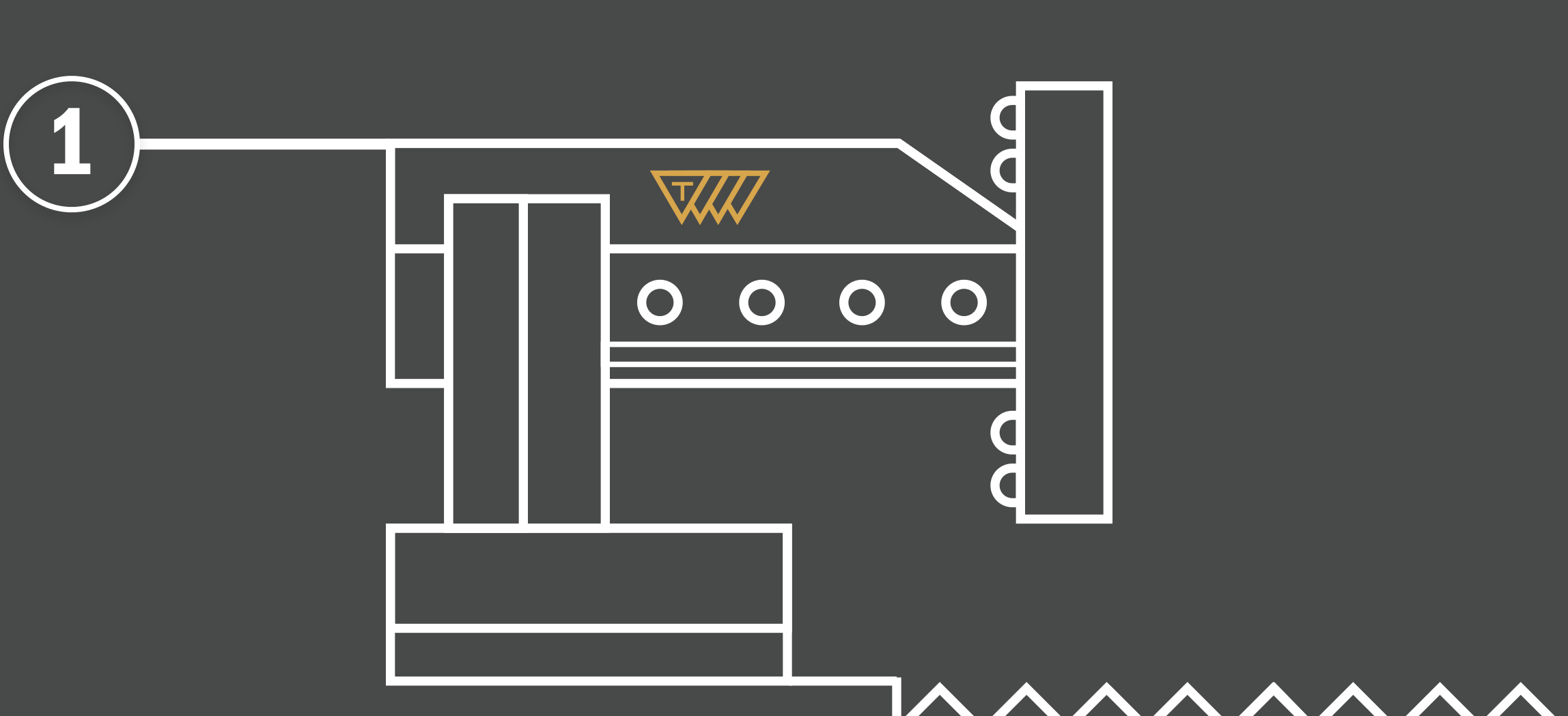


Extending the Window of Port Operationality

With bigger vessels, busier berths and tighter schedules, ports need new ways to optimize existing infrastructure and achieve incremental efficiency gains. Advanced docking and mooring solutions have a pivotal role to play in delivering these benefits, from increasing berth utilization rates through to automating procedures for safer, accurate vessel and jetty operations.

This infographic makes it easy to map your strategic priorities against the latest advances in docking and mooring solutions to optimize operations and extend the window of port operationality. Explore the infographic now.

