

SOPHISTICATED HULL STRESS MONITORING SYSTEM

HULLMOS®

**WHY SETTLE ONLY FOR ESTIMATES
ON YOUR VESSEL'S HULL LOADING
WHEN HULLMOS CAN GIVE YOU
THE FACTS?**



HULLMOS®

- INVESTMENT FOR YOUR VESSEL

HULLMOS® is part of owners risk management. It enables risk control in the fields of:

SAFETY

HULLMOS® has especially been developed to protect the hull thus minimising risks for hull failures. The system alarms when there is a risk of damage to the hull structures or cargo caused by improper loading or high speed in heavy weather.

HULL MAINTENANCE

HULLMOS® is a top of the line real-time recording system, which saves the lifetime history of a vessel. The gathered information assists in hull condition evaluation and fatigue life assessment thus giving the possibility to prevent cracking and more severe casualties. In addition to that the gathered data is useful when planning hull inspections and maintenance.

ENVIRONMENT

Negative publicity is always inevitable in serious shipping disasters. Costs for these disasters are enormous in terms of money and values of nature, not to mention the impacts

on a company image. Use of HULLMOS® clearly increases safety of sea transport and it might have prevented many of the spills and more severe environmental catastrophes.

ECONOMY

Installing HULLMOS® on board gives the shipowner a viable opportunity to negotiate a lower insurance premium. The system also helps in keeping the hull in good condition, which brings about reduced repair and maintenance costs and extended vessel life. As a running recorder the system also enables the shipowner to monitor the handling of the vessel when chartered.

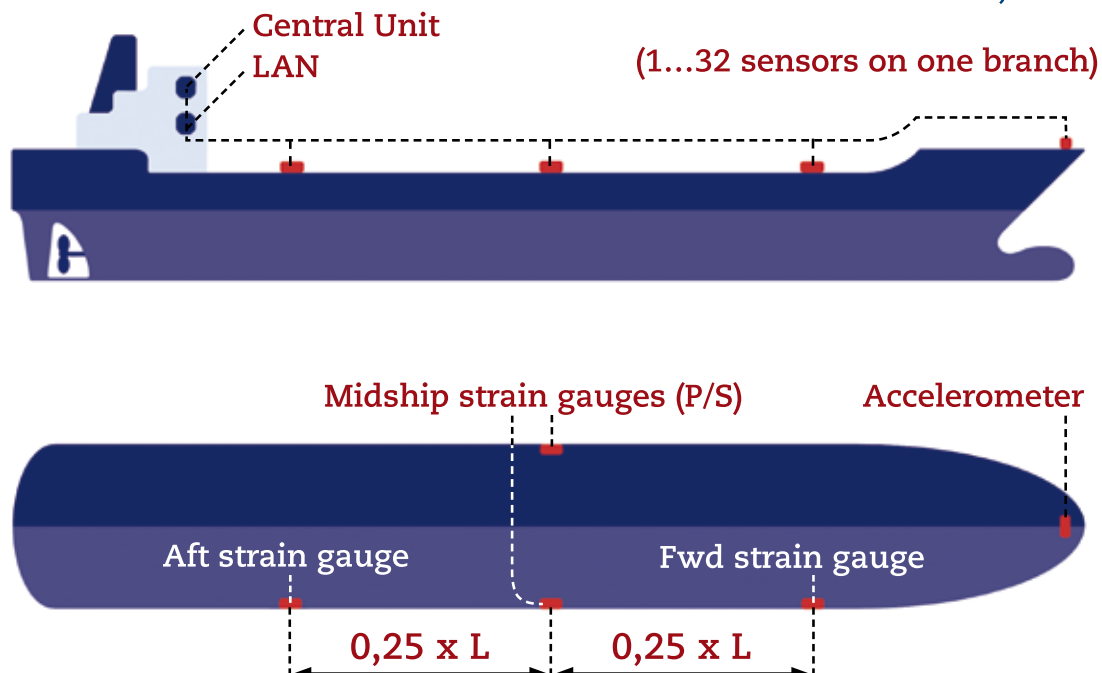
PROBLEM SOLVING

HULLMOS® can serve as a practical tool in problem solving cases. HULLMOS® is suitable for long-term and short-term testing periods as it is quick to install, it provides data instantly and gives possibility to process and analyse the gathered data afterwards.

