February 2024

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PILE BUCK MAGAZINE| WORLD PORT DEVELOPMENT | MARINE CONSTRUCTION MAGAZINE | INSIDE MARINE

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SHIBATAFENDERTEAM
on the safe side

SFT

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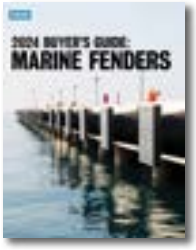
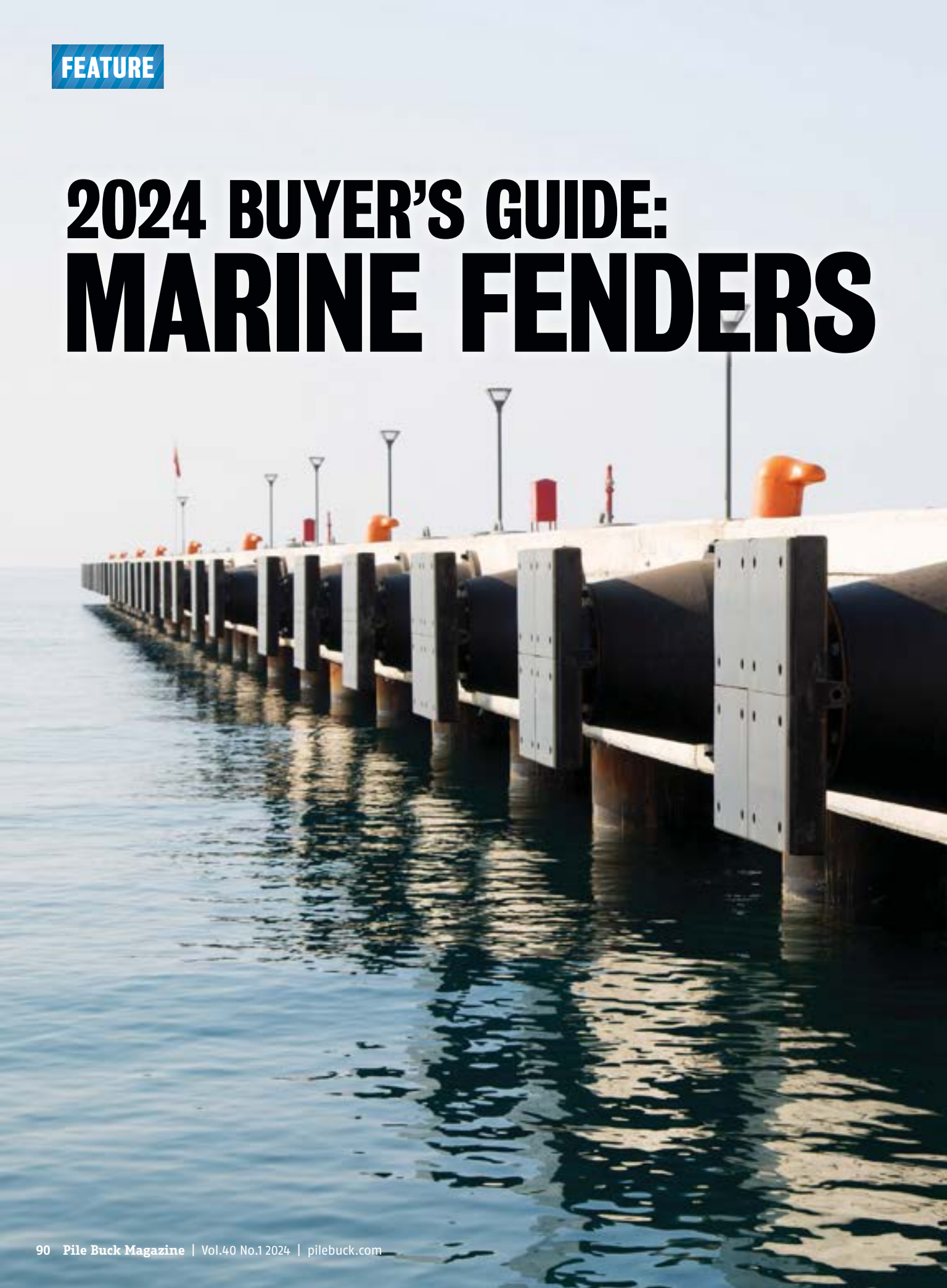
Content



FEATURE

2024 BUYER'S GUIDE: MARINE FENDERS



Fenders are often overlooked but are vital in maritime operations. These unassuming devices play a pivotal role in protecting vessels and infrastructure — effectively cushioning the impact of berthing, mooring, and docking. This guide will cover their diverse types, applications in different marine environments, and the essential considerations for selecting the right fender system.

FUNCTIONS AND PURPOSE OF FENDERS

Fenders play a pivotal role in marine construction, serving multiple functions that are crucial for safeguarding vessels, structures, and ensuring the overall safety and efficiency of maritime operations.

PROTECTION OF VESSELS AND STRUCTURES

One of the foremost functions of fenders is to provide essential protection to both vessels and the structures they come into contact with — including piers, docks, quays, and other infrastructure. This protective function serves several important purposes:

- **Minimizing impact damage:** Fenders act as a buffer, absorbing the energy generated during vessel berthing or mooring. This energy absorption prevents direct collisions between vessels and structures, significantly reducing the risk of damage.
- **Preserving vessel integrity:** By absorbing and dissipating kinetic energy, fenders protect the hulls and superstructures of vessels from structural damage and deformations that could compromise their seaworthiness.
- **Extending infrastructure lifespan:** Fenders also safeguard the longevity of port and harbor infrastructure by reducing wear-and-tear caused by repeated vessel impacts — garnering lower maintenance costs and increased operational efficiency over time.

ENERGY ABSORPTION AND DISPERSION

Fenders are engineered to efficiently absorb and disperse kinetic energy, which is generated when vessels approach berthing facilities or during mooring. This critical function serves the following purposes:

Example of a damaged fender.

- **Energy dissipation:** Fenders dissipate the kinetic energy of a vessel's movement by deforming and rebounding, thus reducing the impact forces transmitted to the vessel and the structure. This controlled energy dissipation prevents sudden jolts and potential structural failures.
- **Enhancing safety:** By gradually slowing down and dispersing the energy, fenders contribute to a safer and more controlled berthing process — protecting crew, cargo, and the vessel itself from sudden and violent impacts.

PREVENTING DAMAGE DURING VESSEL BERTHING

Fenders are especially crucial during the vessel berthing process, where precise control is required to prevent costly and dangerous accidents. Their role in this context includes:

- **Mitigating berthing forces:** Fenders absorb the berthing forces that occur when a vessel makes contact with a quay or dock, preventing excessive loads on the vessel's mooring lines and the infrastructure. This ensures that berthing is a controlled and damage-free operation.
- **Maintaining operational continuity:** Effective fender systems help minimize downtime by reducing the risk of damage to vessels and berthing facilities. This is particularly important in busy ports where efficient vessel turnaround times are essential.

FACILITATING SAFE MOORING AND DOCKING

Fenders also play a pivotal role in facilitating safe mooring and docking procedures, ensuring that vessels can be securely anchored in place. Their contributions include:

- **Steadying vessels:** Fenders assist in stabilizing vessels during mooring and docking — preventing unwanted drifting and swaying, especially in adverse weather conditions.
- **Reducing crew risks:** By providing a cushioned and controlled contact point, fenders reduce the risk of accidents to crew members involved in mooring and docking activities.

TYPES OF FENDERS

Understanding the various types of fenders available is essential for selecting the right fender system to meet the specific needs of a marine construction project. Each type of fender has its unique advantages and limitations, and choosing the appropriate fender type is crucial to ensure the safety and efficiency of a project.

RUBBER FENDERS

Rubber fenders are among the most widely employed fender types due to their versatility and effectiveness in absorbing and dissipating kinetic energy. For example, in busy container ports, cylindrical rubber fenders efficiently cushion and slow down massive cargo vessels as they make contact with the

pier — preventing damage to both the ships and the terminal infrastructure.

They come in several shapes, including:

- **Cylindrical fenders:** Cylindrical rubber fenders are characterized by their simple, cylindrical shape. They are often used in areas with moderate tidal variations and vessel sizes. Cylindrical fenders distribute forces evenly, making them suitable for various applications like marinas and ferry terminals.
- **D-shaped fenders:** D-shaped rubber fenders have a flat back and a semi-circular front, resembling the letter "D." This design allows them to efficiently protect vessels and structures while also serving as a bumper during berthing operations.
- **W fenders:** W fenders, as the name suggests, feature a distinctive "W" shape. This design provides excellent energy absorption and dispersion capabilities, making them ideal for larger vessels and areas with high tidal fluctuations.