STRATEGIC PRIORITIES



Increasing Berth Throughput and Utilization Rates

With trans-Pacific and trans-Atlantic reliability down to 35%¹ and 45% of container vessels delayed by over eight hours² on arrival, identifying ways to increase throughput and berth utilization rates is critical to improving overall port operationality. Taking advantage of technology in docking and mooring operations helps remove the element of "best guessing" and replaces it with accurate, real-time decision-making using reliable data from automated solutions. This significantly enhances throughput by delivering better scheduling control and more efficient transfer operations.

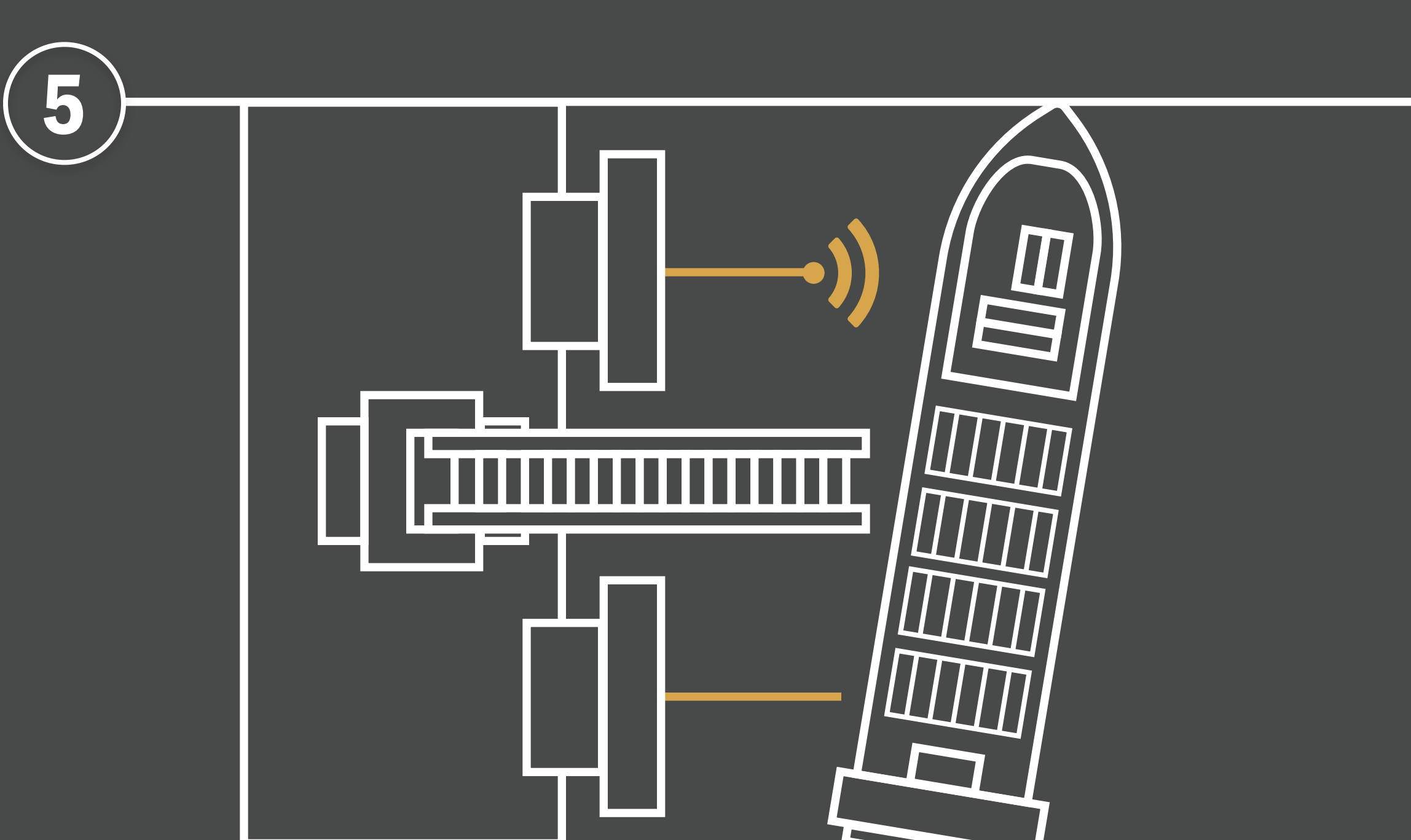
Trelleborg's **AutoMoor** securely moors vessels in under a minute and releases them for departure in just 30 seconds to significantly improve berth throughput rates. This rope-free automated system also eliminates mooring lines to create safer mooring procedures, and reduces vessel motions to broaden conditions in which port operations can continue.