HULLMOS®

MONITORING SYSTEM

Typical sensor locations, class notations: ■ HMON-1, DNV
■ SEA (Hss-4), LR
■ HM2+R, ABS



ADVANCED MARITIME SAFETY

Without hull monitoring there is no knowledge of the actual strains the vessel is experiencing. In the past the only way to make vital decisions has been based on assumptions of optimum speed and direction. In modern shipping industry Hull Stress Monitoring System HULLMOS® provides warning, assistance and predictions to the captain in real-time. The versatile benefits of HULLMOS® makes it clearly a significant part of today's advanced maritime safety.

SOPHISTICATED HULL MONITORING SYSTEM

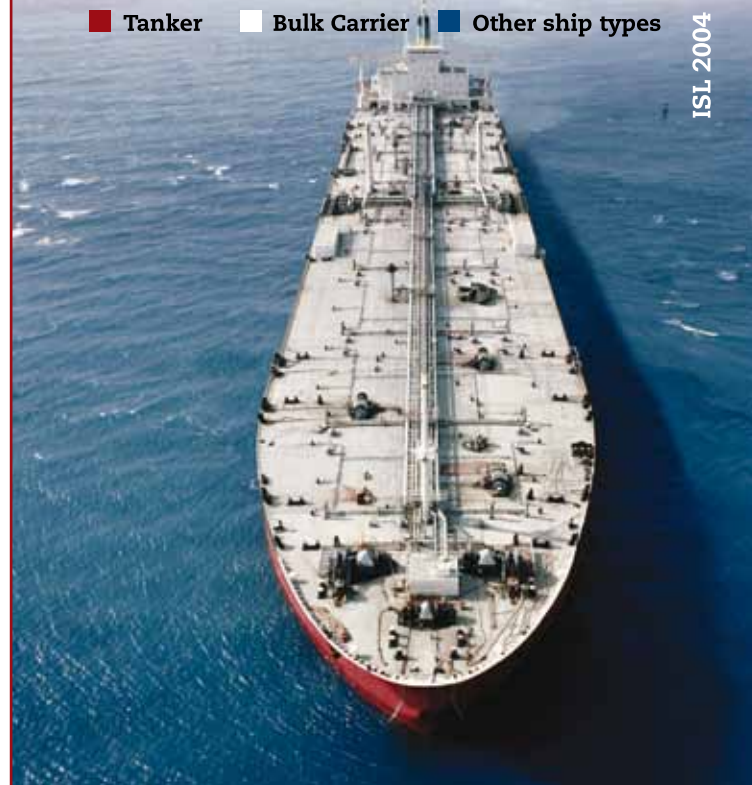
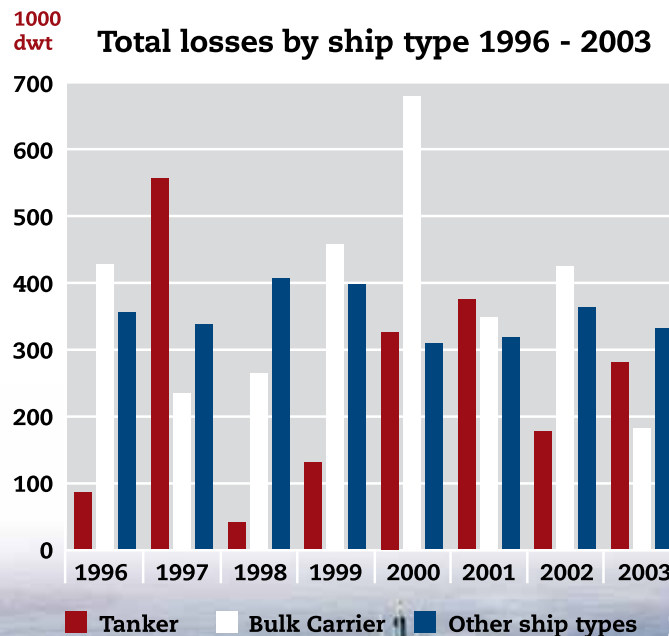
The system is ideal for versatile measurements and monitoring tasks of a ship hull:

- Standard HULLMOS® strain monitoring system with a class notion such as LR, DNV, ABS, BV
- Tailor-made hull monitoring solutions
- Solution for many problems associated with hull structures

HULLMOS® CONFIGURATION

HULLMOS® includes a range of measuring and monitoring products for both steel and aluminium structures. Typical HULLMOS® system consists of 4-6 sensors on the main deck, one accelerometer on the bow and a central unit on the bridge. HULLMOS® can easily be integrated with other information systems on board.

