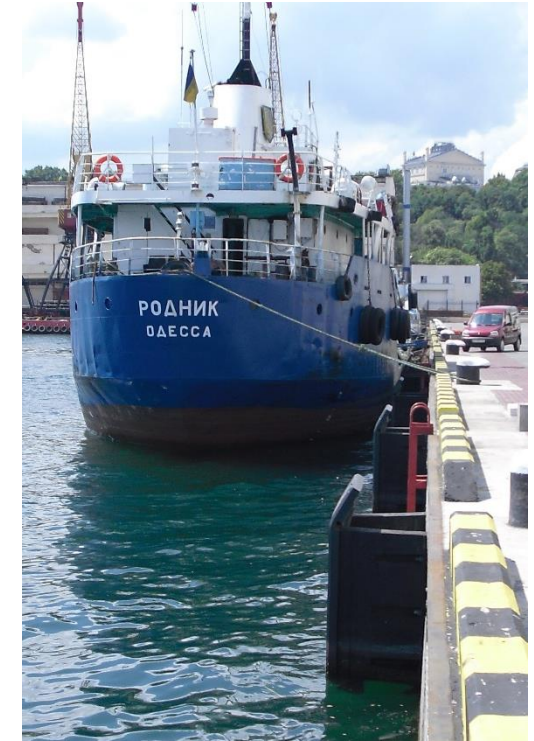
Fender & Fender Systems

- **CSS-2000 Cell Fender System for Khalifa Port, Abu Dhabi, U.A.E**



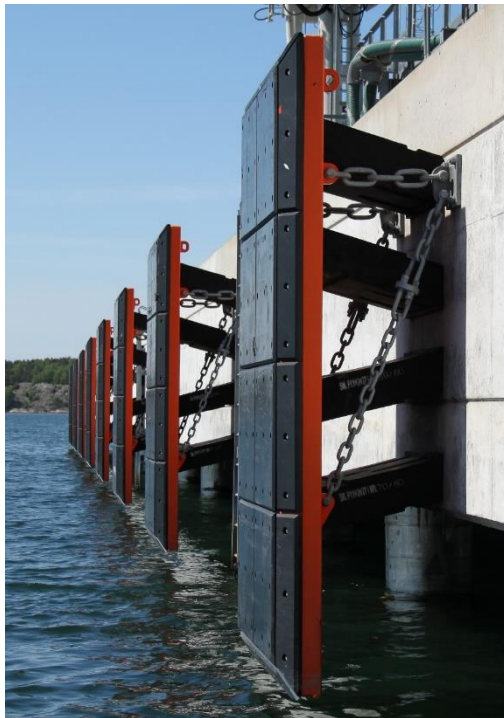
Fender & Fender Systems

- Special Element Fender FE 1000 x 1500 mm System for Odessa Port, Ukraine



Fender & Fender Systems

- Element Fender FE 750 x 1000 mm System for PetroPort Port, Sweden



Fender & Fender Systems

- SX Fender / SX-P 300 & 500 Fender for Port of Sochi, Russia



Fender & Fender Systems

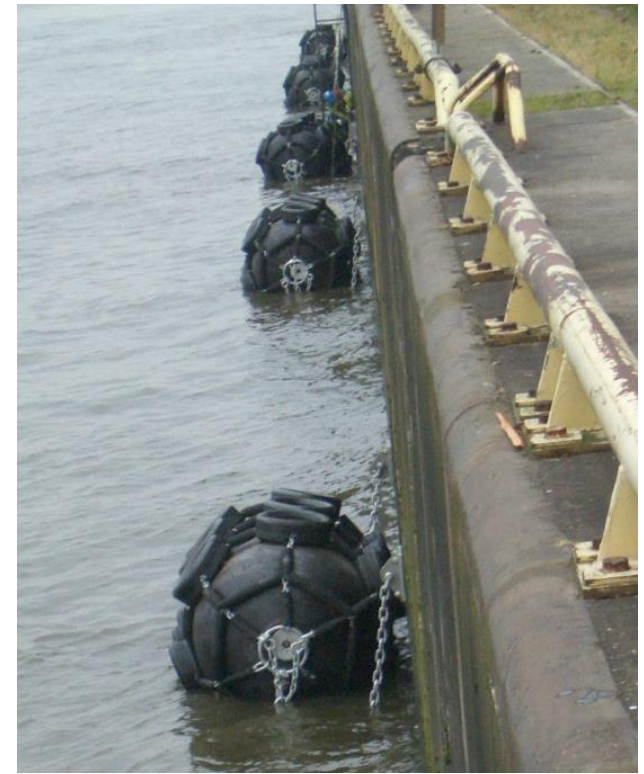
- OceanGuard OD 1700 x L 3000 mm for Gdansk, Poland





