Making it easier to ensure fenders are fit for purpose

Trelleborg is promoting a number of initiatives designed to ensure that fender compounds, specifications and manufacturing processes meet the ever more demanding needs of the towing industry

Richard Hepworth, president of Trelleborg's marine systems operation

Tug fenders have to work harder, for longer, and under more extreme conditions than any other fender type. This makes the specification of fenders for harbour and escort tugs of critical importance.

One of the market leaders in supplying fenders for tugs, Trelleborg, believes that manufacturers should challenge the increasingly common misconception that tug fenders are a commodity product and can be purchased off the shelf.

To assist operators with making the right choice and ensure that the fenders they have selected are fit for purpose, Trelleborg is planning to launch a new fender selection tool. Richard Hepworth, president of Trelleborg's marine systems operation, says: "Selecting the right fender for a project can prove daunting and time consuming. The result is that many companies are purchasing fenders from manufacturers' catalogues without taking into consideration whether the unique hull pressure of a project matches the bollard force requirement of the tug."

The aim of the new tool is to enable companies to determine the correct size and type of fenders needed to withstand the harsh environment in which they operate, in a matter of just a few clicks. Trelleborg is in the final stages of developing this fender selection tool for jetty-based fender systems, and is looking to develop this for the tug fender market in future.

As well as the specification of size and type, consideration of the manufacturing process is important, Trelleborg points out. The company is undertaking research to enable it to better understand the importance of curing for fender performance. Mr Hepworth says: "Uniform curing of fenders is desirable, to achieve consistent physical properties across a fender's diameter. But, as the fender is thick, uniform curing is challenging and depends on the time and temperature of the cure." Trelleborg says that it is now using a critical thermocouple test to optimise the time and temperature required to achieve uniform properties across the entire diameter of the tug fender.

Trelleborg markets a range of highly abrasion resistant, low density tug fenders which are formulated to ensure both longevity and cost-effectiveness. The company has developed a high performance super abrasion resistant (HPSAR) rubber compound, which it is using for its cylindrical tug fenders, that was introduced to the market last year. Mr Hepworth says: "This new compound can increase the fender's service life significantly, reducing maintenance and replacement costs." HPSAR has been well-received by the market and Trelleborg reports that it has supplied its new compound tug fender to projects in Japan, Australia and Europe since its launch in 2015.

A trend that the company is observing is that tug designers are increasingly concerned about hull pressure and the force generated by the vessel during operations. Trelleborg suggests that traditional fenders available in the market are no longer suitable for many tug applications because of their high reaction force, which means that they exceed the designed hull pressure of modern tugs.

"Tug designers need to be working hand in hand with fender manufacturers to build an optimised solution, with special attention given to the formulation of the rubber compound," says Mr Hepworth. "A specially designed rubber compound with much lower modulus is needed to satisfy the hull pressure requirement for modern tugs. It is not easy to develop such compounds, as softer compounds invite many challenges during production."

A recent example of collaboration cited by Mr Hepworth involved a project that Trelleborg worked on in Brazil. In this, the shipyard and its consultant were in touch with a number of fender suppliers, discussing a special low hull pressure requirement. "The other suppliers consulted did not have the knowledge to develop a compound that could meet these requirements, but we were able to," explains Mr Hepworth. Trelleborg says it is keen to work more closely with shipyards and consultants in this way, so that a more effective overall solution can be reached by combining the expertise of each party. TTB