Based on relative deformation the sensors measure and analyse values of global longitudinal bending stresses as well as vibration of the hull girder. The gathered data is then transmitted to the central unit to be further analysed, displayed and datalogged. The personnel in the bridge will be alarmed to take actions in order to avoid exceeding of design stresses.



Length 100mm



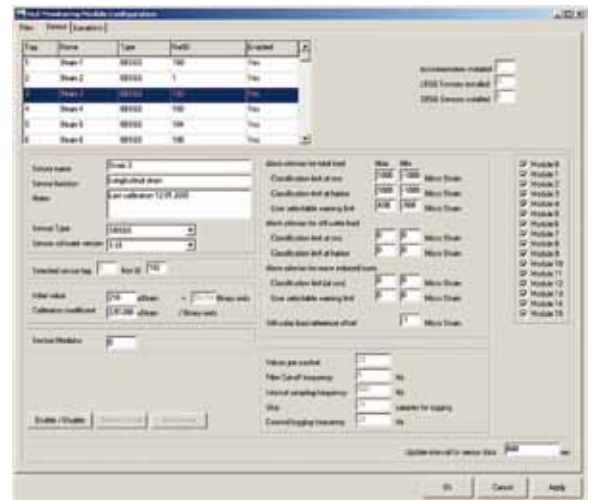
SBSG

The intelligent small size sensor is highly accurate and offers an unique option for continuous stress monitoring even in cumbersome locations. The factory calibrated SBSG sensor is compact and reliable in use. Furthermore, it is easy to install and needs no maintenance.



HULLMOS® can be installed both on old vessels and newbuildings on all types of ships including e.g. Bulk Carriers, Oil Tankers, Product Carriers, LNG Carriers and FPSOs.

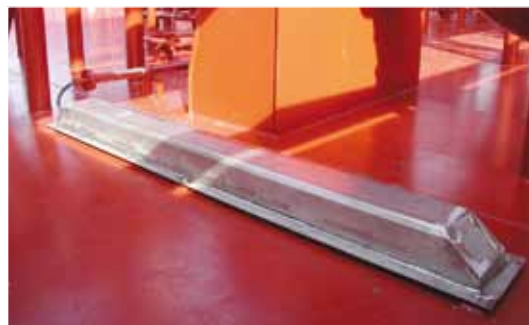
User Interface: Configuration Display



	SBSG (F)	LBSG (F)
Resolution	5 microStrain	
Bandwidth	0 ... 150 Hz	0... 5 Hz
Linear Range	+/-1200 microStrain	+/-2000 microStrain
Max. Dimension	130 mm	2420 mm
Supply	12 ... 24 VDC	
Degree of Protection	fully sealed	IP 56
Cabling	RS 485, shielded cable, twisted pair	
Exi	with Zener Barrier	
Temperature Range	-25°C ... +70°C	
Vibration durability	<ul style="list-style-type: none"> ■ Frequency Range 3 ... 13.2 Hz: Amplitude 1.0 mm (peak value) ■ Frequency Range 13.2 ... 100 Hz: Acceleration Amplitude 0.7g 	
Baud Rate	1.25 Mbps or 625 Kbps	
Interface Protocol	ARCNET	
Output	<ul style="list-style-type: none"> ■ Signal Mean Value ■ Signal Standard Deviation ■ Signal Peak Values ■ Average Mean Crossing Period ■ Rainflow count ■ 10 second Signal History in Cyclic Buffer 	

(F) Fibre Optic version available with tailored characteristics

LBSG Length 1700mm



ROUVARI OY
 Museokatu 9 B, 00100 HELSINKI, FINLAND
 E-mail: info@hullmos.com
 Web: www.hullmos.com
 Tel. +358 505615871