Fender & Fender Systems

- Pneumatic Fender OD 1350 x L 2500 mm for Hamburg, Germany





Fender & Fender Systems

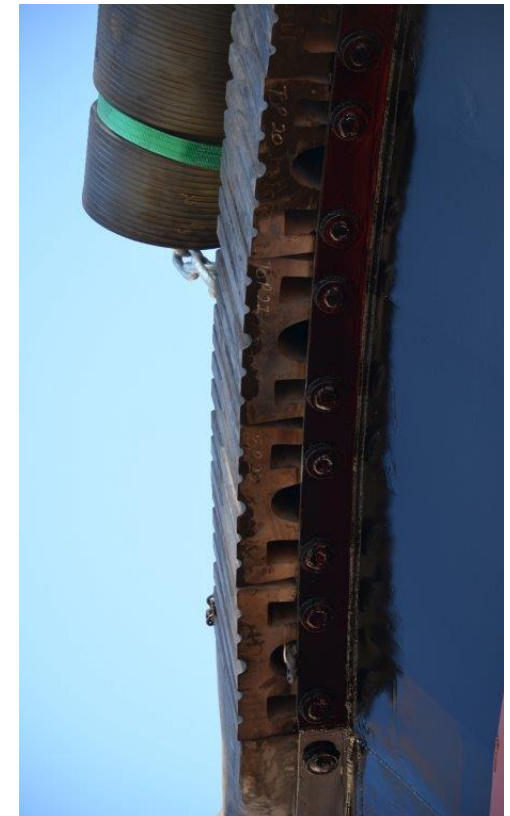
- **Cylindrical Fender OD 1500 & 1200 mm for Container Terminal, Hamburg, Germany**





Fender & Fender Systems

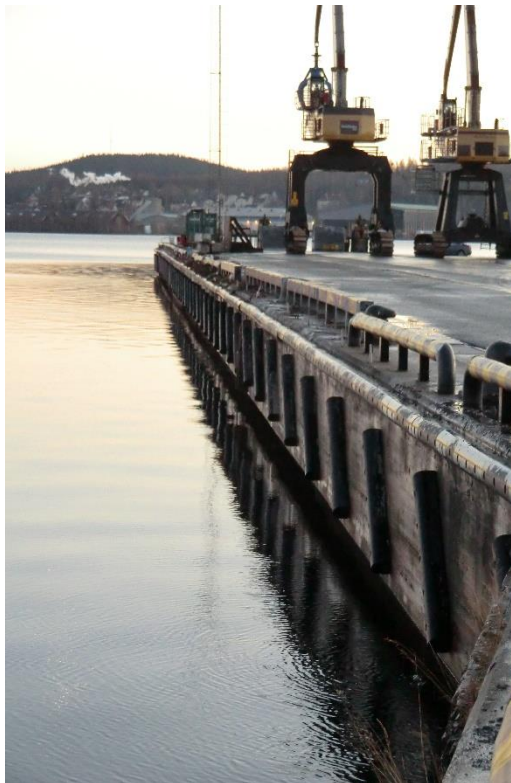
➤ Tugboat Fenders for Port Elizabeth, South Africa





