



Worldwide Mooring Solution!

The device has already been successfully used at quays in various ports: the ShoreTension. The invention of the Rotterdam-based Royal Boatmen's Association Eendracht (KRVE) allows for vessels to be tightly and reliably moored alongside the quay in all weathers. This yields substantial advantages for both safety and operations. A joint venture named ShoreTension Holding aims to make the device a worldwide success. The potential applications are countless - and not just in the container sector.



“The ShoreTension (see box at page 11 for explanation, ed) has unprecedented application possibilities which far exceed just container vessels.” KRVE board members Erik de Neef and Gerrit van der Burg are clearly enthusiastic about their own invention. On a screen, they show several situations in which the ShoreTensions have already proven their value. In the ports of Sines (Portugal), Ferrol (Spain) and Cotonou (Benin), for example, but also closer to home in Bremerhaven and of course Rotterdam. Van der Burg: “The port of Sines is affected by a long swell from the Atlantic which impacts handling operations. Moored vessels encounter considerable movement. The ShoreTensions absorb these movements and ensure that ships remain fixed to the quay with far greater stability. This greatly boosts productivity.” Another example is the recent visit of the FPSO Gryphon A (a gigantic ship for the production and storage of crude oil) to Rotterdam for major maintenance. For five weeks, the ShoreTensions demonstrated their added value here by keeping the ship tightly moored alongside the quay with great stability.

Cooperation in Joint Venture

“The ShoreTension has a huge potential in many sectors: bulk, offshore, containers, etc,” agrees ECT’s director Leo Ruijs on the broad market potential for the ShoreTension. Together with co-director Jasper Hooykaas, Ruijs was involved in the procurement of a 50-percent participation of ECT in ShoreTension Holding BV which will globally exploit the device. “We see many opportunities for the ShoreTension. What’s more, our participation fits in perfectly with ECT’s constant pursuit of innovation.” The other 50 percent in the joint venture is owned by All-round Port Services, an investment company of *Stichting Pensioenfonds voor Roeiers*, the pension fund for boatmen in Rotterdam’s port area.

In Combination with Special Mooring Lines

A ShoreTension has a safe working load of 150 metric tonnes. The device is therefore deployed in conjunction with special, high-quality mooring lines with a breaking strength of 200 tonnes. For this, ShoreTension Holding cooperates with wholesaler Hoenderop, mooring line manufacturer Geo Glestein & Son and DSM Dyneema, the manufacturer of so-called UHMWPE fibre branded as Dyneema®. Mooring lines made with Dyneema® are exceptionally strong and light. They have the same strength and diameter as a steel line, but will weigh only one-eighth. Marc Eijssen, Senior Application Manager at DSM Dyneema: “In cooperation between the four parties, a mooring line has been developed which has been optimally geared to and specifically meets the requirements of the ShoreTension regarding strength and stiffness. What’s more, it is fitted with a so-called Snake Skin Cover to protect the line against abrasion.”



From left to right Leo Ruijs, Gerrit van der Burg, Jasper Hooykaas and Erik de Neef: "The deployment of ShoreTensions makes handling operations safer, more efficient and faster."

Van der Burg: "As boatmen, we were looking for a strong partner to further spread our wings internationally. Preferably one which is also familiar with Rotterdam, which is why ECT was a perfect match." Van der Burg elaborates on the many applications for the ShoreTension. "Take Africa, for example; the device could perfectly be used at terminals which are being developed more offshore. Large market parties need handling facilities which are not present in the local ports there." De Neef adds: "We have also only just begun to scratch the surface as regards the potential application possibilities of ShoreTensions for so-called ship-to-ship operations at sea and in ports. The devices can provide perfect solutions to many bottlenecks."

From First Test to Structural Use

The relationship between ECT and the boatmen has already been excellent for a long time: there is a great degree of contact between the two and the boatmen of course moor and unmoor each sea-going vessel calling at ECT. When the boatmen wanted to test their first prototype of the ShoreTension in practice in 2009, ECT was therefore more than willing to cooperate. The first use of the device involved the stable mooring of a damaged vessel at the ECT Delta Terminal. After that, the ShoreTension was gradually used on a more structural basis. Especially at the ECT Delta Dedicated North Terminal, the ShoreTensions have already kept several vessels of MSC tightly moored to the quay in strong winds. Generally speaking, two ShoreTensions are required for ships up to 300 metres and four for longer vessels. Besides safety, the ShoreTensions also offer various operational benefits. Hooykaas: "If a ship is firmly moored

