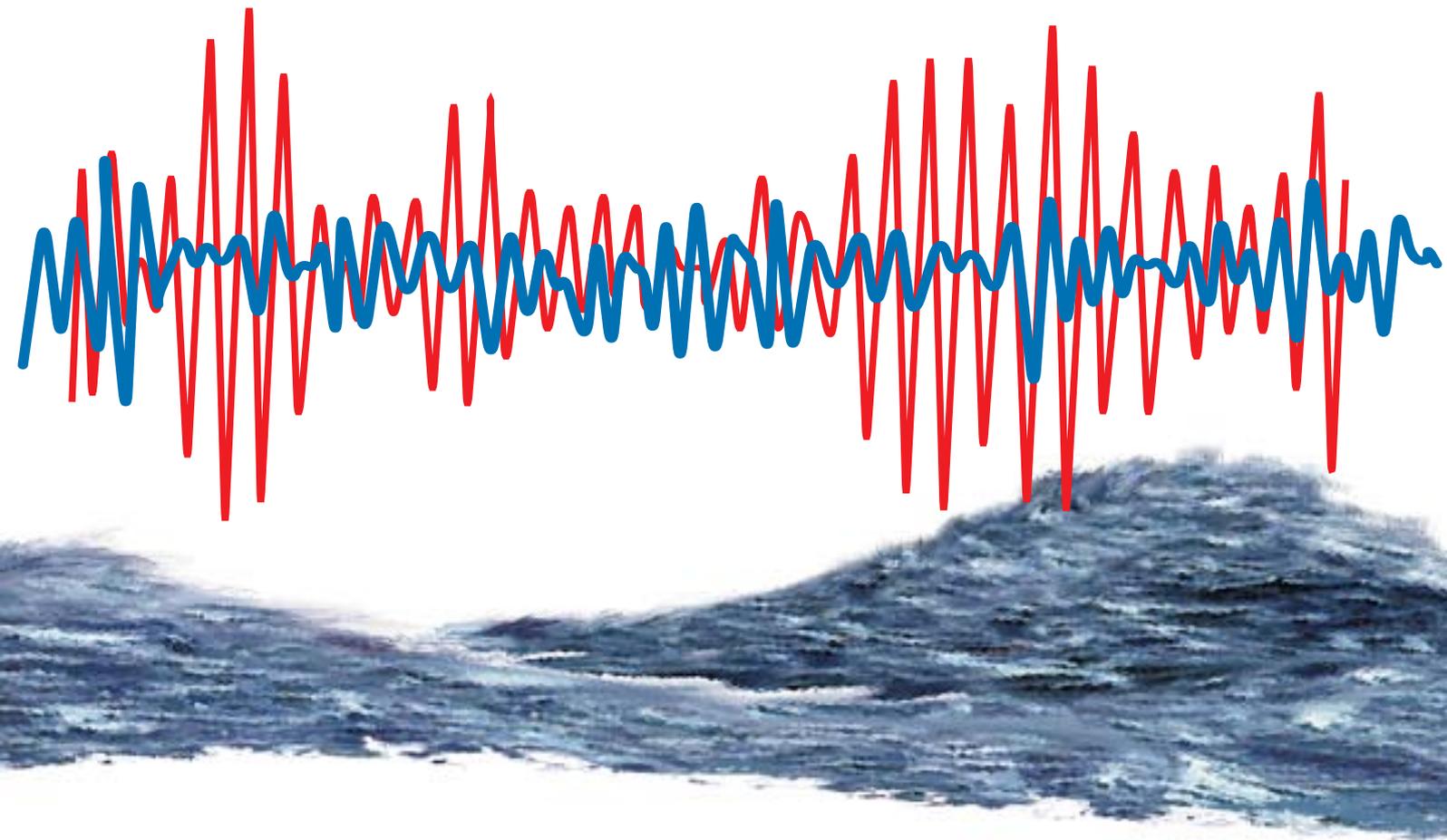
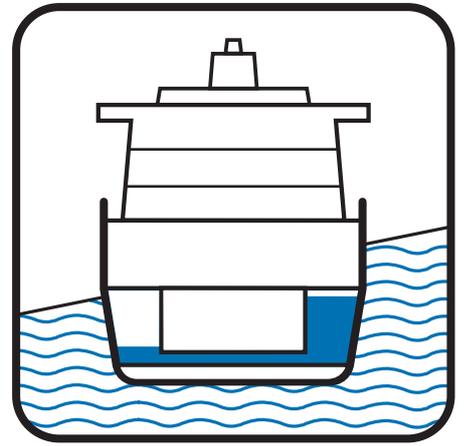


