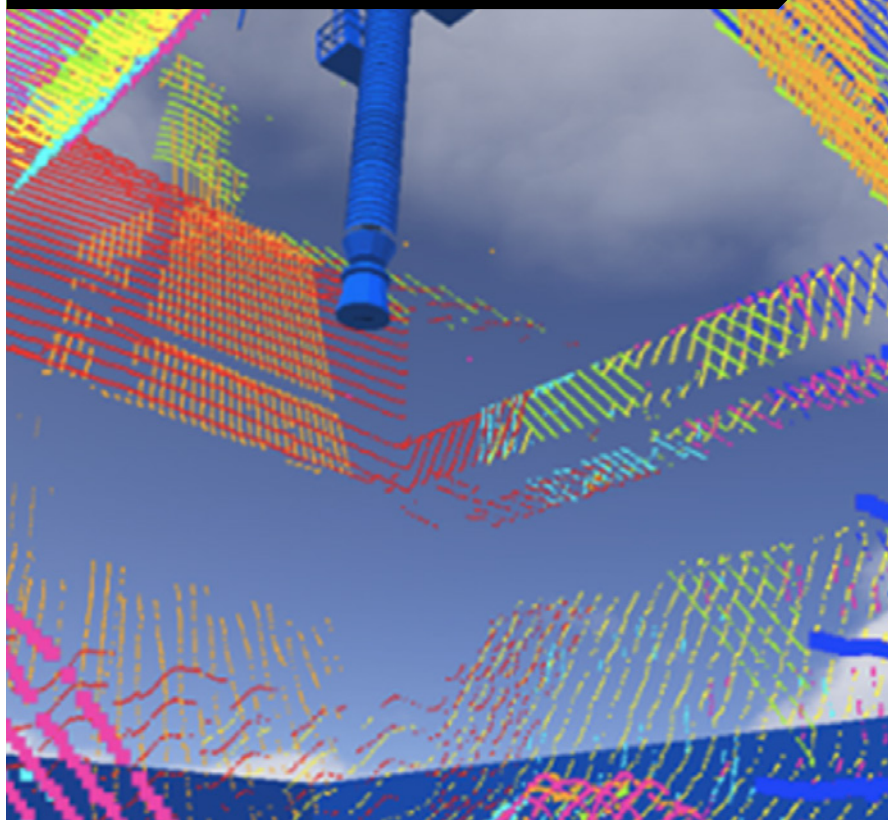


Metso

Bulk material handling and port solutions

Shiploader automation with Axo33



Application

Helps ports load vessels more safely, protect critical assets and take the next step toward automated ship loading.

Safe and efficient ship loading and unloading requires precision, visibility and control. Axo33 SHIPS™ helps operators achieve all three through real-time vessel visualization, collision avoidance and advanced automation.

Ship loading operations are complex environments where operators must safely move equipment around continuously changing vessel positions and cargo requirements.

Axo33 SHIPS™ combines real-time scanning, digital twin technology and automation into a single platform that helps operators improve safety, protect assets and achieve more consistent loading performance.

The system continuously monitors vessel position, machine movements and loading conditions, creating a live digital representation of the operating environment that supports both operators and automated functions.

What is a digital twin?

Axo33 SHIPS™ creates a real-time 3D model of the vessel and surrounding operating area using onboard scanning technology.

This digital twin provides operators with continuous visibility of vessel geometry, machine location and loading activities. The platform serves as the foundation for advanced collision avoidance, operator assistance and automation capabilities.

Because the vessel model is generated automatically, no prior vessel information or onboard vessel hardware is required.

Protect critical assets

Shiploader collisions can result in costly repairs, downtime and safety risks.

Axo33 SHIPS™ uses advanced Collision Avoidance System (CAS) technology to continuously monitor clearances between the machine, the vessel and nearby structures. As equipment approaches a predefined safety limit, the system automatically slows and stops machine movements before contact can occur.

The solution has been used to support the incident-free loading of thousands of vessels across multiple export terminals worldwide.

Improve safety and operational consistency

Axo33 SHIPS™ reduces reliance on manual intervention while supporting semi-automated and automated loading operations.

Operators can be relocated from the machine to a safer remote operating environment while maintaining control over loading activities. Automation functions help deliver consistent loading performance, reduce operator variability and support repeatable operating practices across shifts.

By removing personnel from hazardous locations and providing intelligent operator assistance, Axo33 contributes to safer and more reliable operations.

Enable the journey toward automation

Every operation has different automation requirements. Axo33 SHIPS™ is designed as a modular platform that supports progressive implementation. Sites can begin with digital twin visualization and collision avoidance before expanding into active collision avoidance, in-hatch automation and vessel plan automation.

The system works alongside existing PLC-based control systems and can quickly revert to standard operating modes when required, helping maintain operational flexibility and availability.

Works with your existing systems

Axo33 SHIPS™ can be applied to a wide range of ship loaders and unloaders without replacing existing control systems.

Built around a resilient architecture, the platform integrates with site controls while providing a scalable foundation for future automation. Metso delivers the complete solution, from design and implementation through commissioning, support and ongoing development.

Whether the goal is improved safety, asset protection or full loading automation, Axo33 SHIPS™ can be tailored to meet site-specific requirements.



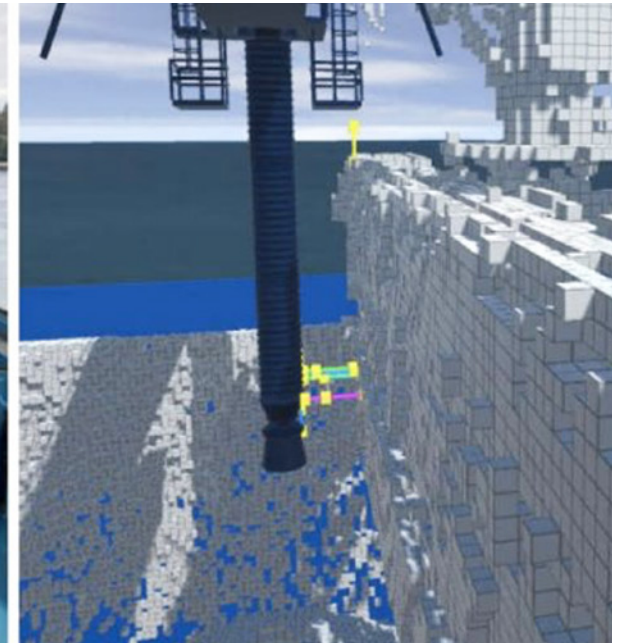
Increased
safety



Improved
reliability



Real-time
visibility



Axo33 SHIPS™ creates a digital twin that mirrors vessel and machine movements in real time, enabling safer and more efficient loading operations.

Proven performance

- Trusted on more than 5,800 vessel loading operation
- Installed at major export terminals worldwide
- Trusted for day-to-day operation with 99.5% system utilization
- Proven on a wide range of ship loaders and unloaders

Benefits

- Real-time vessel visibility
- Digital twin technology
- Improved safety
- Asset protection
- Reduced machine stress
- Semi- or fully automated loading
- Consistent vessel loading
- Remote operation capability
- Progressive automation roadmap