FOAM FENDERS

Foam fenders are lightweight and durable, making them suitable for

Cylindrical fender. Photo credit: ShibataFenderTeam.

Ocean Guard Fender (foam fender). Photo credit: ShibataFenderTeam.


Pneumatic fender. Photo credit: ShibataFenderTeam.

specific marine construction scenarios. They are typically made of closed-cell foam encased in a tough polyurethane or elastomer skin. Foam fenders offer advantages such as low maintenance and high energy absorption.

PNEUMATIC FENDERS

Pneumatic fenders, also known as air-filled fenders, rely on air pressure to absorb impact energy. They are highly resilient and can adapt to variations in vessel size and shape. Pneumatic fenders are commonly used during ship-to-ship transfers and as temporary fenders in construction and maintenance projects.

SHEET PILE & CONCRETE DOCK FENDERS

Sheet pile and concrete dock fenders are versatile options for shielding docks and quays from the forces of maritime operations. Sheet pile fenders are constructed from interlocking steel sheets, while concrete dock fenders are made of durable concrete. They serve as a solid buffer, minimizing impact damage and ensuring the longevity of structures in busy port environments.

TUGBOAT FENDERS

Tugboat fenders are specially designed to protect tugboats during


Sheet pile fenders. Photo credit: Schuyler Companies.

Bow fenders on a tugboat: Photo credit: Schuyler Companies.

pushing and towing operations. They are typically installed on the sides of tugboats to minimize damage during contact with larger vessels.

CONE FENDERS

Cone fenders have a conical shape and are highly effective at absorbing energy in a compact design. They find application in various marine environments, including container terminals and oil and gas facilities.

PIPE PILE FENDERS

Pipe pile fenders are a robust and reliable solution for safeguarding marine structures. They consist of sturdy steel or concrete pipes driven into the seabed, creating a protective barrier that absorbs and dissipates energy during vessel berthing. Pipe pile fenders are commonly used in piers, wharves, and other waterfront structures — offering

SPC Cone Fender. Photo credit: ShibataFenderTeam.

effective protection for both vessels and infrastructure.

STEEL BEAM FENDERS

Steel beam fenders are renowned for their exceptional strength and resilience. These fenders consist of steel beams positioned horizontally or vertically along the waterfront, effectively absorbing and dispersing kinetic energy from vessel impacts. Steel beam fenders are commonly deployed in heavy-duty applications, such as bulk cargo terminals and industrial facilities.

EXTRUDED FENDERS

Extruded fenders offer a streamlined and effective solution for vessel protection. These fenders are typically made from high-quality rubber compounds, featuring a continuous extruded profile that provides excellent energy absorption. Extruded fenders are frequently used in various marine settings — including marinas, ferry terminals, and offshore installations — where their reliability and durability shine through in demanding conditions.

DONUT FENDERS

Donut fenders, also known as toroidal fenders, have a circular shape with a central hole. They are commonly used in offshore mooring and vessel-to-vessel transfers, offering reliable protection and stability.

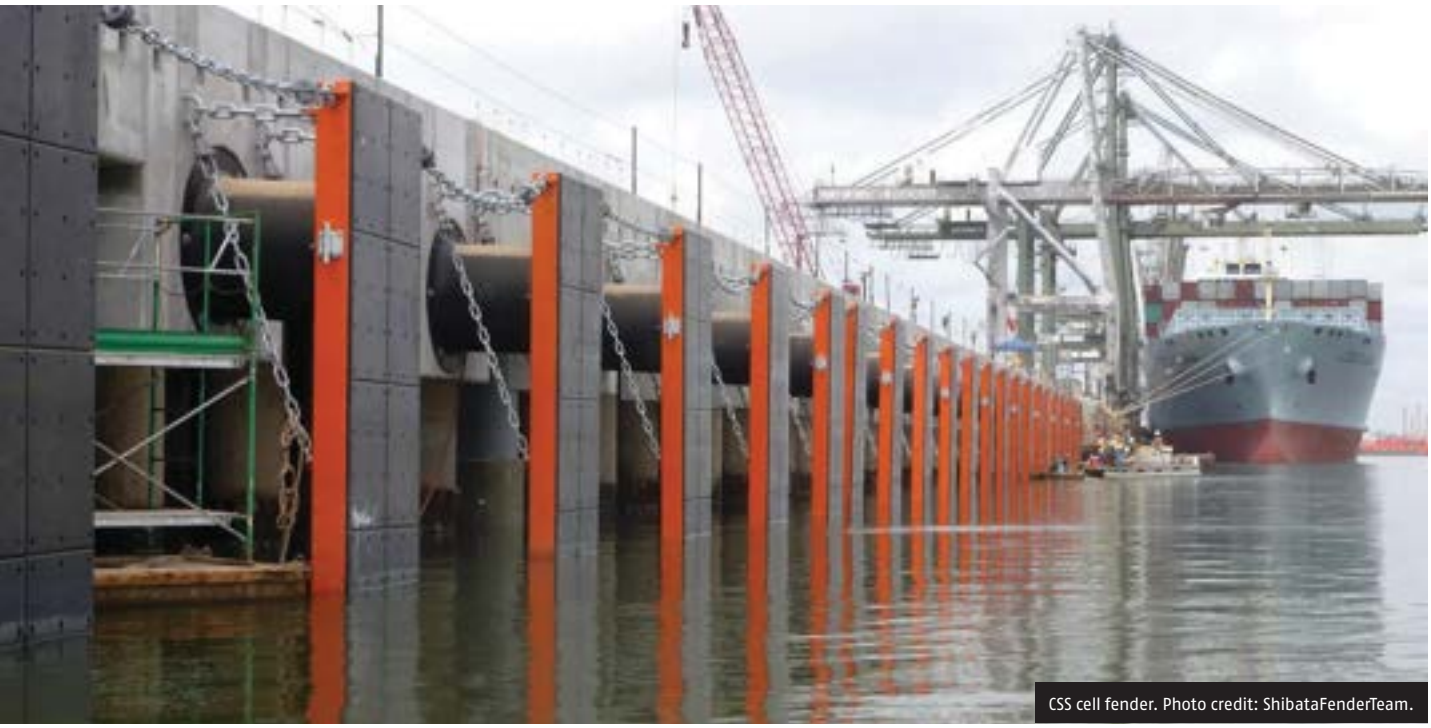
CELL FENDERS

Cell fenders are characterized by a series of hollow cells, which provide exceptional energy absorption and low reaction forces. They are suitable for

Pipe pile fenders: Photo credit: Schuyler Companies.

Extruded fender. Photo credit: ShibataFenderTeam.

Steal beam fender. Photo credit: Schuyler Companies.



CSS cell fender. Photo credit: ShibataFenderTeam.

Donut fender. Photo credit: ShibataFenderTeam.

berths accommodating large vessels, such as bulk carriers and tankers.

Super cell fenders are an advanced version of cell fenders, featuring a larger contact area and improved energy absorption capabilities. They are often preferred for heavy-duty applications, such as LNG terminals and cruise ship docks.

SELECTION CRITERIA FOR FENDERS

At the very least — the selection criteria for fenders should include design considerations, materials and durability, and maintenance requirements.

FACTORS TO CONSIDER WHEN CHOOSING FENDERS

The following factors should be considered during the fender selection process:

- **Vessel size and type:** The size and type of vessels that will be berthing or mooring at a facility are paramount in fender selection. Different vessels generate varying levels of kinetic energy during berthing, necessitating fenders that can adequately absorb and dissipate this energy.
- **Berth configuration and conditions:** The layout and configuration of the berthing area — including water depth, tidal variations, and available space — influence the choice of fenders. For instance, tight berths with limited maneuvering space may require fenders that offer precise protection.
- **Impact energy calculation:** Calculating the expected impact energy during vessel berthing is crucial. This involves analyzing factors such as vessel speed, weight, and angle of approach. Fender systems must be selected to match or exceed the calculated energy to ensure safety.
- **Environmental factors:** Environmental considerations — including wind, wave action, and water currents — can affect fender performance. Fenders must be chosen to withstand these conditions and maintain their effectiveness in adverse weather.

FENDER DESIGN CONSIDERATIONS

The design of the fender system itself plays a significant role in its suitability

for a specific application. Key design considerations include:

- **Type and shape:** Different fender types — such as cylindrical, D-shaped, or cone fenders — have unique designs optimized for specific functions. Choosing the right type is essential for effective energy absorption.
- **Mounting and attachment:** Fenders can be installed in various ways, including fixed or floating configurations. The choice depends on the berthing facility's design and requirements.
- **Deflection capability:** Fender systems should have the appropriate deflection characteristics to accommodate vessel movement and impact without exceeding their limits.