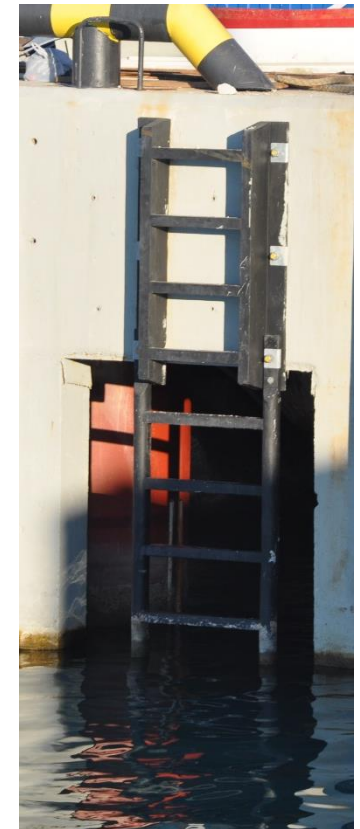
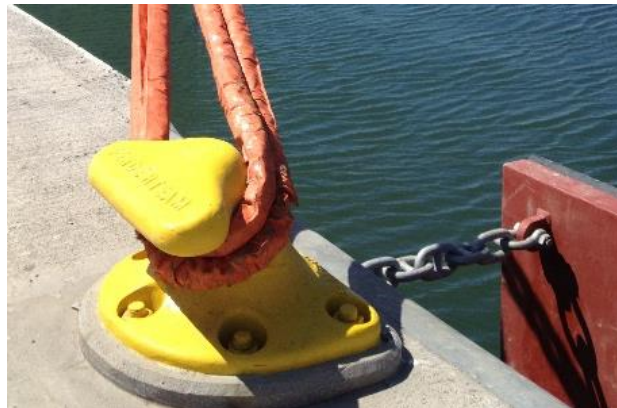
Fender & Fender Systems

➤ Extruded Fenders



Other Products

➤ Sliding Fenders, Bollards & Ladders





SFT Services

**For the design of a high performance, reliable
and high quality fender system**



SFT Services

Detailed Drawings & Calculations

**INGENIEURBÜRO
ROSSBURGER**

0420 Khalifa Port 1x CSS 2000 F4+8

page 1

Preamble:

This calculation concludes the structural design and the capacity checks for the steel fender panels. Each panels consists of a closed steel box frame, H x W x T = 5000mm x 2700mm x 207mm, covered with 40mm UHMW-PE pads. The panels are bevelled 300mm to edge and 150mm on both sides. Each fender system is equipped with 1x CSS 2000 F4+8 rubber fender, 2x upper tension chains and 2x weight support chains. The fender systems are to be assembled on a concrete quay wall. Final stand-off distance results in approximately 2200mm. Total number of fender systems is 54 pieces. Further details will be shown on respective drawings.

Basics:

Fender CSS 2000 F4+8 performance data:
Max. Reaction force at 25.0 % and 52.5 % deflection R_{RFD25} = 153.4 t (1505 kN)
Max. Energy absorption at 52.5 % deflection $E=$ 135 tm (1324 kNm)

Partial safety factors for panel design:

Flare angle 15° CF = 1.00 (Reaction force is constant under angular compression $\leq 15^\circ$)
Velocity factor VF = 1.12 (given by Fender supplier)
Tolerance factor TF = 1.10 (concludes +/- 10% manufacturing tolerance)
Temperature factor TF = 1.08 (given by Fender supplier, based on low temperature 1°C)

Total Correction Factor

= $1.00 \times 1.12 \times 1.10 \times 1.08 = 1.33$
< $\gamma = 1.60$ acc. to BS 5959-1:2000 table 2 for imposed load
so $\gamma = 1.60$ is applied on all internal forces and moments due to R_{RFD25}

Self weights of steel panel, PE and rubber were neglected.

