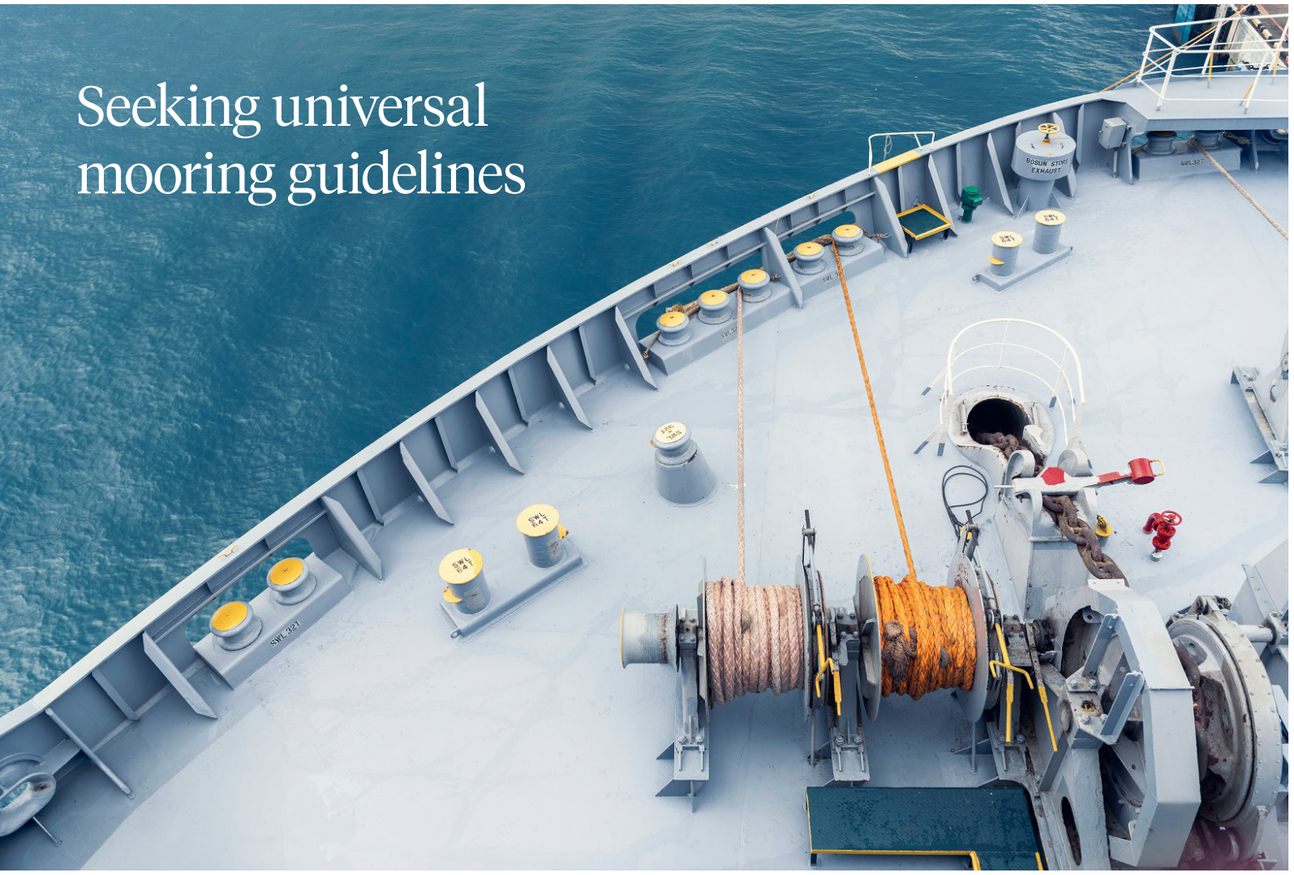
Seeking universal mooring guidelines



Every journey has an end, and every ship must be moored safely when its journey is over.

Despite this fundamental requirement, mooring standards remain far from standard, containing many exceptions and variations from a diverse range of stakeholders offering individual specifications and guidelines for mooring equipment and practices.