MATERIALS AND DURABILITY

The materials from which fenders are constructed significantly impact their longevity and performance. Considerations include:

- **Rubber quality:** For rubber fenders, the type and quality of rubber used are critical. High-quality rubber compounds enhance durability and resistance to environmental factors.
- **Reinforcement:** Fenders may incorporate reinforcing materials such as steel or nylon to improve their structural integrity. The choice of reinforcement material should align with the intended application.
- **Corrosion resistance:** In corrosive environments, such as saltwater, selecting materials that resist corrosion, like stainless steel components, is essential to prolong fender life.

MAINTENANCE REQUIREMENTS

Fenders, like any other equipment, require regular maintenance to ensure their continued effectiveness and longevity. Maintenance considerations include:

- **Inspection and monitoring:** Scheduled inspections to check for signs of wear, damage, or degradation are essential. This helps identify and address issues promptly.
- **Cleaning:** Fenders should be kept clean and free of debris that could affect their performance.
- **Repair and replacement:** When fenders show signs of significant wear or damage, timely repair or replacement is crucial to maintain safety and operational efficiency.

CONCLUSION

Fenders are indispensable in marine construction, serving as crucial protectors of both vessels and infrastructure. The key takeaways to remember include recognizing the diversity of fender types, understanding the importance of meticulous selection criteria, and placing an unwavering emphasis on safety throughout their deployment.

PILE BUCK'S TOP RECOMMENDED FENDER SUPPLIERS

SHIBATAFENDERTEAM GROUP

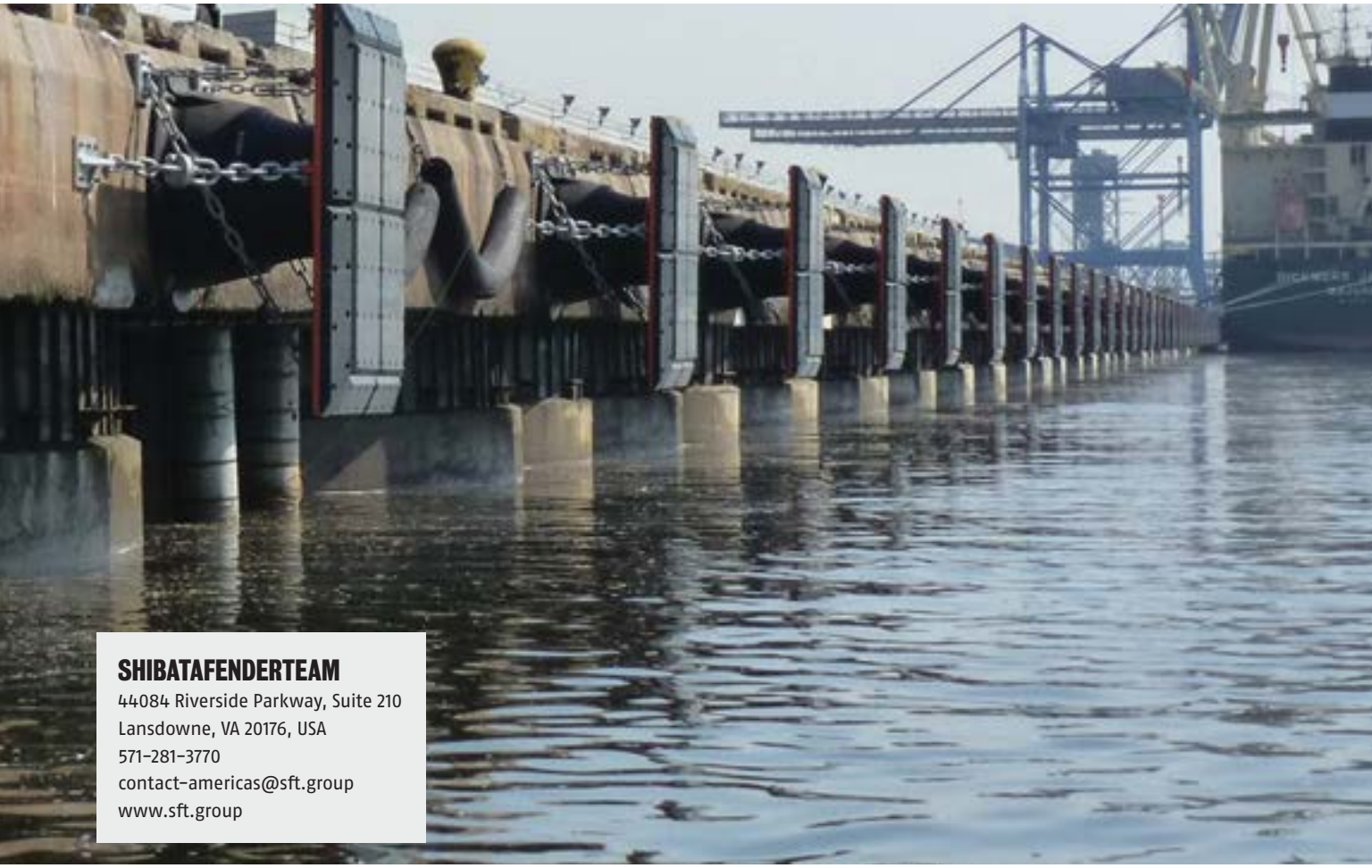
DESCRIPTION

The ShibataFenderTeam Group is the leading international fender manufacturer with 60+ years of group experience in fender production, +145,000 fenders in service, and 100 years of experience in the production of rubber products. They are headquartered in Germany with regional offices in the US, Europe, and Asia, supported by a large network of well-established local representatives on six continents. As a specialist for customized fender solutions, they focus on vertical integration with in-house manufacturing and full-scale testing.

SFT offers the full range of marine fender products, from simple rubber profiles up to highly engineered systems as well as accessories and fixings. Decades of experience have gained them a reputation as a dependable partner in the international port, harbor, and waterways market.

PRODUCTS AVAILABLE

- Rubber Fenders
- Foam Fenders
- Pneumatic Fenders
- Corner Fenders
- Rolling Fenders
- Extruded Fenders
- Komposite Fenders
- Tug Boat Fenders
- PE Sliding Plates and Fenders
- Special Solutions
- Accessories and Fixings
- Bollards



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An SFT foam fender.

Focus on fenders

Claire Instone talks to a representative from ShibataFenderTeam to gain some expert insight into the fender market.

Ocean shipping is not only an integral part of the supply chain for most industries, but also a vital pillar of the global economy. 90% of traded goods are transported by sea - a growing trend, with volumes to further increase.

Together with the rise of seaborne trade comes an increasing need for modern ports with berthing options for increasing vessel sizes around the world, and with that an increasing need for marine safety measures, with fenders being one of them.

Fenders are safety-critical equipment for maritime infrastructure. They are the interface between vessels and berths - fenders protect vessels, infrastructure and most importantly, people working in port or onboard a vessel.

With fenders being such an integral part of a port's functionality, *WPD* wanted to get some expert insight on what to look for in a fender and its manufacturer.

Where does the expertise lie in fender manufacturing?

Generally speaking, within the fender market across-the-board major innovations are less common and most of the focus is on customised solutions for very demanding projects, new engineering approaches, and working to meet the increasing demand for sustainable fenders.

The real expertise lies in being able to produce bigger and safer. In this regard, SFT has put a lot of effort in the past to increase capacity and respond to increasing demand, mainly at the production facility in Malaysia.

As technical specialists, we at SFT have noticed that Foam Fenders and Buoys are experiencing unrivaled high demand and impressive development. It is pure craftsmanship for our skilled staff in our facility in Rechlin when manufacturing high-quality foam fenders up to the biggest sizes in the market.

An Ocean Guard Foam Fender measuring 3000x4500 mm is not a simple task to complete. What is needed is an experienced manufacturer with the right equipment and know-how to complete the job. (SFT can boast being the only company to offer such high-quality fenders made in Germany).

The manufacturing of such a large fender takes time and skill. First, the dimension and fender weight are a challenge to our colleagues making this fender by hand! Moreover, the fender size makes the manufacturing control process in each step of the production even more important as the enormous number of materials have to be balanced throughout the fender to ensure a homogeneous product, skin thickness and nylon distribution.

Even the simple task of keeping the fender round is a different story when you make a 3000x4500 mm fender vs. a 1200x2000 mm!

What do you think clients most value in a fender manufacturer?

Trust. Trust is essential in the maritime industry. We always stay in close contact with our clients, with regular and direct communication. This level of availability is something we experience becoming more and more demanded by port authorities, contractors and consultants.

Projects in maritime infrastructure always go along with heavy investments, long-term planning and long-term commitment. Therefore, trust in the partner that accompanies you along

the way is essential. All market players within the industry need a lot of perseverance until they can finally see their project become "live". Having a partner that stands next to you during all project phases is most valued by our clients; they invest heavily in port infrastructure and expect a parallel commitment from us.