INTERING STABILIZERS

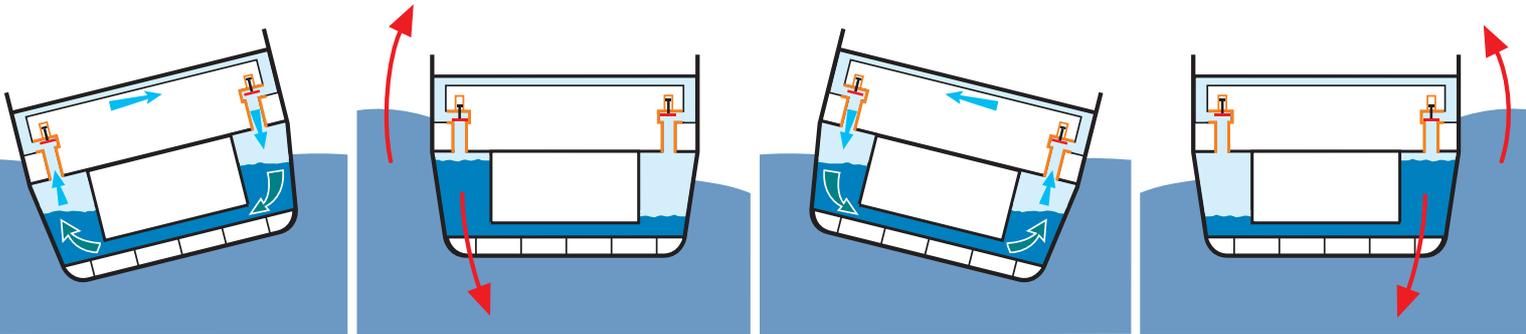
PROVEN SINCE 1970



Avoid cargo damage
Improve Comfort &
Operating Performance

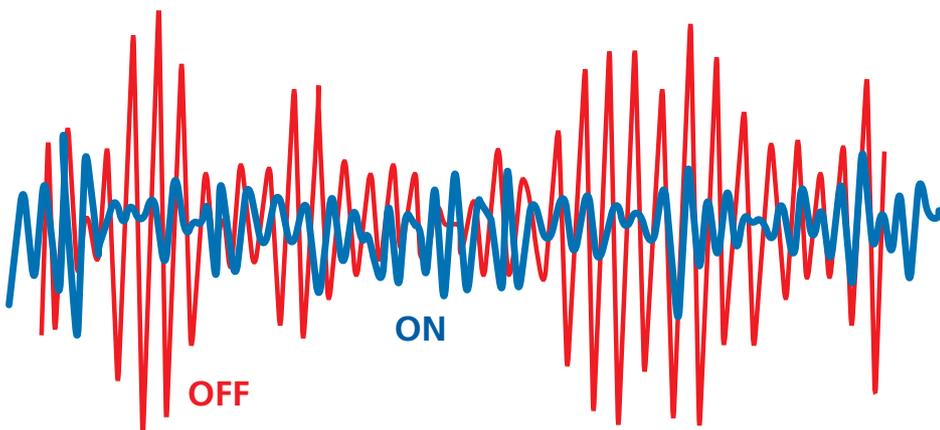


Roll Reduction with Energy supplied by the Sea



Caused by the ship's roll, tank water oscillates athwartship to counteract the roll:

- at short periods by natural oscillation,
- at longer periods, air valves cyclically block the water on the upwards moving ship's side.



Automatic control reacts within 1/4 roll period.

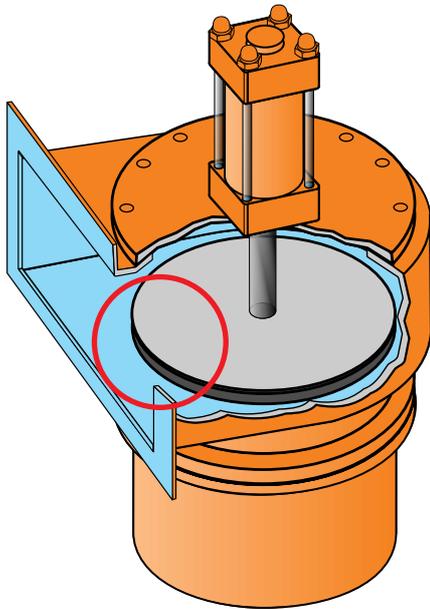
Roll reduction up to 70%, in normal irregular seas 40–60%, sufficient to completely prevent damage caused by roll.



