

INNOVATION

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TURNING, LOCKING AND BRAKING (TLB) SYSTEM FROM TWIFLEX PROVIDES SINGLE-SOURCE CONVENIENCE FOR MARINE AND OTHER INDUSTRIAL APPLICATIONS

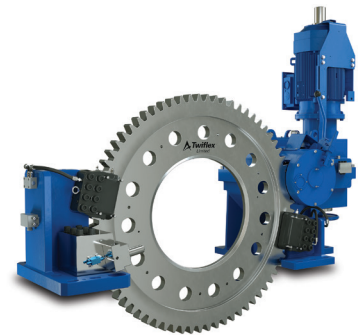
When a large ship is moored for an extended period of time, especially in a flow stream or current, its propulsion shaft needs to be set and locked to prevent undesired rotation. During regular maintenance the shaft needs to be locked in a fixed position, yet also able to be incrementally rotated in both directions to allow complete access by the ship's engineers. Also, during lengthy stays in port, the shaft is occasionally rotated to keep the propeller free from marine growth.

Typically, propulsion OEMs specify separate braking, locking and turning devices, often supplied by different manufacturers, to perform all three functions while fitting in a very small footprint. This is a time-consuming sourcing challenge that also requires the OEM to ensure that all three components interface properly once installed.

TWIFLEX RESPONDS WITH A UNIQUE FLEXIBLE SYSTEM SOLUTION

Working closely with a leading global marine propulsion system OEM on a next-generation ice-breaking vessel, Twiflex engineers designed and delivered a complete Turning, Locking & Braking (TLB) System that could be quickly integrated with the rest of the ship's drivetrain.

The compact Twiflex TLB consolidates three usually separate interfaces and functions into one package, including brakes and mounting brackets, turning device and gearwheel, and locking mechanism. The modular TLB system is configured to allow customers to select and install one of the turning, locking and braking functions individually or to choose paired or complete turning, locking and braking functionality, depending on project requirements.



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The Twiflex TLB was conceived to be flexible in design on all three functional elements:

- Turning (indexing, manual turning or motor-driven turning)
- Locking (manual pin or hydraulic locking device)
- Braking (pneumatic, hydraulic or electric – whether direct-applied or spring-set)

CONVENIENT INSTALLATION AND OPERATION

The Twiflex TLB features a split disc with a gear-tooth profile which is mounted onto a customer-supplied flange, making the need to disassemble the propulsion shaft unnecessary during installation – an important advantage in retrofit applications.

The entire system is designed to be controlled from the ship's bridge. However, when maintenance is planned, a signal from the bridge to "permit local control" is generated and, providing all the safety interlocks have been satisfied, the caliper brakes and turning gear can be operated from a local control panel.

AN IDEAL CHOICE FOR AUTO SHREDDER APPLICATIONS

Recently adopted OSHA mandates now require additional safety measures for auto shredding machines. The shredders (hammer mills) feature one or more toothed rotors that grind autos into small- and medium-sized pieces for eventual sorting and recycling. When power to the shredder is shut off, the large out-of-balance grinding rotors can still rotate, creating a dangerous condition for operators and maintenance crews.

Twiflex TLB system can be retrofitted onto the rotor drivetrain to provide secure locking functionality as well as allowing controlled incremental creep rotation for tooth replacement and jam clearing.



TLB SYSTEM PROVIDES SAFETY AND RELIABLE PERFORMANCE ON COAL-FIRED POWER PLANT FANS

A leading global manufacturer was looking for ways to improve the safety on its axial fans used at coal-fired power plants. The large diameter forced draft, induced draft, and primary air type fans are critical to boiler air and flue gas flows in the steam generating process.



Safety concerns arise when the large fan blades need to be replaced per maintenance schedules. The blades are accessible through a hatch in the horizontal fan duct. As blades are removed, the assembly becomes out of balance, causing it to rotate. There is a small clearance between blade tip and duct and the inertia of the slowly rotating assembly makes it difficult to stop by hand. This condition presented a trap-risk for maintenance workers during the uncontrolled rotation.

Twiflex engineers designed a custom TLB configuration to meet the specific fan application requirements. The complete system included turning control, a manual locking device and hydraulically applied brakes.

The new TLB system allows workers to rotate the unbalanced assembly, in either direction, to align a blade with the access hatch, stop and lock the shaft in position, and carry out the necessary maintenance.

* Source: Ships Time in Port, an international comparison