



COMPANY
PROFILE

SHIBATA**FENDER****TEAM**

▶ | on the safe side

PRODUCT RANGE & CAPABILITIES.

Overview of our wide product range and fender sizes. For more information and special products, please visit our website at www.sft.group

- ▶ Moulded and Extruded Rubber Fender units up to single weights of 18.5 t
- ▶ Foam Fenders with diameters up to 4.5 m and 10 m long
- ▶ Buoys for various applications up to 4.5 m diameter
- ▶ Pneumatic Fenders with diameters up to 3.3 m and 9.0 m long
- ▶ HD-PE Sliding Fenders up to 300 mm x 300 mm cross-section and 6 m long
- ▶ Steel construction with single unit weights up to 30 t
- ▶ Many special products for marine applications which exploit our knowledge of rubber, steel, polyurethane and polyethylene

SHIBATAFENDERTEAM GROUP.

The ShibataFenderTeam Group is the leading international fender manufacturer with 50+ years of group experience in fender production, +100,000 fenders in service, and 90+ years of experience in the production of rubber products. Shibata Industrial, headquartered in Japan, is responsible for rubber production and R&D, generating a revenue of about 120 million USD with +360 employees in Japan. ShibataFenderTeam, headquartered in Germany, handles design, manufacturing (steel, foam, PE) and international sales, generating a revenue of about 55million USD with their +80 employees around the world. The SFT Group offers consulting, engineering, manufacturing, after sales service and testing. Our regional offices facilitate the local contact to customers and are located in the US, Malaysia, Spain and The Netherlands. They are supported by a large network of well-established local representatives on six continents. Direct contact between all our employees and partners plays a vital role in our group's development.

Providing safety critical fender systems, the ShibataFenderTeam Group has a strong focus on manufacturing all major components in-house, ensuring highest quality and reliability at our own production facilities in Europe and Asia. Our experience has earned us a reputation as a dependable partner in the international ports harbors and waterways market.

Customized Fender Solutions.

Engineering.

Engineering excellence means that our partners can be confident in expecting the best from us in all areas. Our value engineering provides excellent customized solutions. Detailed design, drafts work and structural analyses are prepared by our in-house engineering team. Our specialists have a long proven track record in the marine construction industry.

All steps of fender design go hand in hand and influence each other. This fact emphasizes the need for a holistic approach to fender system design in the industry and an experienced manufacturer to ensure reliable, safe and efficient operations for ports. If a rubber fender system does not perform as required, safety in marine operations and efficiency for marine terminals cannot be ensured.

After Sales Service.

ShibataFenderTeam is committed to provide global support and assistance during commissioning, installation, throughout the service life of the fender system and/or maintenance works. We are with our clients each step of the way, from engineering to manufacturing and finally after sales support. Regular maintenance of all parts of the fender system can help to detect potential damages at an early stage and allows for immediate action. As part of our after sales service, we offer a site assessment including a customized maintenance plan to assess the condition of the marine furniture. A maintenance regime and proper training of staff ensures a long service life of the fender systems.

Consulting.

ShibataFenderTeam offers assistance with unbiased project specifications, and detailed and extensive design input at an early project stage as well as support with drawings or suggestions for installation. We support and guide engineering companies, operators and other stakeholders through every stage of the project and beyond.

Our offices and global network of local agents have decades of experience in fender design. With us, you can always rely on global support adhering to local standards and regulations. We are a team of true fender specialists – ready to receive your enquiry.

Manufacturing.

Providing safety critical fender systems, ShibataFenderTeam has a strong focus on manufacturing all major components in-house at company owned production facilities in Europe and Asia. Highest quality and reliability is ensured for the production of rubber fenders, steel panels, related hardware, HD-PE profiles and foam fenders. Where buy-in items are required, these are sourced from audited and reputable suppliers only.

All manufacturing is in accordance with ShibataFenderTeam specifications, drawings, calculations and quality requirements, in order to ensure a safe and reliable fender system. Our quality management system is certified as per ISO 9001 and ISO 14001.

Testing.

Questioning and monitoring one's own efforts is vital when striving for quality. Not only do we hold our plants, production processes and partners to the highest standard, testing every single fender we manufacture is a vital part of our business. All ShibataFenderTeam products are designed, manufactured and tested in accordance with PIANC 2002, BS 6349, EAU 2012, EC3, DIN 18800, BS 5950 and AISC. All of ShibataFenderTeam's testing equipment and processes meet the most stringent industry standards as well as the calibrating requirements set forth by PIANC. Type Approvals according to PIANC are available for a broad range of our products.

SPC Cone Fenders

The SPC Cone Fender is an efficient fender type that is used in various applications. It has a conical body and fully rubber-embedded mounting flanges. Its refined geometry and conical shape result in a number of outstanding performance characteristics.