Participant in International Research Projects

Over the course of three years, 26 different participants - including (port) authorities, terminal operators (ECT), vessel operators, pilots, boatmen, suppliers, consulting firms and research institutes - investigated the effects of a passing ship's wash on moored vessels and what can be done in terms of port design to mitigate that. The use of ShoreTensions has been an integral part of this so-called ROPES project, which will be completed at the end of 2013. What's more, the ShoreTensions will be included in a new joint industrial project which will commence in the second half of 2013. This time, the research focuses on improving the safety of mooring large cargo ships off the coast of West Africa. The combination of heavy ocean swell, squalls and shallow coastlines here can create unpredictable conditions. The results of the new three-year research project aim to provide new mooring guidelines and systems which will improve offshore transshipment.

at the quay, our cranes are much better able to continue operating, also near the bridge. The movement of the ship always brings an additional risk there. The ShoreTensions significantly reduce this." And there is another advantage. "The ShoreTensions make it possible to moor a ship in such a manner that the hawsers are positioned almost perpendicular to the quay. This can just make the difference whether an additional barge, feeder or an extra deepsea

"We are proud of the ShoreTension System, an invention that is truly from Rotterdam. The Port of Rotterdam Authority supports its broad implementation."

René de Vries, Harbour Master of Rotterdam

vessel can be moored. The handling capacity of the terminal is vastly increased as a result,” says Hooykaas.

Four Own ShoreTensions

Until now, the ShoreTensions used at the ECT Delta Terminal have been on loan from the boatmen. ECT has however decided to purchase four devices itself. As in the present situation, these will be deployed at the ECT Delta Dedicated North Terminal; in the future, the ShoreTensions will also be used at the Euromax Terminal Rotterdam. Being the terminal closest to the port entrance and thus optimally located for visiting vessels, the Euromax Terminal Rotterdam will be confronted with passing shipping traffic once the new Maasvlakte 2 port area is commissioned. The ShoreTensions neutralise the movements this causes to moored vessels; as a result, the quay cranes can continue their operations unhampered.

The Rest of the World

The joint venture aims to market a multitude of ShoreTensions throughout the world. Hooykaas: “Storms happen everywhere. Long swell frequently occurs on the entire Southern Hemisphere. The deployment of ShoreTensions makes handling operations safer, more efficient and faster. Not only in ports, but also regarding ship-to-ship operations.” The ShoreTension will be priced at approximately 150,000 euros. Ruijs: “That’s without the input of the boatmen’s expertise. Each usage of ShoreTensions must be customised. After all, no two ports and terminals are the same. This makes it necessary for the boatmen to optimally fine-tune the ShoreTensions on location and train local staff. The costs of a ShoreTension by the way are completely offset by the efficiency gains which can be achieved or the reduced likelihood of damage to ships, cargo or port infrastructure.”

ShoreTensions prove themselves in Offshore

One of the satisfied customers of ShoreTensions is the company Dutch Offshore Contractors. Manager Operations Dave Hangoor explains:

“Recently, we were requested to move the oil rig Prime Exerter from Rotterdam to the Caspian Sea. En route, the locks in the Volga-Don Canal however only allow for a maximum width of 16.5 metres; the rig was therefore dismantled in Rotterdam and cut into transportable pieces. We did this in close cooperation with Keppel Verolme and using a giant crane of Mammoet as well as the sheerleg Matador. The entire rig was first positioned on three seaworthy pontoons. We next used the ShoreTensions to stabilise these pontoons. The ShoreTensions did this for four weeks, allowing the hook crane to always be positioned straight above the project unaffected by tides and wave motions. This definitely saved a lot of time. We were able to continue working much better than if we had only relied on mooring lines. The hull of the Prime Exerter has by now arrived in Baku on the Caspian Sea, where it is being reassembled again. For us, it was the second time we used ShoreTensions and we will certainly do this again.”



Watch the Video!

See more of the ShoreTension on the free Fast Forward app which you can download in both the Apple App Store and Google Play Market.

From Idea to Practice

The ShoreTension was conceived and developed by Rotterdam’s boatmen after the CMA CGM Claudel broke free of its moorings at the ECT Delta Dedicated North Terminal in high winds in 2007. In response, the Port of Rotterdam Authority requested the boatmen to think about a solution for preventing similar situations in the future. The solution they came up with is the ShoreTension. This cylindrical-shaped device can be used on any quay. Without external energy - and therefore CO₂ neutral - the ShoreTensions

exercise the same, constant pressure on the mooring lines of a ship. And exactly this is crucial for safely and steadily mooring vessels. Ship movements are caused by the fact that mooring lines are exposed to different tensions. This causes tremendous forces which can ultimately even lead to mooring lines snapping.

Safe and Efficient

Whereas the ShoreTension was originally developed with safety

in mind, it also proves valuable for more efficient operations. As ships are moored to the quay tightly, cranes are better able to continue operations etc. Moreover, the ShoreTensions do not only prevent ship movement due to high winds, but also because of passing shipping traffic, strong currents and long and/or high swell.

All details on the ShoreTension are available on the website www.shoretension.com.