

Compensators Designed to Reduce *Vibration*

by Bo Svensson

Guide force moments, unbalanced moments, axial thrust and hull beam vibrations are all unavoidable characteristics linked to different engines such as the low-speed, two-stroke diesel engine, but also to various propeller installations. Most vibration problems are reduced by adequate conventional countermeasures such as stays and dampers, but such measures only reduce the symptoms and do not eliminate the source of the vibration.

Gertsen & Olufsen Vibration Compensators specialize in eliminating unwanted vibrations and improving the performance and comfort of ships and power plants. The company specializes in the development, production, sale and installation of electrically driven moment compensators.

A number of engine-related problems and damages can result from vibrations. Take limitation of engine performance, abnormal wear of rotating components and increased failure rate of electronic and electric components. There are also risks for more ship-related problems and failures like cracking and reduced mechanical strength of superstructures.

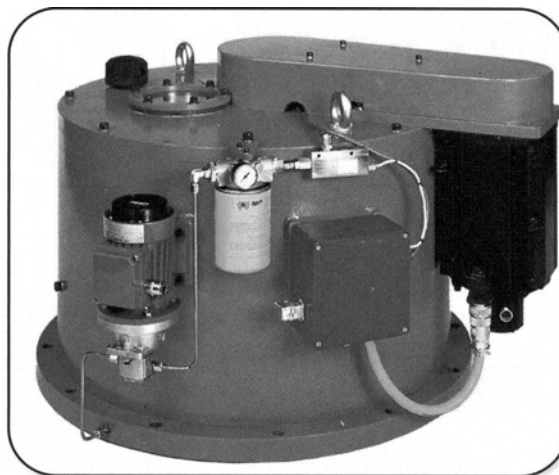
Stays and tanks and vibrations may also result in leaking from cracking of fuel and lube oil piping.

Vibration problems do not occur until after the completion of a specific ship design, when the vessel is taken into service and then the electrically driven moment compensator may be the best and most economical countermeasure available. By introducing the Gertsen & Olufsen electrically driven moment compensator, the source of vibration is eliminated because the system creates an opposing, sinusoidal varying force and phase angle that simply outbalances the source of vibration, the company said. Besides improved comfort onboard and reduced maintenance cost, the engine performance is likely to improve.

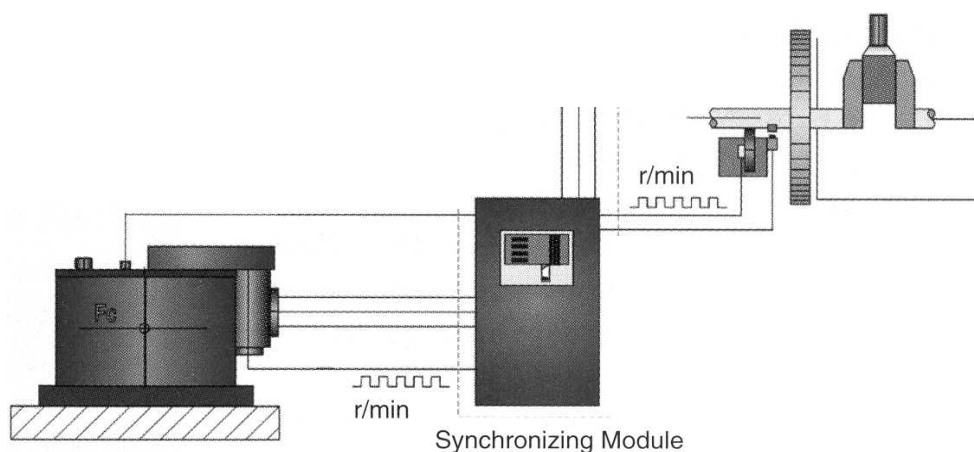
The Gertsen & Olufsen vibration compensator system comprises three components: the synchronizing, the encoder and the compensator units. The synchronizing unit measures and controls frequency, phase angle and position of the compensator unit, based on the measured r/min of the main engine.

The encoder unit detects r/min and the top dead center (TDC, Cyl. no. 1) of the main engine. Since the system is not integrated with the main engine, it can be started and stopped automatically at preselected engine speeds and load conditions. "Installing the Gertsen & Olufsen vibration compensator is a relatively simple project," says a company spokesman. "It does not interfere with the operation of the vessel.

Our company can take responsibility for the entire installation from excitation test through to fine tuning of the system." The unique and patented design offers many operational advantages such as easy adjustment of force, direction and phase and an automatic control and safety system. The system is easy to install and the company can refer to a long list of references within the shipping industry.



The G&O vibration compensator is designed to solve most known vibration problems deriving from different engine and propeller installations on various vessels.



The compensator system includes three components. The synchronizing unit measures and controls frequency, phase angle and position of the compensator unit based on the measured r/min of the main engine. The encoder unit detects r/min and the top dead center of cylinder No. 1 of the main engine.

Source: **Diesel & Gas Turbine Worldwide**