Characteristics

- ▶ Exceptional good energy absorption to reaction force ratio (E/R)
- ▶ Outstanding energy absorption per fender weight
- ▶ High shear stability
- ▶ No loss of performance up to 10° approach angle
- ▶ Anchor recesses for easier installation
- ▶ Optional overload stopper

Applications

- ▶ Container & Bulk Terminals
- ▶ Oil & Gas Terminals
- ▶ General Cargo Terminals
- ▶ Cruise Terminals
- ▶ Ferry & RoRo Terminals
- ▶ Navy



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CSS Cell Fenders

The CSS Cell Fender is a well established fender type, with a hollow cylindrical body and fully rubber-embedded mounting flanges. It is designed to deflect in an axial direction up to 52.5% (design deflection).

Characteristics

- ▶ Easy assembly & installation
- ▶ Good shear force resistance
- ▶ Cost-effective: large footprint leads to a good load distribution on the substructure which results in a lighter panel construction
- ▶ Very robust
- ▶ 40 years proven track record

FE Element Fenders

The FE Element Fenders are fully moulded rubber legs with embedded mounting plates. Based on V Fenders but with separate legs, FE Fenders provide high layout flexibilities when installed behind steel panels or where mounting space is limited.

Characteristics

- ▶ Good energy absorption to reaction force ratio (E/R)
- ▶ High energy absorption per fender weight
- ▶ Modular and compact design with small footprint
- ▶ Vertically and horizontally mounted elements may be combined in one system
- ▶ Single units also used in combination with fender pile designs
- ▶ Easy maintenance & replacement

Applications

- ▶ Container & Bulk Terminals
- ▶ General Cargo Terminals
- ▶ RoRo Terminals
- ▶ Navy
- ▶ Barge

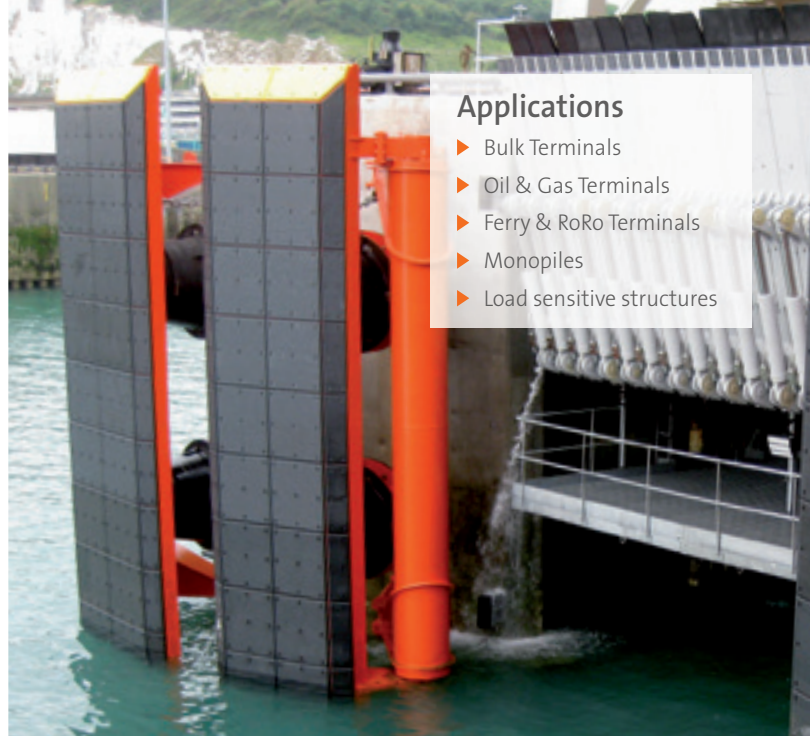


Parallel Motion Fenders

Parallel Motion Fenders are individually engineered systems and could be designed with different rubber units, but typically with SPC Cone Fenders, CSS Cell Fenders or FE Element Fenders. A turning lever arm (torsion arm) is mounted between the back structure (concrete or steel) and the frontal steel panel. The arm restrains the panel movement during the entire fender compression, allowing it to move only parallel to its mounting, irrespective of impact level and angle.