Extending the Window of Port Operationality

Widening the range of conditions in which efficient transfer can take place significantly increases the window of operation at the berth and this in turn directly impacts efficiency of docking and mooring operations. If berths typically experience between 15 – 20% downtime due to MetOcean conditions, then reducing this to 10% will have a positive effect on increasing revenue⁴. Automated mooring technologies are an effective way to decrease the issues of passing ship movements and the effects of long period waves - DynaMoor can reduce mooring line tensions by as much as 40%⁵, helping to minimize downtime and optimize operations.

Trelleborg's automated mooring solutions, **AutoMoor** and **DynaMoor**, use a continuous passive surge damping system to minimize vessel motions at berth and extend the range of conditions for successful transfer in the port environment.



Supporting Sustainability Measures

Reducing the time, personnel and equipment involved in docking and mooring operations will lower costs, reduce waste and decrease port emissions to help increase sustainability. Automating procedures supports sustainable returns in areas such as faster turnaround that reduces fuel consumption as ships are no longer idling, through to advanced technology solutions, which use hydraulics that can run on reduced power. Using environmentally-friendly technology also optimizes assets both day-to-day and over the long-term through predictive maintenance programs.

Trelleborg's range of docking and mooring solutions, including **AutoMoor**, **DynaMoor** and **Environmental Monitoring Systems** are designed to improve the efficiency of port operations by adjusting mooring configurations to suit environmental conditions and to support sustainability measures.



Improving Safety During Docking and Mooring

95% of serious mooring injuries involve ropes and wires handling or parting, at a cost of over \$34 million³. Finding ways to protect personnel and infrastructure while mooring increasingly bigger vessels without incident is essential. Today's mooring solutions have a direct impact on improving operational safety and keeping wharf-side personnel to a minimum. Smart technology is able to capture and relay data in real-time to provide a continuous and accurate overview of procedures such as; eliminating the possibility of snapback, reducing berthing velocities, minimizing the risk of collision and protecting personnel. Smart solutions can automatically maintain mooring line tensions actively reducing vessel motion and enabling operations to take place safely and securely in a wide range of conditions.

Trelleborg's **DynaMoor** and **Quick Release Hooks (QRH)** with load cells use smart technology to continuously monitor and maintain mooring line tensions in real-time to improve the safety, efficiency and reliability of product transfer operations. Industry-leading **SmartMoor QRHs** continuously monitor load, offer remote release and are easily integrated. These smart products offer report-generating functionality so that historical data can be reviewed in light of specific mooring events.



Optimizing Existing Infrastructure

As vessels with a capacity of 24,000 TEU become a reality⁶, ports are faced with accommodating ships with ever bigger and longer dimensions onto existing infrastructure, or otherwise investing in costly upgrades. Protecting existing structures from damage can be achieved without significant capital investment by using technology that optimizes mooring operations based on a vessel's unique dimensions and approach parameters in real-time. This prevents abnormal impact during docking procedures and then moors it securely at the wharf during product or personnel transfer operations. Wharf infrastructure is repeatedly protected and vessels can continue to berth again and again, in a safe and timely manner.

Trelleborg's **SmartDock** and **SmartDAS** docking aid systems accurately monitor vessel distance, angle and speed in real-time to reduce the risk of damage from a collision between the ship and jetty and to improve operational safety, efficiency and reliability. Used in conjunction with **AutoMoor**, they can significantly reduce the complexity and time required for mooring operations.



Trelleborg's **AutoMoor**, **DynaMoor**, **SmartDAS**, **Quick Release Hooks**, **SmartDock** and **environmental monitoring systems** fall under our **SmartPort** portfolio.

