STRUCTURAL MONITORING SYSTEMS

CETENA S.p.A.

THE ITALIAN SHIP RESEARCH CENTRE

a FINCANTIERI company

STRUCTURAL MONITORING SYSTEMS

THE AVAILABILITY OF REAL TIME INFORMATION ONBOARD SHIP STRUCTURES IS AN IMPORTANT SUPPORT TO SAFELY PROTECT SHIP ASSET, CARGO AND CREW.

CETENA has a solid experience providing monitoring systems that have been successfully developed and installed on board merchant and naval ships over the years.
These decision support systems are able to evaluate the ship's behaviour and the environmental conditions in which it operates. CETENA's decision support systems have been tested during many experimental campaigns and they are now available in different configurations to meet the shipowners and operators' needs.

CETENA has developed the **SHIP ADVANCED MONITORING AND ANALYSIS (Sh.A.M.An.) HULL MONITORING SYSTEM (HMS)**, a customizable system that reduce the risk of hull structures damage caused by improper loading or navigation in bad weather conditions. Full 3D finite element analysis can be carried out by CETENA to identify the more appropriate location for sensors and set warning and alarm thresholds.
Sh.A.M.An. achieved the Certificate of Design Assessment by RINA according to the additional class notation MON-HULL + S.

CETENA HMS can be interfaced with most navigation equipments, automation systems and VDRs. Interfacing with the loading computer, the system keeps under control the loading/unloading operations of the ship and to warn the personnel about potentially dangerous situations for the ship structures.

The extensive experience gained in the naval field allows CETENA to plan and realise **HEALTH STRUCTURAL MONITORING SYSTEMS** as the one recently installed on the Viaduct "PerGenova".

Using optical-fiber sensors with low installation impact, it is possible to install hundreds of sensors on bridges, viaducts and tunnels, providing a detailed and reliable information on the state of art facility. Precise control algorithms perform a range of dynamic analysis and testing operational limits, notifying any potential alarm to supervision and control system, preventing the critical thresholds being reached.

Behaviours

- Protects ship's asset, cargo and crew, providing support in counteracting potentially dangerous situations
- Monitors the ship structural integrity during transfer of ballast and in ship loading/unloading operations
- Allowing to evaluate and predict the ship fatigue life
- Can be interfaced with ship maintenance software, giving way to a condition-based maintenance plan of structures
- Reduces risk of structural damages, avoiding relevant repairing costs
- Demonstrates the ship quality to charterers

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