The trust placed in our team is one more reason to strive for excellence in all we do, and it is also the foundation of all our partnerships.

Moreover, with an increase of global port projects, it gets more and more important to have a partner with a global reach. The SFT Group has a worldwide presence through sales teams and agents - 5 offices and agents on all six continents - with decades of experience in fender design. Clients need to be able to rely on global support and at the same time, rest assured that we are able to adhere to local standards and regulations. Accessibility and availability of our team is a priority.

Do you have one key tip for customers?
It's important to know that foam fenders can be re-skinned. Refurbishment extends the fender lifetime and saves resources and is a sustainable and cost-effective alternative to buying new ones.

Our Ocean Guard Fender, a foam fender covered with a thick nylon reinforced polyurethane skin, can be re-skinned. The SFT Group performs this service on a regular basis for clients.

Back in 2021, we worked at the Port of Kiel in Germany where the fenders had been in service for about ten years and the outer PU skins showed the usual signs of wear and abrasion. The fenders were still performing even after a decade, but to extend their lifetime further they were overhauled.

With SFT this service included transporting the fenders to our production plant in Rechlin so our experts can assess all needed repairs. The factory takes off the current PU layers and then applies a new PU skin with a thickness of approx. 20 mm (skin thickness depends on overall dimension of the fender) on the rough surfaces of the prepared fender. As part of the overhaul, typically the internal chain as well as the swivel, swivel plate and bolts are also replaced, as corrosion inevitably appears on steel elements after 10 years in seawater. For this special project, we have overhauled 11 Ocean Guard Fenders with a diameter of 1000 mm and a length of 3000 mm.

The overall turnaround time was about 5 weeks from the pickup and overhaul to the reinstallation. The fenders were reinstalled at berth 32a at the seaport of Kiel and are again ready for further decades of service.

Finally, can you detail some of your most recent projects?
In the last few months, some projects that ShibataFenderTeam Group (SFT) have been working on and planning for months, even years, have become reality. The most prominent of which are detailed below.

Wilhelmshaven, first LNG Terminal in Germany, equipped with ShibataFenderTeam Fender Systems

Wilhelmshaven, a deep-water site on Germany's North Sea coast, became the country's first LNG Terminal at the end of 2022. SFT's German office designed and delivered customised fender systems for the project: three sets of fender systems, including SPC Cone Fenders and steel panels (5000 x 3300 mm) with UHMW-PE pads.

The design really focused on permanent mooring and safety for the chartered FSRU. The demanding 3-month time frame required close communication and coordination with the contractor and SFT team at the German production facility. The delivery schedule could only be met by supplying the steel components from our own factory in Germany.

New dry dock at the Port of Djibouti equipped with ShibataFenderTeam Wheel Fenders

Djibouti has made significant investments in recent years to enhance vessel handling and berthing. Among these investments is a new 50 x 20 meter dry dock equipped with eight Wheel Fenders designed and manufactured by SFT to protect its entrances.

The fenders were designed by our in-house engineering team and produced in our production facility in Rechlin, Germany, with welding done according to ISO15614 standards.

The manufacturing process was supervised by Lloyd's Register as an independent third party to ensure compliance with project regulations.

43 ShibataFenderTeam Cone Fender Systems for the expansion of Freeport in Texas, USA

The Freeport port in Texas is undergoing expansion to accommodate larger vessels, with berth seven being refurbished to become the deepest container terminal in the Gulf of Texas and a new berth, number eight, being constructed. ShibataFenderTeam designed and delivered 43 sets of SPC Cone Fender Systems with closed box panels.

The project faced challenges in maintaining consistent fender design between the berths and accommodating the curved berthing line of berth seven, but ultimately achieved a unified and safe solution inserting individual spacers for each of the berth 7 fender systems.

Multiple ShibataFenderTeam fender systems for new Tibar Bay Port in Timor-Leste

Timor-Leste, a country in Southeast Asia, has developed the Tibar Bay Port as its largest infrastructure project to support the country's 20-year development plan; the port aims to handle 750,000 containers annually. SFT supplied Tibar Bay Port for the past four years to complete, in recent months, state-of-the-art equipment for safe vessel accommodation. The most recent - and last - delivery included 41 sets of CSS Cell Fender Systems, 22 Staghorn Bollards and 10 Steel Ladders.

High profile project to refurbish Port El Bluff, Nicaragua with ShibataFenderTeam Cone Fender Systems

Puerto El Bluff in Nicaragua underwent improvements, including replacing the wooden berthing structure with a new steel dolphin structure. ShibataFenderTeam worked closely with the client throughout the project to design and deliver a customised fender system: two sets of double SPC Cone Fenders systems and one set of SPC Cone Fender System with redesigned anchorage to fit the new dolphins.

Design and manufacturing were completed in-house and representatives from the Nicaraguan client visited SFT's manufacturing facility in Malaysia to witness the testing process of their fenders.

Customisation, the (new) standard in the fender industry

Fender systems are the interface between ship and berth. A safety measure to protect vessels, infrastructures and people, that needs to perform for its entire service life, even in the most remote locations and under harshest conditions.

Designing good fender systems encompasses many skills and disciplines, and standards are needed to design and manufacture them. Nevertheless, even two berths for the same application might require different fender systems and a design concept that is rarely simple and never an off-the-shelf solution. Putting an extensive focus just on the rubber unit and more or less ignore the requirements of the overall project, is a dangerous one-sided approach to fender design, which unfortunately seems to become common practice in the industry by some. No two projects are alike, no two solutions are alike and customisation is the new standard when dealing with a marine infrastructure project.

Figuring out customisation

First things first. Customisation refers to the act of adapting a product or service to suit certain requirements and preferences, and also applies when modifying something to solve a specific task. Translated into business language this means, customisation is the result of putting the spotlight on the project and the customer.

We are used to seeing customisation in the retail industry, e.g. soft drink cans are customised with the buyer's name, or in the automotive industry. Now, what is the path to fender system customisation? A focus on the uniqueness of each project and of each client. This uniqueness might come in the shape of the product, the installation, sustainability, delivery and other special project and client requirements.

A customised fender system can only perform as expected if several aspects are considered, such as the project conditions, all the system components and their manufacturing. Considering them all and treating a fender system as one unit is the way to meet the project and client expectations.

Project conditions

Firstly, deeming and delivering each project as unique means taking into account the constraints of the project. These are very individual and comprise, amongst others, the local climate, vessel types and berthing energy, location, berthing approach or berthing structure. Furthermore, the review of different characteristics of the various fender types should also be incorporated in the design process.

Components

Part of the customised approach is to ensure the fender system is up to its task, the designer must keep an eye on the big picture, while paying attention to every little detail. The rubber unit is a crucial component of the system, but it is only as good as the system's overall design. A fender system is made of different components: rubber unit, steel panel, chains, anchors, fixings and PE plates. All of them and their interaction should be seen together to make sure they are all designed in the correct balance and work together properly.

Manufacturing

From a technical point of view, the road to a good rubber fender is completed with the combination of high-quality source materials and a fender manufacturer expertly skilled to guarantee the performance of the final product to the individual project requirements, and also international standards. The same applies for steel parts and PE as well.

When speaking about customisation, the focus is often on the product itself as an individual solution for the client, based on project requirements. However, customisation goes far beyond that and is valid for the entire steps of a project, from consulting to design, to manufacturing and delivery.

Such level of attention to the uniqueness of each project and of each client is only possible when relying on a company that has the resources and experience to design, engineer, manufacture and follow up the whole process until its completion.

In environments such as the Antarctic, the short installation window required a customised service and a very close and individual coordination between the client, the contractor and the manufacturer.

What it looks like: A Trajectory to Customisation

Projects that speak for themselves

The construction of a completely new port is a huge project, coming with the same project conditions, such as weather, tides and water levels, but challenged to meet many different requirements. This is the case of the international Seaport of Turkmenbashi, the largest on the Caspian Sea, customised to safely berth different types of vessels at its different terminals: general cargo, dry bulk, ferry, shipyard, passengers and containers.

On the other hand, there is a single pontoon in Singapore in an exposed location with strong currents, swell and choppy waters that needs to perform 24/7. Customisation came with extra support of the Cushion Roller to dampen the main impacts and with the addition of a roller hinge to accommodate the tilting movements.

The small passenger terminal in Stubbekoebing (Denmark) needed a curved fender system so the ferries could pivot "around" the dolphin, which serves as a turning support. The customer's requirements in this case called for customisation in the engineering, solved with a pre-bent panel that snugly fits around the dolphin, creating an energy absorbing and deflecting fender system.