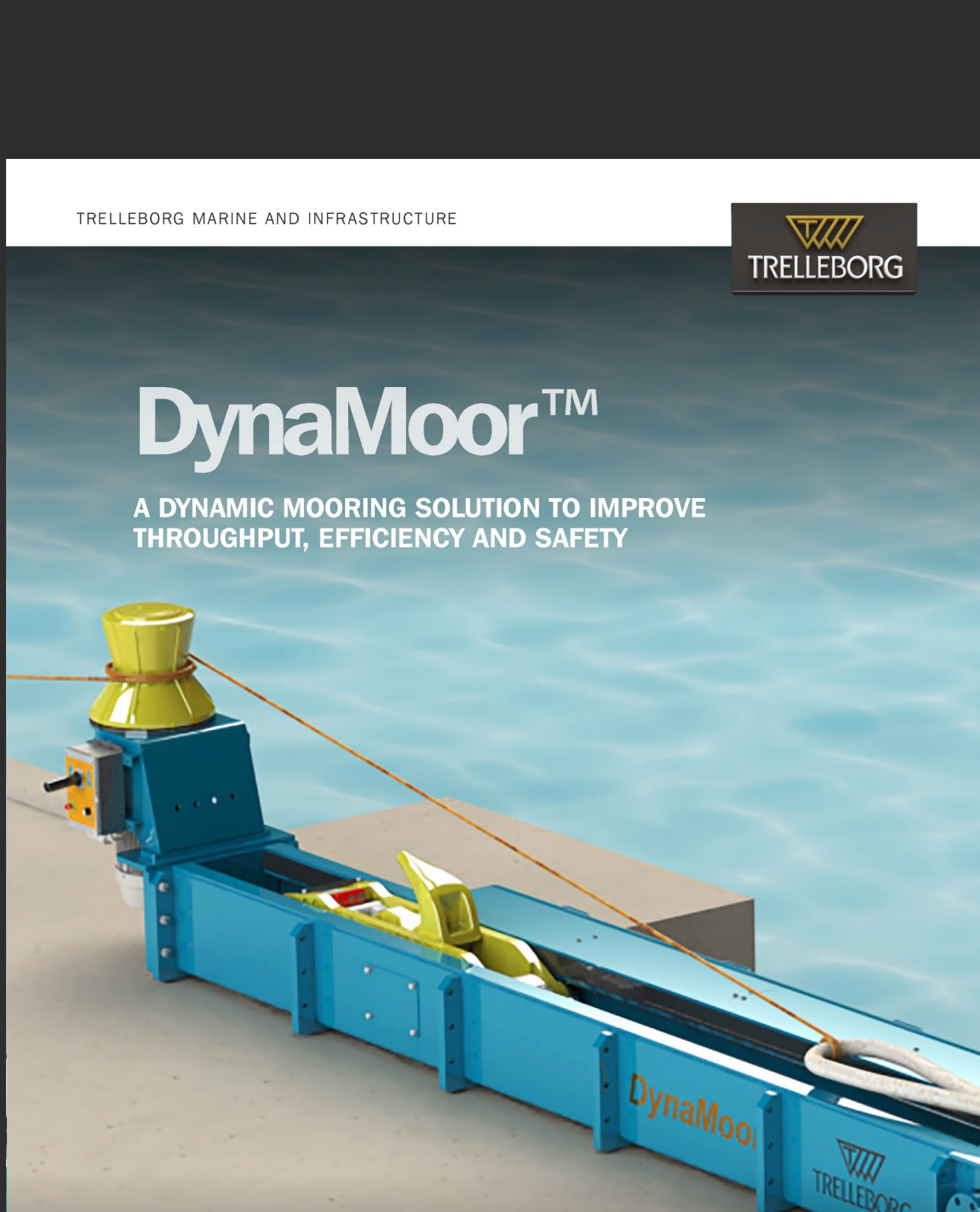
SmartPort powers the critical interface between ship and port, on land and at sea. It connects port operations, allowing operators to analyze performance and use data to improve decision making. The system integrates assets like fenders, mooring equipment, ship performance monitoring, and navigation systems, underpinned by cloud and Internet of Things (IoT) technologies.