No moving Parts in Water 3 Years Guarantee since 1982

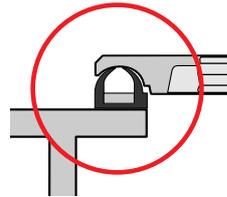


Proven for trouble-free Operation



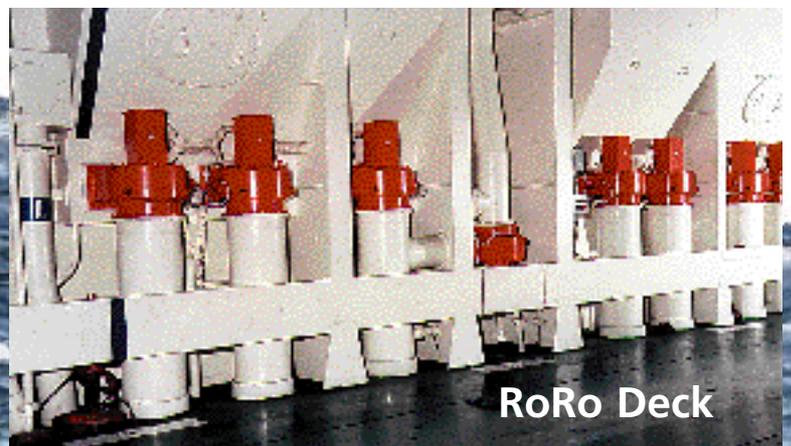
Valves for maintenance-free, smooth and precise operation

Fail-safe pneumatic actuation



Elastic double lip sealings assure tightness for many years of continuous operation

Fit within depth of web frames, no loss of cargo space



RoRo Deck

Control Unit

- Operating panel
- Roll-sensing unit
- Programmable logic control
- Electronic roll simulator for test purpose

Further Components

- Bridge panel: start/stop, monitoring
- Pneumatic solenoid valves in sheet-steel cabinet
- Level sensors
- Control air preparation unit

- Design, Engineering
- Large-Scale Model Tests

- Starting-up
- After-Sales Service



Cleaning of Control Air Filters only



Order-specific Design & Engineering

- Use of experience from thousands of projects & operating systems
- Computer programs for design, calculations & system optimization
INTERING engineer's experience built-up since 1965
- Simulation & test facilities
- Thorough quality control leads to high standard



Large-Scale Model Tests

3 m wide roll simulators, extensive testing for:



- Optimization of
 - steel structure,
 - tank dimensions
 - damping on water & air side
 - splash & guide plates
- Avoidance / minimization of sloshing effects, noise
- Control system checks



Superiority to Passive Tanks

Due to:

- Immediate & individual reaction on any change in roll motion comparable to fin stabilizer control
- Constant working level, no need to adapt to changing ship's and roll conditions
- Safety control for following sea
- Same tanks used for anti-heeling operation



Quality by Experience



Roll Reduction pays back

More than 25 years of experience prove:

INTERING STABILIZERS

- **Avoid damage to cargo & ship**
- **Increase operating performance & comfort**
- **Also at low & zero speed**



- **Reduce fuel consumption**
- **Arranged without loss of cargo space**
- **In same tanks with Anti-Heeling**



Superior to Fins & Passive Tanks

due to overall performance, flexibility & investment costs



Multi-Use of Tanks

Maximum benefit is achieved when the INTERING STABILIZER is combined – in same tanks, without loss of cargo space – with:



INTERING Anti-Heeling-System

Reduces ship's heel to the minimum required.
Saves time & costs in port. Can be combined with



INTERING Stability Test System – ISTS –

for accurate, reliable and fast measuring of the ship's stability – awarded by representatives of IMO, IACS, BIMCO, INTERCARGO, US Coast Guard – to further improve ship's economy and safety.



Auxiliary Tank-Water Activation

by use of control air to compensate wind list and asymmetric weight when ship is not rolling

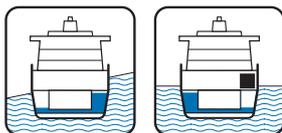


INTERING Heavy Fluid

with specific density up to 1.55 t/m³ is available for increase of tank volume efficiency resp. to reduce the required space. In special applications fuel may be used as operating liquid.

Successful Operation on:

**RoRo Vessels · Paper Carriers · Research / Patrol /
Navy Vessels · Ice-Breakers · Cable Layers and all ships
requiring roll stabilization at low & zero speed.**



INTERING

Ship Stabilizers · Anti-Heeling Systems · Stability Test Systems

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