Chain design:

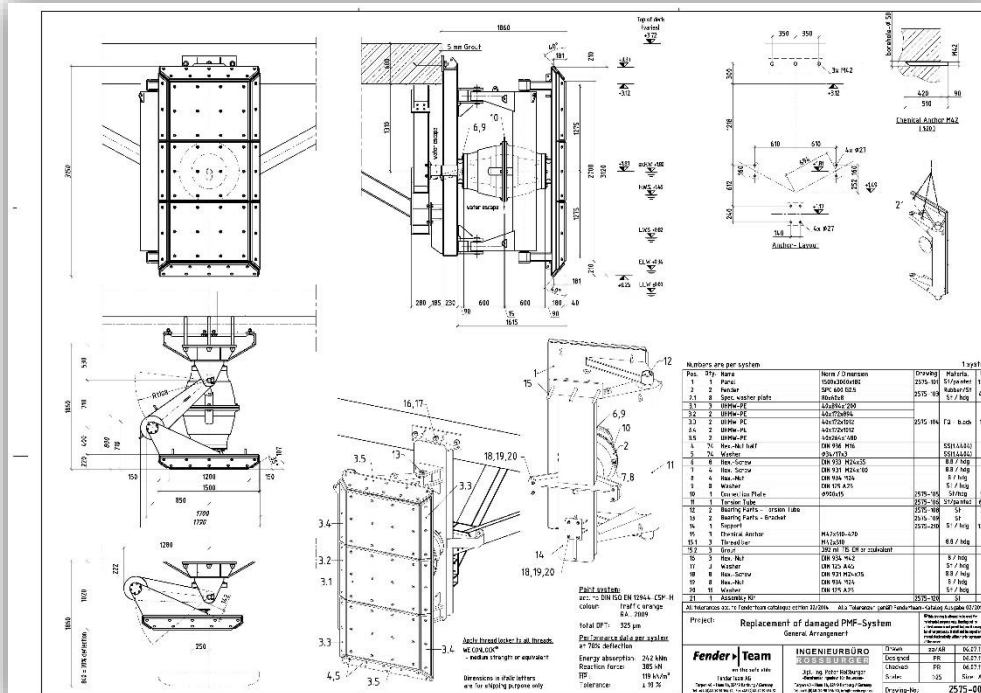
FOS against MBL ≥ 3.0 , chain loads based on R_{RFD25}

Shackle design:

FOS against MBL > 3.0 , shackle loads based on R_{RFD25}

Materials:

Steel S355 J2 (1.0553) for structural members and eye plates, S235 J2 (1.0038) for all other members,
Thread bars M64, Stainless Steel V4A (1.4404)
Bolts and nuts grade 8.8. hdg
UHMW-PE FO 1000, friction-coefficient $\mu=0.20$
PE-fixing welding studs, nuts, washers Stainless Steel V4A (1.4404)



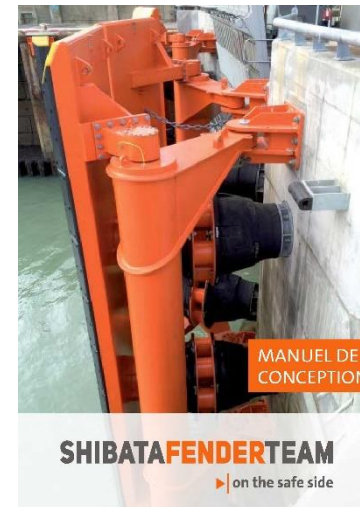
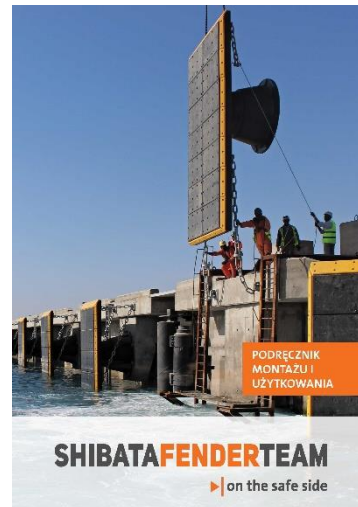
SFT Services

- In-house Fender Testing
- Installation Supervision
- After Sales Service



SFT Literature

- Product Catalogue
- Installation, Operation & Maintenance Manual (IOM)
- Design Manual





Thank you for your attention!

For more information visit us at
www.shibata-fender.team