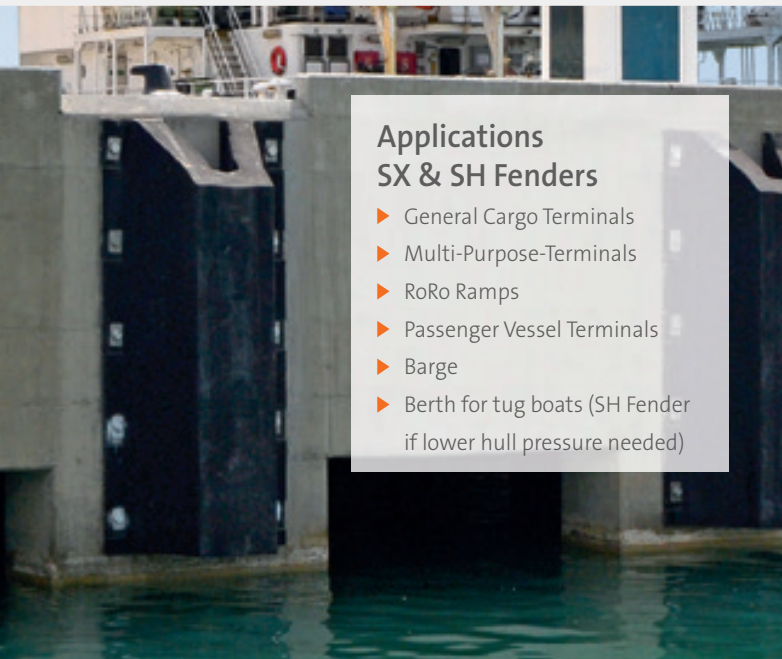
Characteristics

- ▶ Equal energy absorption capacity at any impact level
- ▶ No second contact point between ship and the fender system



Applications

- ▶ Bulk Terminals
- ▶ Oil & Gas Terminals
- ▶ Ferry & RoRo Terminals
- ▶ Monopiles
- ▶ Load sensitive structures



Applications SX & SH Fenders

- ▶ General Cargo Terminals
- ▶ Multi-Purpose-Terminals
- ▶ RoRo Ramps
- ▶ Passenger Vessel Terminals
- ▶ Barge
- ▶ Berth for tug boats (SH Fender if lower hull pressure needed)

V Fenders

The V Fender is a rigid and simple moulded one piece fender type. V Fenders are available in different cross sections, SX and SH. The main difference is the width of the fender head and resulting surface load. Each type can be equipped with an additional embedded steel plate in the fender head (SX-P and SH-P). This allows the installation of an UHMW-PE frontal plate, a steel fender panel or the mounting of the fender unit behind a pile construction.

Characteristics

- ▶ Suitable for various applications
- ▶ Very robust, durable and requires low maintenance
- ▶ High shear resistance in the longitudinal direction
- ▶ Can be installed both vertically and horizontally
- ▶ Suitable for turning dolphins & pivot points

Cylindrical Fenders

The Cylindrical Fender was the first fender type to be produced with a defined performance. Installation is simple by using chains, bars, ropes or specially designed ladder brackets, depending on the fender size and substructure. The Cylindrical Fenders' proportional increase of reaction force and energy absorption all the way to the rated deflection is an advantage resulting in softer berthing. Special dimensions and features such as pre-bending or jointing can be requested.

Characteristics

- ▶ Very robust and simple
- ▶ Easy to install
- ▶ High abrasion resistance
- ▶ Proportional load deflection curve



Applications

- ▶ Multiple usage at different berths
- ▶ Bulk Terminals
- ▶ General Cargo Terminals
- ▶ RoRo Terminals
- ▶ Tug Boats
- ▶ Barge

Foam Products

High performance fender systems for various applications with the focus on projects with high variations in water levels and for cruise terminals. Other foam products are used as navigational aids and security barriers. We supply:

- ▶ Ocean Guard Fenders
- ▶ Ocean Cushion Fenders
- ▶ Submarine Foam Fenders
- ▶ SSD Fenders
- ▶ Donut Fenders
- ▶ Ocean Guard Buoys

Applications

- ▶ Navy vessel berths, cruise terminals and ship-to-ship operations (Ocean Guard & Ocean Cushion)
- ▶ Naval & commercial vessels with limited storage space (SSD Fenders)
- ▶ Locks and dry dock entrances (Donut Fenders)
- ▶ Mooring, marking, navigational aids (Buoys)



Applications

- ▶ In ports with extreme tidal variations
- ▶ Ship-to-ship lightering operations
- ▶ Oil & Gas (typically FSRU)
- ▶ Temporary Berthing
- ▶ Submarine jetties (Hydropneumatic Fenders only)



Pneumatic Fenders

High performance fenders for various applications with the focus on projects with high variations in water levels and ship-to-ship operations. We supply:

- ▶ Pneumatic Fenders
- ▶ Hydropneumatic Fenders

Characteristics

- ▶ Proportional increase of reaction force and energy absorption
- ▶ Low hull pressure
- ▶ Submerged contact area (Hydropneumatic Fenders only)

Rolling Fenders

Fender systems specially suitable to provide ship guidance in narrow areas. A wide range of types and performances is available to suit almost all project requirements. We supply:

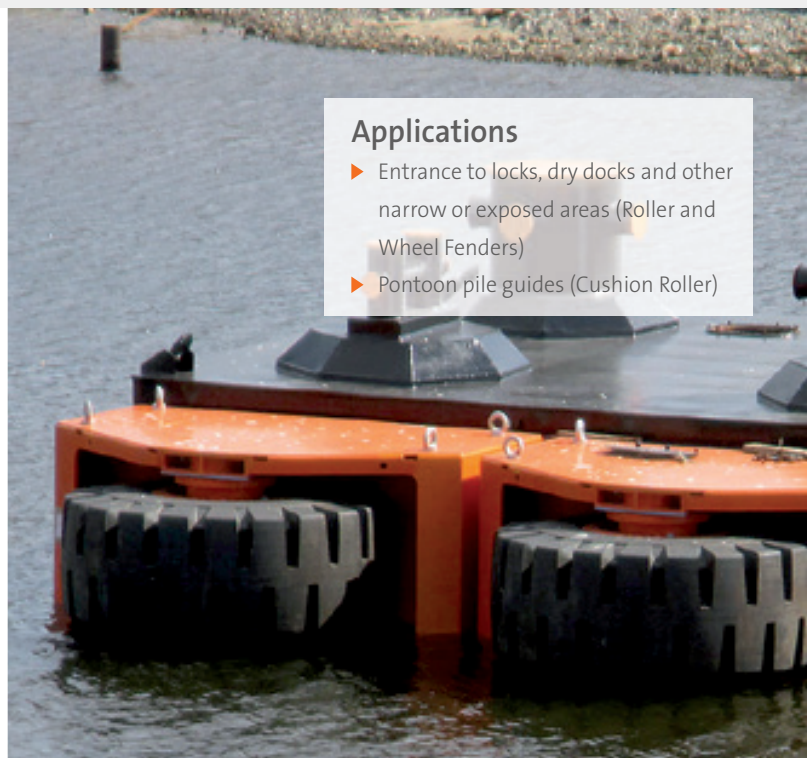
- ▶ Roller Fenders
- ▶ Wheel Fenders
- ▶ Cushion Rollers

Characteristics

- ▶ Guiding system
- ▶ Good energy absorption
- ▶ Multi purpose use
- ▶ Rubber cushion to withstand berthing impacts (Cushion Roller only)

Applications

- ▶ Entrance to locks, dry docks and other narrow or exposed areas (Roller and Wheel Fenders)
- ▶ Pontoon pile guides (Cushion Roller)



Extruded Fenders

Simple rubber profiles for various applications that can be manufactured in almost any lengths. Supplied cut and drilled for easy and quick installation.



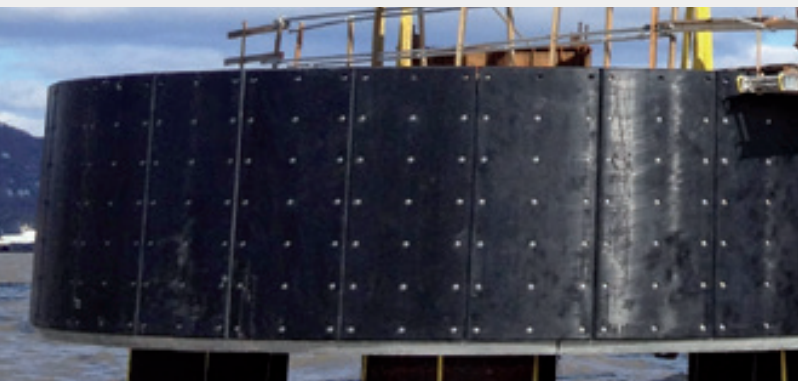
Tug Boat Fenders

Extremely robust fender types for heavy-duty and demanding tug boat operations.

ShibataFenderTeam offers the complete range of Tug Boat Fenders for all kinds of applications.

Special Solutions

Besides standard rubber fender units we also offer highly customized products made from rubber, steel and other materials for fender and related marine applications.



PE Sliding Plates & Fenders

Plates and Fenders made from Polyethylene which combine impact strength with high abrasion resistance and low friction. They can be used for many applications in the marine environment.

Accessories & Fixings

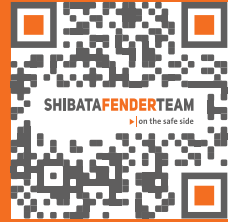
High quality chains, accessories and compatible fixings to assemble and install fenders are an important part of each fender solution and are completely delivered by SFT.



Bollards

SFT Bollards come in various shapes and capacities and provide safe and secure mooring even at full working load. We deliver a variety of bollards.

OUR OFFICES.



SPECIALIST PORT EQUIPMENT

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