A recent project in Norway came with the challenge of differently sized dolphins to which the fenders had to be installed. Additionally, the existing concrete was quite old and partly damaged, and the required stand-off distance was rather small, posing a high demand for the design and installation of fenders, panels and chains. These three challenges were overcome with a customised product that integrated special tubes into the steel panels to avoid the need of additional flanges.

Logistics can also be the focus of attention, especially if the construction site is located near the centre of a large city, where the lack of space to store materials is one of the biggest issues. In this case in Sweden, customisation comes in the shape of the delivery being done in separate shipments, simple solution but not handy for every supplier.

And what about if the construction happens in Antarctica, an "ecologically fragile and worth preserving" environment. In such environments, the short installation window (only possible during the Antarctic summer) required a customised service and a very close and individual coordination between the client, the contractor and the manufacturer: "Try to imagine all the steps they [the installation crew] have to take and under what conditions they have to do it. If you give them small bits and pieces to assemble in -50°C. Give the team something that's easy to assemble and to perform for a long time without maintenance."

To finish this trajectory, let's look ahead in the future where customisation is coming in the form of sustainability. A LNG project in Jakarta (Indonesia): "After 10 year of being exposed 24/7 to waves, wind, sun, and salt water at an offshore terminal without major maintenance, all fenders are still in good condition" and will continue to do so for at least the next 10 years.

With more than six decades of group experience, ShibataFenderTeam have always had the focus on customisation. For the past five years, we have advocated in the industry for a holistic approach to fender system design, valuing the aspects of project conditions, system components and manufacturing as being seen equally. Starting in 2021, we finally noticed an evolution within the industry and corresponding standards, and it is good to see that others finally follow.

What to expect from 2023

Sustainability will move further to the centre of the table with the goal to reduce emissions. Reducing the impact is key, like with reskinning Foam Fenders so they can be used again and do not need to be manufactured new - which we have done for the Port of Kiel (Germany). Also reduce from the beginning, which means

The international Seaport of Turkmenbashi, the largest on the Caspian Sea, customised to safely berth different types of vessels at its different terminals.

working with a sustainable and green design to extend the life cycle of fenders. Following this approach, it will not be necessary to waste more raw material and other resources for early refurbishments or even new fenders in cases of damages.

The industry path in 2023 will also be influenced by the release of the updated 'Guideline for the design of fender systems', revised by PIANC Working Group 211. Being future oriented, this updated guideline will strengthen a sustainable approach and includes a holistic view to fender system design. For the market, we expect a further positive development. First with the - hopefully soon to be calmed down and solved - disruption of the supply chain (with regards to raw materials and shipment in general) and also with Governments maintaining the flow of money for infrastructure projects to work against the Corona impacts.

Finally, we have seen two applications rising lately as key in the industry. Energy diversification being the uppermost concern, has meant that LNG supply installations are a big topic in Northern Europe: new terminals are being built to help countries to become more energy independent. And, back to normal after the Corona crisis, cruise projects which had been paused due to the pandemic are flourishing as tourism starts up again.

Herein: *On a project in Singapore in an exposed location with strong currents, swell and choppy water, customisation came with the extra support of the Cushion Roller.*
Below: *Reskinning Foam Fenders so they can be used again and do not need to be manufactured new - successfully done for the Port of Kiel.*

The fenders of the maritime universe

The ShibataFenderTeam Group (SFT) is a leading customised fender solutions manufacturer for high-quality rubber fenders to ports and terminals worldwide. Engineering, safety and quality go hand-in-hand as SFT guarantees reliability in one of the most critical elements of the industry. Report by Andy Probert.

Critical engineering, science and added value all converge through the ShibataFenderTeam Group (SFT) as it consistently channels high-quality fenders to ports, harbours and waterways for the ultimate dual protection of vessels and infrastructure.

SFT brings together two diverse elements from very different parts of the world and is distilled into a leading international fender manufacturer. It offers a full range of marine fender products, from simple rubber profiles to highly engineered systems, accessories and fixings.

Shibata Industrial, headquartered in Japan, was founded in 1923 to produce rubber boots but quickly diversified into other rubber products. FenderTeam was launched by a couple of partners in Germany in 2006, backed by their expertise in the fender industry.

Over time, the alliance of the two quickly strengthened, with Shibata becoming a significant shareholder in FenderTeam. The cooperation culminated with a uniform global entity under the brand name ShibataFenderTeam in 2015.

Global presence

The company is now a $60 million business with an 80-strong workforce worldwide. In the last 15 years, SFT has completed over 7,300 projects, being responsible for the design and manufacture of more than 120,000 fenders that are in service today.

Shibata Industrial remains responsible for production and R&D of the rubber units, while SFT handles design and sales. The group maintains its own production facilities for high-quality rubber products, steel panels and foam fenders.

"Our vast group experience in fender production has earned us a reputation as a dependable partner," commented Board Member Dominique Polte. "We have consistently posted strong growth rates of 30% and more."

With the German-based team handling projects and orders for Europe, the Middle East and Africa, it has regional offices in the US, Malaysia, Spain and Netherlands to facilitate local contact with customers. The operation is also supported by an extensive network of well-established local representatives on six continents.

Mr Polte disclosed: "Our fenders, of which 99% are fixed to quay walls, can be found close to the North Pole all the way to Antarctica. Fenders are in some of the remotest locations on earth; in Northern Canada, Russia, in the Caspian Sea, Greenland and South America."

SFT has a strong focus on manufacturing all major components in-house, ensuring the highest quality and reliability at its production facilities. The German facility has gained expertise in steel fabrication, corrosion protection and HD-PE Sliding Fender Extrusion, and since 2014 it has also produced foam fenders.

Rubber fender manufacturing facilities in Malaysia and Japan have an extensive proven track record of producing high-quality rubber fender products.

Manufacturing innovation

With a wide variety of molds, SFT can manufacture cone fenders, cell fenders, arch fenders and other types. Extensive quality control oversees raw materials, production processes; and when the final product is ready, the state-of-the-art test equipment is used for verification testing.

In addition to rubber fender manufacturing, Shibata Industrial has its own mixing plant for rubber compounds in Malaysia to ensure even more control over the entire production process.

"As it has a great influence on the quality of the fenders, a perfect mixing process has always been of paramount importance to us," asserted Mr Polte.

The company's two-stage mixing plant is a natural consequence of that priority – an investment that underscores a commitment to quality products and the market. This new plant is the first fender manufacturer to use the latest generation of compound mixers and associated technology.

"Creating and protecting value is the essence of what our products are meant to do," he added.

Having amassed more than 50 years of group experience in fender production and about 100 years' experience in the production of rubber products, the group honed its skills to provide excellence in every product and project it takes on.

"Our role goes beyond simply designing and manufacturing," detailed Mr Polte. "We act as a real industry partner, providing excellent products and technical expertise. Clients are part of the team effort, and we are with them each step of the way from concept to delivery and beyond."

Critical to port infrastructure

Highlighting some of SFT's outstanding projects, Mr Polte said that since 2012, it has delivered more than 80 sets of cone fenders, in excess of 60 sets of double SPC cone fenders and over 200 bollards and various fender safety applications to the Port of Stockholm, for port developments at Värtahamnen, Kapellskär and Norvik.

"Our fenders are critical when it comes to either refurbishment of ports and terminals, or the extension of new quays, as were experienced at the Värtahamnen Terminal, and new berth extensions at the port in Kapellskär."

Washington United Terminals marked the beginning of the group's Americas success story and the first order of 14 sets of cone fender systems to the Port of Tacoma container terminal in Washington state, an important hub in the Northwest Pacific region.

Since that order in 2010, SFT has maintained a long track record of fender contracts with The Northwest Seaport Alliance (NSA), which manages five container terminals at Tacoma.

"These projects and association with NSA are the perfect example of our holistic approach to fender design, proven durability and reliability, verified by independent testing," said Mr Polte. "Those first fender systems are still in daily operation more than ten years later, safeguarding the majority of container handling."

Indicating its vast and varied project management experience, the company has recently completed on contracts for a port near Jakarta in Indonesia; a bulk terminal in Seri Manjung, Malaysia; a new container berth in Marseille, France, and at the Toft Fishing Pier, for a small village on the Shetland Islands.

Cooperation with local agents is always based on mutual trust, loyalty and a long and close working relationship to keep up with the company's high internal quality standards.

"To ensure our products are up to the task, we design our fender systems with an eye for the bigger picture while paying attention to every detail," said Mr Polte. "Engineering excellence means that our partners can be confident in expecting the best from us."

Preferred fender provider

Mr Polte confirmed the company is solely focused on continuing to grow its strong position in the market.

"We have a passion for the product, and we want to become the preferred provider in more and more countries: think fenders, think of us."

While the company had been relatively untroubled by the pandemic era, due to having long-term contracts and projects in place, today's main concerns are the global supply chain – particularly the ready supply of raw materials – their rising costs and related logistic challenges.