“A lot of good work is being done to improve mooring safety,” acknowledges Veronika Aspelund, Business Manager Ropes at Wilhelmsen, “but there are still many loopholes that need to be closed. We believe a more holistic approach to mooring regulations would help reduce risk to both crews and assets.”

Unregulated regulations

With no mandatory regulation or international standard currently in place, OCIMF, the Oil Companies International Marine Forum, is generally regarded as the industry gold standard when it comes to mooring practices. Their latest guideline update, MEG4, was released in 2018. “But these are only recommendations,” says Aspelund. “The OCIMF is not responsible for others following their advice.” Nonetheless, she notes that OCIMF guidelines have come to serve as the industry’s de facto “mooring bible. Other ship types and trades use it as well, not just tankers.”

While embracing the overall usefulness of OCIMF guidance, Aspelund cautions that certain factors may impact objectivity: “Several major rope suppliers have been involved in the development of MEG4, and they have influenced results. Other suppliers have then had to make investments in order to comply. This is a good example of why the industry would benefit from more independent control of regulations.”

Aspelund reports that Wilhelmsen has been in dialogue with the OCIMF regarding testing and safety recommendations: “We felt they needed a more independent approach to testing, in order to help customers better understand which ropes they can or should use.”

Many pieces to the puzzle

Parallel to OCIMF recommendations, terminals and ports often elect to define their own mooring requirements, Aspelund says. “Terminal vetting inspectors will check for compliance in their own specific contexts. If a ship does not meet those requirements, it will not be allowed to call at the terminal.”

She cites one example of a tanker that met OCIMF requirements, but not those of certain terminals. When the shipowner requested a solution from their rope supplier, they were advised to carry two sets of mooring lines in order to meet both requirements. “Ships can’t reasonably be expected to have two sets of ropes on board and change for each terminal they call at,” Aspelund argues.

In a misguided attempt to allow ships to manage such disparate requirements, Aspelund reports that some manufacturers will supply two sets of documentation for the same set of ropes, a practice she dismisses as less than desirable, not least from a safety perspective.

Ropes may not match up optimally with mooring equipment either, she observes, noting that close cooperation between rope manufacturers and equipment suppliers is needed in order to assure a good fit in the overall mooring picture.

When standards collide

The 2018 MEG4 guidelines addressed human-centric design principles, advocating a systematic approach to the design of mooring equipment and a holistic application of mooring line management. Close on the heels of MEG4, the 2019 SOLAS amendments concurred on a unified mooring system for equipment and ropes, but removed the human-centric design and tension monitoring elements from their recommendations. “For this and other reasons, it might have been better to have the IMO determining the direction of development,” Aspelund offers.

Rope size vs. strength presents another challenge: “The most important property in a rope is strength, but many customers buy ropes according to size, or the manufacturer’s specified production diameter,” says Aspelund. “The problem is that the relationship between strength and size is dynamic. Ropes specified as 40mm will have a larger diameter under relaxed conditions and will be closer to 40mm under tension. The actual measured diameter for a 40mm rope will also vary between producers. These parameters need to be harmonized.”

			% ship design	MBL
Increased loading on line leading to increased rate of damage and increased risk of loads exceeding residual strength	Fitting	Max LDBF	105	LDBF = 100-105% ship design MBL
	Mooring Line	Ship Design MBL	100	
			75	Residual strength - Recommended retirement of mooring lines according to OCIMF MEG4
Working loads within max expected values for anticipated env. conditions		WLL (50-55%)	55 wire	Working Load Limit
			50 synthetics	Working Load Limit
Typical Operational Range			22	Recommended Working Load
			0	

OCIMF (2018) Mooring equipment Guidelines (MEG4).