[LEARN ABOUT SMARTPORT](#)

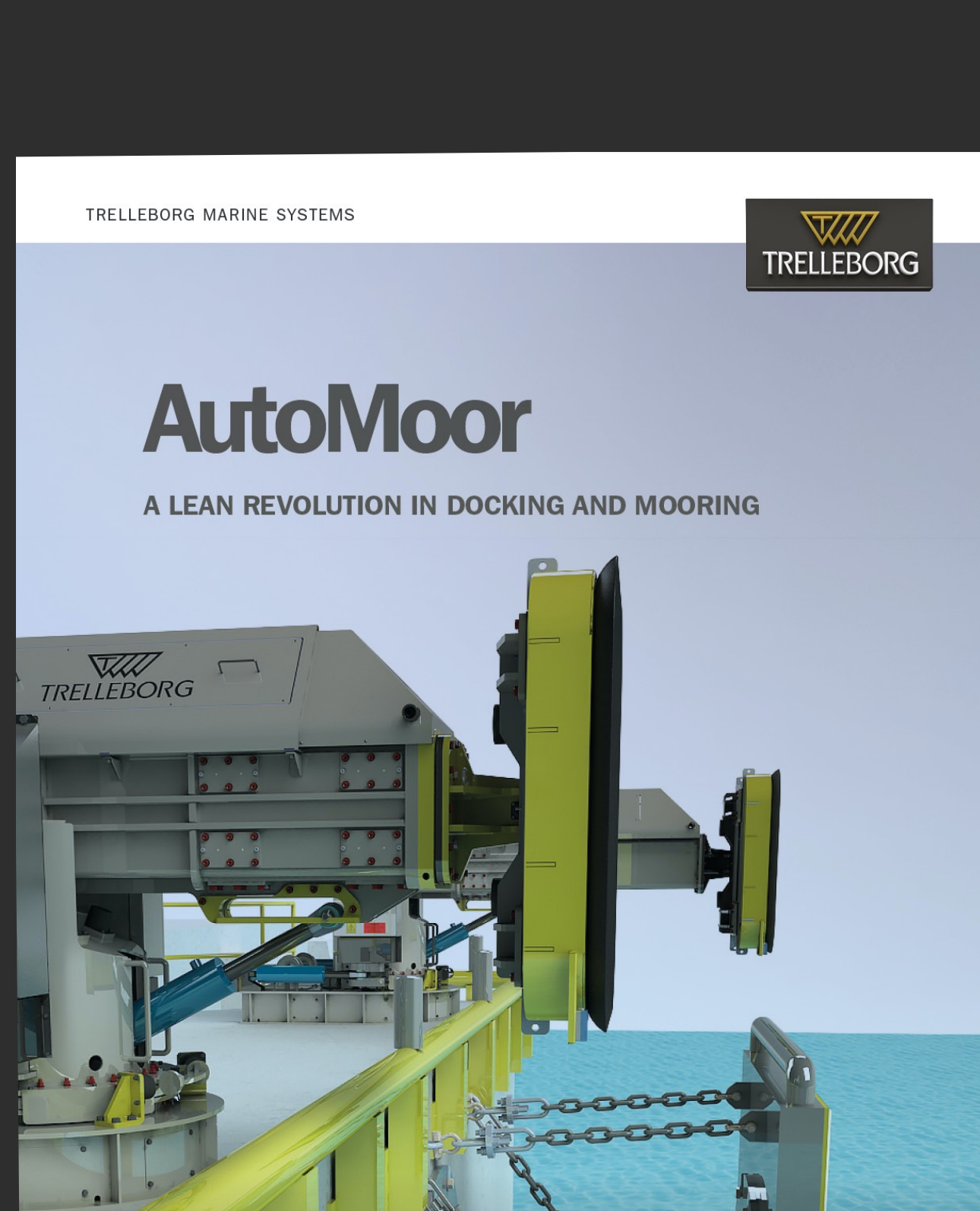
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Read how automated and dynamic mooring systems decrease wave effects and eliminate passing ship effects.



[READ DYNAMOOR](#)



[READ AUTOMOOR](#)

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 Thesmarterapproachblog.trelleborg.com

Trelleborg Marine and Infrastructure
 Email: marine_infra@trelleborg.com