Mr Polte said: "We differentiate ourselves from competitors in the market because we come to the table with a package that runs from concept, design, manufacturing, partnership and completion with a key focus on the design of the entire system.

"Through that arc, we emphasise that all the key components of a fender system are essential to each other and the ultimate performance in a port or terminal. We can bring critical thinking, engineering, design and the desired outcomes. That's why clients return to us again and again."

He concluded: "With our expertise, (and backed by Shibata Industrial's incredible experience in manufacturing and R&D) we are continuing to set the standard for the best quality fender systems on the market today.

"We understand what needs to go into a good fender unit, how it should be designed and how it can be adapted to a client's requirements. SFT always delivers the best in reliable and suitable solutions." ■

The MCM Conversation with … Dominique Polte, ShibataFenderTeam

By Warren Miller

ShibataFenderTeam is one of the leading manufacturers of fenders for ports and other marine purposes. Its business is almost entirely custom work—fenders designed for unique harbors and applications, and largely manufactured in-house.

But what may be most unique about ShibataFenderTeam itself is how compact the staff is for an enterprise that not only ships product around the world, but designs and interfaces with customers around the world, as well.

The smooth functioning of a small yet capable team that is spread around the world is the direct purview of its president—CEO, board member and co-founder Dominique Polte.

"You have certain cycles in activity—per country, per business, per type of terminal. There's always a port being built somewhere."

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What was your background? You're in a field that has a strong emphasis on engineering, yet you're not an engineer.

My background is business administration, so I'm more on the commercial side. I started in the fender industry right after university. The first year was with our competitor, but by the end of 2006, several of us at that company decided to start our own company. Fender Team became operational in 2007, which is when I joined. Back then, there were three or four people in the office.

How did Shibata become part of "Fender Team"?

We worked with Shibata from day one. Shibata Industrial Japan has been around for almost 100 years, and they have a proven track record with fenders since the 1960s. They now are the majority shareholder in our company, which is why we combined the names. In 2015, we combined the operations, taking over responsibility for Asia and Australia. The brand name Shibata was very well established in those markets, so it made sense to combine them. In South and North America, you can still find Shibata installations, but they're mostly from the 1970s through the 1990s.

Why did you form your own company?

My partners and I wanted to go in a different direction. We wanted to deploy a different strategy and approach to the market. It's a customer-oriented, holistic strategy. We're very close to the client and follow up regularly with the people on the project. Some companies quote a price, then lean back and wait for the order, but that's not how it works. You have to be with the client, be available, be reliable and take care of things. We're in the construction industry, which means there's always an issue somewhere. And if there's an issue, we take care of it and fix it. That's one of the aspects that differentiates us from others in the industry.

How do you run a global company with a small staff?

Well, there are only two global companies, one of which is us, and the global market for fenders is not that big, maybe $200 million annually. That's why we can cover so much ground with just a few people.

Take South America, for example. In Chile, we supplied fenders to virtually all the port development over the past 10 years. These fenders have a service life of 15 to 20 years, which means there's not much business after you sell a fender project. There's spare parts here and there, but nothing major. Then there was a lot development in Colombia, and now other regions are popping up. That's why you can cover a lot of ground with a few people.

It also depends on the industry. The cruise ship industry has been down the last year and a half because of Covid, but in the States, LNG projects have picked up because the U.S. needs terminals to export product.

The point is, you have certain cycles in activity, per country, per business, per type of terminal. There's always a port being built somewhere.

"You have to be with the client, be available, be reliable and take care of things. We're in the construction industry, which means there's always an issue somewhere. And if there's an issue, we take care of it and fix it."

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Dominique Polte's photo from SFT's first catalogue in 2007.

What do you focus on in your role with the company?

I'm one of the owners, and on the board, so I do look at everything. But my main focus is on sales, marketing and engineering. I travel a lot to meet with clients, as well to see our manufacturing facilities, and other operations we have around the globe on a regular basis.

Does ShibataFenderTeam come up with rubber products that might have other uses outside of fenders?

Not really. We focus on our core business at the SFT Group. Shibata Industrial Japan, on the other hand, offers a wide range of rubber-related products. Fenders are something we know and are really good in. We'd rather do something right than do a different product where we're not 100-percent in on it. Our focus on fenders is one of our strengths. If you diversify and look into other products, you lose the focus on your core business.

Rubber fenders are an industry where innovation is limited. The interesting part comes with the engineering and design of the systems. That's where the challenge comes. All the fender systems are made to order. The rubber units are pretty much

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"We cover a lot of ground with a small number of people." Polte and SFT's Kuala Lumpur-based sales rep Chris Millwood on a road show.

standard, but the engineering is for the overall system, and this is why we call what we do a holistic approach. If you don't have a well-defined system, it won't work.

My go-to example is a dinner recipe. You can buy the best ingredients, but if your recipe is wrong, the dinner won't taste good. This is the same with a fender system. You can have quality parts, but if the design is wrong, your system will fail. People often focus on the rubber unit only, which is an important part, but the rubber unit only works if the overall system is well-defined.

Where will ShibataFenderTeam's growth come from?

The main growth areas still are South America and Asia. Europe is pretty saturated. There are always new projects, but you don't have the growth rates of other markets. The U.S. is unique. There's always a good amount of activity, but the projects often are upgrading or refurbishing projects. So any stimulus money that is introduced into the market will be beneficial, because that will go into infrastructure. The prediction now is that about $17 billion will be

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"My focus is to make sure that we have the right people in the right places, and that we have an organization that is well set up for the future."

set aside for ports and harbors, and a good chunk of that will go to fenders.

One issue is there may be "buy American" requirements, because some of the materials, like the rubber units, are not made in the U.S. They have to come from some foreign country. There's no way around it. Other components—like steel panels, for example—we would have made in the U.S.

Then the cost is another huge issue. U.S.-made steel, compared to steel made in Europe, is at least double the price, which amazes me.

We have our own production in Germany, Malaysia and Japan, which is where many of our components come from. We have a production partner in the U.S. for a certain fender type, and for steel components in the U.S., we have external partners we're working with.

We make our rubber components in-house. We have the ability to produce almost everything in-house, but to meet the demands of the market, we also have strategic production partners around the globe, mainly on the steel side.

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Where do you see yourself in 10 years?

We will continue to grow the company. My job is to make sure that the company is organized and running well. The organization and the people in it are the backbone of the company. My focus is to make sure that we have the right people in the right places, and that we have an organization that is well set up for the future. We need to have young people growing within the organization, because when we look into the future, we have partners in the company getting closer to retirement age.

We want to continue growing the company and establishing our market position and brand awareness. There's still more potential to grow the business.

"My go-to example is a dinner recipe. You can buy the best ingredients, but if your recipe is wrong, the dinner won't taste good. This is the same with a fender system. You can have quality parts, but if the design is wrong, your system will fail."

Transparency and Trust

ShibataFenderTeam (SFT) talks to WPD about their holistic approach to fender system design.

What makes your fenders stand-out from the crowd? Why would a customer opt for your fenders?
At SFT we adopt a holistic approach to fender design and manufacturing.

Can you explain what you mean by 'holistic approach' in regard to fender design and manufacture?
At SFT our holistic approach means that our engineers design high-quality fender solutions taking into account all the individual elements of a fender system (rubber unit, steel panel, chains, fixings etc.) while other manufacturers can get lost as they only focus on the rubber unit. Although the rubber unit is a very important part of the fender system, it works only as well as the design of the system. Often you can see premature failure of fender systems where the rubber unit shows damage. In most cases this damage does not happen because the rubber fender has a low quality or mistakes have been made during manufacturing- it happens because the design of the overall system is wrong. For SFT, it is paramount that the fender system has a holistic design, valuing all the individual requirements of the project.

With our engineering expertise, we view beyond what looks good in a drawing, because it might not work in the field. Each project has diverse requirements that are all equally important when designing a fender system and we are highly committed to increasing the industry's awareness of the relevance of a comprehensive concept. The consequences of overall design problems and typical failures should never be underestimated which is why we at SFT make it our mission to clear up common misconceptions about fender system design.

With the overall target to protect people, ships and port infrastructures, engineering excellence and project-specific solutions are crucial in the fender industry. The focus on customised and ideally balanced fender system designs is one of SFT's main strengths, improving the fender systems' performance as well as its service life. In short, our holistic approach reduces maintenance, replacement, and consequential costs at the terminal and improves the service life of fender systems.

SFT is pleased about its contribution to Panama's tourism sector and the sustainable development to the country.

In your opinion, why do clients continue to choose SFT's fenders?