Strength values for mooring ropes

Further complicating the issue is the treatment of splicing, generally acknowledged to decrease rope strength by 10 percent. ISO defines un-spliced rope strength, while the OCIMF defines strength using spliced rope. “Virtually all mooring ropes are spliced, and this practical reality should be reflected in the relevant standards,” Aspelund maintains. “Spliced strength is what the customer is really buying, so this should naturally be what manufacturers display. This is not the case today, and it can lead to safety issues if customers buy ropes that end up being 10 percent weaker than they actually need for their ship.”

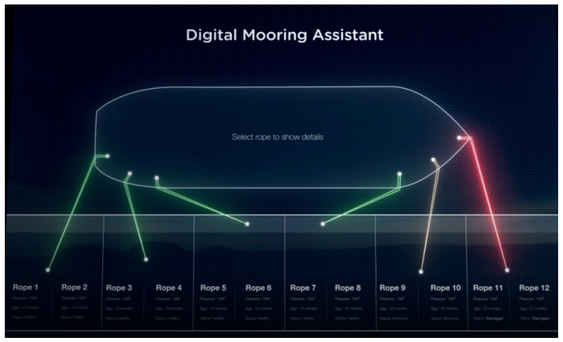
Making safer technology accessible to all

An early pioneer in Snap Back Arrestor technology (SBA), Wilhelmsen is currently cooperating with DNV GL on certification of their SBA products. While ropes fall outside the classification regime, Aspelund reports that Wilhelmsen is working with class in order to instil industry confidence in the solution. “We want to make sure customers can verify that the solutions being offered actually perform as they should, and we want more suppliers to be able to offer safer solutions to the industry.”

Timm Master 12 mixed polymer rope with Snap Back Arrestor for improved safety

She notes with satisfaction that several competitors have followed suit with their own SBA offerings: “We are not aiming for a monopoly on safe products. Most manufacturers can offer snap-back protection, and all customers should have access to it.”

The same applies to digital technology making headway in the mooring space, Aspelund says, including smart ropes that incorporate sensors to enable tension monitoring. “Tension monitoring was a big development in safety,” she relates, “but lines are designed to breaking force, which tells the strength of new rope. When this force is exceeded, the rope will break. The normal working load is approximately 22 percent of minimum breaking load, and the working load limit is 50 percent, but it is not possible to know when these limits are reached. Smart ropes will tell you this.”



Smart Ropes digital mooring system

Yet however smart ropes may become, Aspelund points out that they will still need to be maintained. “Use and wear impact the life of ropes. A rope is chosen from strength when new, and the effect of use on that rope is often not taken into consideration.” Here, smart ropes would be a source of invaluable information, she says.

The holistic path to safety

“We want to see a more holistic view of mooring in the industry,” Aspelund emphasizes. “For example, equipment on new ships should help ropes last longer, but there are some unfortunate examples of designers and builders trying to save money by cutting corners, resulting in equipment that can weaken ropes more quickly. We need to see design from an overall perspective.”

To this end, Wilhelmsen is currently collaborating with a wide range of stakeholders, including terminals, organisations, unions, and class. “We are not just talking to customers. This is not marketing, and it does not apply just to rope makers,” Aspelund says.

Asked how to keep the industry on the right path, Aspelund has two words: Safety First. “SBA was met with enthusiasm. Our customers said they wanted to put safety first, and some are making the change, but when the price is higher, some will hesitate,” she relates.

> “Regulations would make safer choices mandatory, and this is really what we are after. Right now ropes are treated as a commodity. We believe a better solution would be to classify mooring lines as safety equipment and ensure that they are regulated accordingly.”

It’s complicated – for now

In the case of safe mooring, Aspelund reflects that the road to ambiguity is paved with good intentions: “Class advises on safe mooring and industry stakeholders provide important guidelines, but there is a need for an independent voice on universal requirements.” In the meantime, she observes, some owners are taking safety issues very seriously, while others are slower to respond.

“The overall picture is difficult to comprehend,” Aspelund acknowledges. “There are so many elements in play that it is unreasonable to expect everyone to sort out all the details. We just want to make things simpler. In order to make the right choices, customers need an easy and reliable way to understand which rope is suited for their needs.”

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