We are our client's partner throughout the entire project including for example support, close cooperation, cost efficient solution, and engineering specially targeted to project specifications. Fender design and manufacturing is our core competence with all available resources used for excellence in design and product quality. Furthermore, we are always at our client's side with worldwide offices and a network of sales agents offering local support.

We value transparency and trust. With our White Paper Series on fender manufacturing, for example, we continuously advocate more transparency in fender production in order to ensure quality standards that are driven by a commitment to high-performance products and a clear sense of responsibility. Our experience and proven track record with several thousand references worldwide speaks a language of its own and proves that we are successful with what we are doing and that clients can rely on our expertise and experience as the the largest marine fender manufacturer globally. We offer product liability insurance with at least EUR5million coverage as well as extended warranties backed up with corresponding bonding.

What kind of new fender design features would you like to highlight for our readers?

Wave fenders: Different applications require different fenders and a design concept that is often not a simple off-the-shelf solution. While most terminals require as little friction as possible between the vessel and the fender, others are actually in favour of high friction levels. This is particularly of interest where small ferries berth head on to mooring posts to let passengers walk off and on the ferry.

Our wave fenders are offering nothing short but that very feature. With their alternating trough and peak design they are providing mechanical resistance due to their shape and physical resistance by the nature of the rubber properties. A solution well accepted by operators and proven in practice throughout years in service with calls every hour.

We took the good advice from installation crews and ports with respect to an installation as easy and fast as possible and most importantly having the executing works crew in mind who has to carry out lifting and drilling operations close to water. At the Port of Stockholm, a modular system was developed whereby the individual wave fenders are pre-mounted to a solid steel backing plate in a safe workshop environment. The pre-fitted modules then feature significantly less anchors to be cast or drilled and will make installation safer, quicker and more economic. A random number of pre-fitted wave fender modules can be placed next to each other as they all fit nicely into each other by overlapping and inter-connecting links, just like a puzzle. And should there still be the need for a replacement, all wave fenders can be easily removed from the modules and individually replaced.

You could say that this example reflects our approach: highly customised designs taking into account the client's requirements and the uniqueness of the project. We undertake new design challenges due to unusual existing substructures, e.g. for upgrading of berths or duplex coating systems for steel panels.

With a large number of manufacturers competing for business, how do you view the market for 2020 and how competitive is it going to be?

There are only two true global players on the market with SFT leading the field. Small or new manufacturers often cannot achieve the experience of long-established manufacturers such as ourselves as they have very few reference projects, and limited design and manufacturing expertise. Additionally, if a manufacturer is financially unstable, contractors face major risks to source the materials; this risk can be avoided when choosing a manufacturer who has demonstrated long term financial stability.

Both Brexit and the Coronavirus are having a knock-on effect on trade around the world - what are your expectations for 2020 world-wide? Have you adjusted your expectations for 2020?

SFT has not reduced expectations for 2020. We stick with our planning; there might be delays due to the tense economic situation worldwide but our outlook for 2020 stays strong. Brexit has an influence but more in the logistic than the actual business; the UK

Wave fenders in Stockholm.

market has a huge potential. It might be more complicated but the market is still strong; the gap that missing EU subventions leave might be closed by the UK government and pushing investments. With regard to the coronavirus pandemic the development and consequences resulting cannot be estimated at the moment. It is influencing the supply chain of manufacturing and shipping for the parts which are produced in Asia.

The SFT Group has a unique position that we are able to use the capacity of our state-of-the-art production facility in Germany where we can offer short term solutions, improve delivery times and make sure that target construction schedules are met. This flexibility is a great advantage which we offer our clients. Additionally, we take into account travel restrictions and have therefore developed a successful online seminar session which is individual and customised for our clients' requirements.

What is your view on how the market for fenders will develop over the next couple of years?

Keeping an eye on a company's environmental carbon footprint will grow in importance, such as for example, how to dispose of fenders after their life cycle; it should be noted that it is absolutely no solution to use recycled rubber in the fender manufacturing process. We believe there will be strong development in certain regions. Also, international trade will further increase even if some countries are protecting their markets, but with a long-term view, international trade will not decline. With strong interactions of world markets, the majority of trade will be processed through ports and harbours which, coupled with further growth of the cruise industry and the upgrading of ports to be prepared for larger ships, provides opportunities for us.

Were there any interesting order(s)/delivery last year and how is 2020 shaping up so far?

There are a few highlights we can share for this feature. For example, with the new Cruise Terminal in Amador, Panama is seeking to increase cruise tourism with an eye to potentially serving as a home port for cruise vessels. Subsequent to dredging the navigation canal and terminal area, the new terminal consists of a pier with two berths and a total length of 366m and can accommodate two mega cruise ships and handle all their passengers simultaneously.

SFT successfully developed a customised solution to accommodate the fenders to a broad range of tides and delivered 18 Ocean Guard Fenders of the size of 3300 x L 6500mm within a short time frame. Ocean Guard Fenders are foam fenders which are the perfect choice for cruise terminals since their urethane skin does not leave marks on the white hull of cruise vessels. SFT is pleased about this contribution to Panama's tourism sector and the sustainable development to the country.

Being located in the middle of the Kattegat, the weather can get rough and the visibility is not always the best. To make sure that the vessel's captains can locate the pier head regardless of the weather conditions, yellow UHMW-PE for the top of the steel panels was used. An individual solution for a challenging design, ensuring safe travel for the commuters of the region and a safe and secure berthing throughout the year - an order perfectly solved by ShibataFenderTeam.

SFT provided hinged fender panels for a pier head at Sjællands Odde.

In another project SFT provided hinged fender panels for a pier head at Sjællands Odde, a small village on the northwest coast of the Danish island Zealand. Its ferry connection to Aarhus, operated by ferry company Molslinjen A/S, marks an important hub for commuters who rely on a timely and reliable connection between these two parts of Denmark. With up to 24 departures, the port is highly frequented and used by some of the world's fastest ferries. The operator Molslinjen A/S recently commissioned the refurbishment of the pier head in Sjællands Odde to keep up with the new ferries.

ShibataFenderTeam equipped the pier head with 30 CSS 800 Cell Fenders and steel panels in 9 different sizes, each with a height of 4700mm and widths from 1500mm to 3100mm. The engineering aspect of the design was probably the most challenging, as the pier head was not completely smooth and the specification required that every panel should be hinged together. Through great cooperation with the client Molslinjen, ShibataFenderTeam delivered a perfectly fitting system.

Last but not least in Singapore, one of the first orders for SFT's new factory in Malaysia has already been the most comprehensive one for the company to date: 199 CSS 1700 Cell Fenders with 6100mm x 3370mm steel panels for the new mega port in Tuas in the West Region of Singapore are scheduled for final delivery and installation in 2021.

For the production of the fenders, 645t of rubber compound will be produced in-house in the new factory. Next to the rubber compound production, all the other fender manufacturing steps from compounding to curing and testing will be taking place on-site pursuant to the SFT Group's high quality standards.

Rubber fenders for the new mega port Tuas.

NEWS

Turkish "Galataport", the world's first underground cruise terminal, equipped with ShibataFenderTeam fender solutions

Galataport Istanbul, the fashionable port located at the heart of the Bosphorus, is poised to revitalize the cruise tourism industry in the area. It is also a global engineering feature; its unique hatch system allows the terminal to be situated underground, making it the world's very first underground cruise terminal. Spanning an impressive 29,000 square meters, Galataport can accommodate up to three cruise vessels and serve 15,000 passengers per day.

SFT worked in partnership with the contractor to design and supply the fender systems for this new terminal. In total we delivered 17 SPC Cone Fender Systems (1200, G2.8) with close box panels (2300 x 3210 mm). The project scope included the steel panels featuring white UHMW-PE low friction pads, a customization made upon the client's request.

Another distinctive aspect of this project is the prominent visibility of the fenders. Unlike the industry's typical practice, they are directly mounted on a pier that sees a high volume of daily foot traffic from city residents and visitors. Additionally, it is noteworthy that the entire process, from the initial order placement for the fenders to their complete installation, took only six months.

We are proud to have contributed to this project with another prime example of our collective dedication to delivering excellent customer service with a customized fender solution that caters to both: safe berthing and client requirements.

NEWS

ShibataFenderTeam delivers 11 SPC Cone Fender for the AGEO Terminals expansion in Port of Santos, Brazil

AGEO Terminals, a leader in handling liquid bulk at the Port of Santos since 2008, caters to diverse industries, including chemical and cosmetics. Its prime position on the left bank of the port – the biggest in Latin America – paves the way for ambitious expansions. A notable example is the construction of the new berth AGEO SP, capable of accommodating vessels up to 230 meters in length and with a capacity of 80,000 DWT, marking a significant development in the infrastructure.

To provide safe berthing for the larger vessels, SFT designed and delivered 11 SPC Cone Fender Systems (1300, G1.2) with closed box panel (2300 x 3860mm) pre-fitted with UHMW-PE pads. The order also included 11 double Quick Release Hooks (QRH 100t) manufactured and supplied in collaboration with our long-term partner company Straatman.

Given that the new berth primarily accommodates liquid bulk carriers, often transporting highly hazardous cargo, adhering to stringent safety and quality standards was crucial. The project's swift completion, initiated in early February and finalized by the second half of the same year, is also noteworthy.

Finally, AGEO was particularly pleased with the excellent customer service provided throughout this project. SFT celebrates the successful completion of the new terminal, a significant boost to AGEO's competitive edge and a reinforcement of its commitment to the region.

SHIBATAFENDERTEAM SUPPLIES COMPANY'S LARGEST-EVER OCEAN GUARD FENDERS TO JAWA SATU FSRU IN INDONESIA »

The Jawa Satu FSRU (Floating Storage and Regasification Unit), with its impressive 295 meters length and 43 meters width, serves as an operational LNG terminal. Its primary mission is to supply fuel to Jawa-1, the innovative gas-fired power plant said to be the Asia's first LNG-to-power project utilizing an FSRU. With an expansive cargo storage capacity of 170,000 m³ of liquified gas, Jawa Satu ensures a reliable and sustainable fuel source.

To guarantee the safety and stability of the FSRU's permanent mooring, ShibataFenderTeam rose to the challenge of designing and delivering the largest-ever Ocean Guard Fenders in the companies track record.

Four mammoth Ocean Guard Fenders, each weighing over 16 tons and measuring ø4000×6900 mm, were meticulously built to withstand the harshest offshore conditions, including extreme weather, currents, and waves.

To support the mooring system, SFT introduced a specially designed shock absorber in both the lower and upper chain assemblies, mitigating the risk of sudden shock loads. Additionally, a duplex coating process was applied to the chains, enhancing their resistance to corrosion from the harsh marine environment. This process combines galvanization (hot dip galvanizing) with an epoxy/PU top coating, ensuring the chains' longevity and reliability.

As the leading manufacturer of fender systems, SFT takes pride in contributing to this monumental project. With Jawa Satu representing a critical step forward in the pursuit of sustainable energy solutions in the region, the production of these fender systems not only secures the mooring of vital vessels but also contributes to the cause of clean energy. ■

WITH JAWA SATU REPRESENTING A CRITICAL STEP FORWARD IN THE PURSUIT OF SUSTAINABLE ENERGY SOLUTIONS IN THE REGION, THE PRODUCTION OF THESE FENDER SYSTEMS NOT ONLY SECURES THE MOORING OF VITAL VESSELS BUT ALSO CONTRIBUTES TO THE CAUSE OF CLEAN ENERGY.

HISTORIC PONT DES TROUS PROTECTED BY MORE THAN 300 FENDERS SUPPLIED BY SHIBATAFENDERTEAM

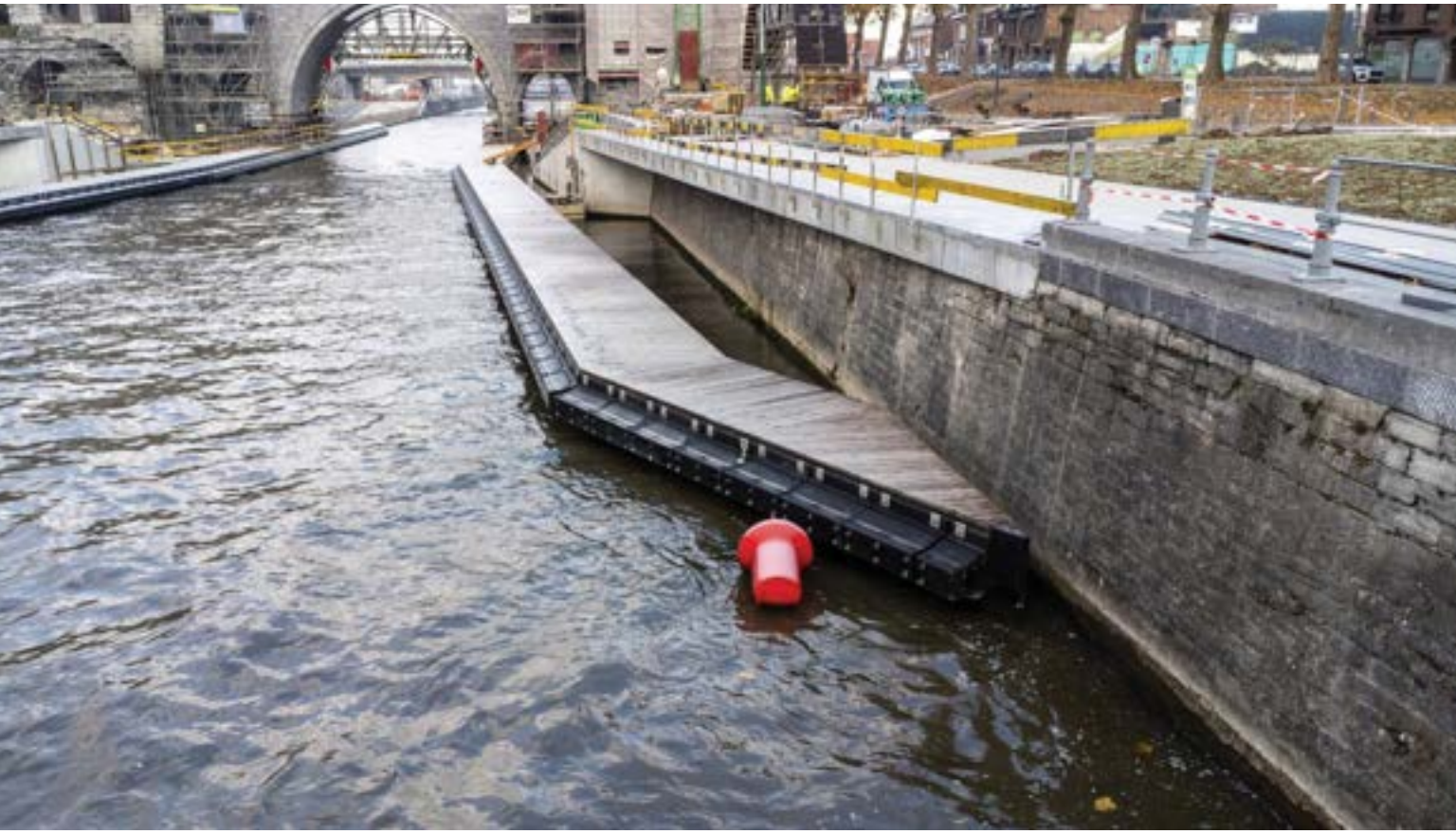
Belgium

Built at the end of the 13th century over the Scheldt River, Pont des Trous in Tournai is one of the most prominent heritages of Belgian medieval architecture. Five years ago, the authorities outlined a plan to renovate the Scheldt riverbanks; the last phase of the plan included broadening the main arch of the bridge to allow the passage of 3000 t vessels.

Our team at the Dutch office worked hand in hand with our local agent CGK Maritime and contractor BAM Galère to protect the renewed structure, and its historical past, from river traffic. We supplied 268 V Fenders (SX-P 400, G 2.7), also known as Arch Fenders, with UHMW-PE pads and 44 Cone Fender Systems (SPC 600, G 2.9).

Due the very old, bricked quay wall where no fenders can be mounted on, the 312 fenders are placed on two floating caissons, each 130 m long and 300 t of weight, that will serve as a vessel guide to protect Pont des Trous from the possible impact of 3000 t vessels passing by.

We at ShibataFenderTeam Group are proud to have contributed to the protection of this historic monument and thank CGK Maritime and BAM Galère for putting their trust in us. ■



SFT
media clippings

February 2024

Our offices.

ShibataFenderTeam Group.

The ShibataFenderTeam Group is the leading international fender manufacturer with 60+ years of group experience in fender production, +130,000 fenders in service and 100 years of experience in the production of rubber products.

Shibata Industrial, headquartered in Japan, is responsible for rubber production and R&D, with about 300 employees in Japan. ShibataFenderTeam, headquartered in Germany, handles design, manufacturing (steel, foam, PE) and international sales, with its about 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 the SFT Group's development. Providing safety critical fender systems, the SFT Group has a strong focus on manufacturing all major components in-house, ensuring highest quality and reliability at its own production facilities in Europe and Asia.

It is also pioneering the industry by being the first fender manufacturer to provide product and project specific figures on CO2 emission. Decades of experience have gained them a reputation as a dependable partner in the international port, harbor, and waterways market.

For up-to-date news, visit the **News Section** on our website

Contact us

SHIBATAFENDERTEAM