

Active Balancing System

The only effective engine silencer for large ships



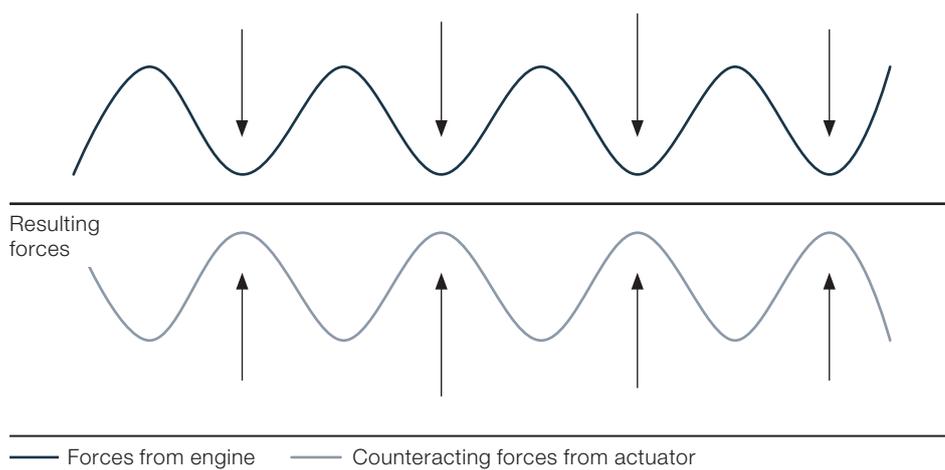
Active Balancing System (ABS)

Shipbuilders are under increasing pressure to reduce emissions and increase comfort. This particularly applies to cruise liners, mega yachts and navy ships. What's more, the need to reduce noise from marine engines is growing. There is only one viable solution on the market that addresses this problem: the Active Balancing System (ABS), developed by MAN Diesel & Turbo and its partners.

The technology

The ABS system consists of power actuators, which are installed on a ship's hull. These generate forces that counteract those emanating from the engine, reducing the impact on the hull. Essentially, this is very similar to the technology used to minimise ambient noise levels in modern headphone systems – but on a scale capable of matching the enormous forces exerted by a large diesel engine.

The principle of the ABS system



MAN Diesel & Turbo

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References

The ABS system was tested in MAN Diesel & Turbo's own power station and aboard the ferry MS Benedikte. The results were impressive: for the first time, it could be shown that adaptive balancing systems are just as effective when applied to the low frequencies of a medium-speed diesel engine. The introduction of ABS led to a significant reduction in vibrations, dramatically increasing the comfort of passengers and crew.

Advantages

Conventional measures, such as double-elastic mounting systems, can reduce vibrations in general. However, these have some key disadvantages – which highlight the benefits of the ABS system:

- A double-elastic system including intermediate frame increases the weight of the engine by up to 60% – while an ABS system adds less than 4%. Accordingly, double-elastic systems have so far only been applied to small, high-speed engines.

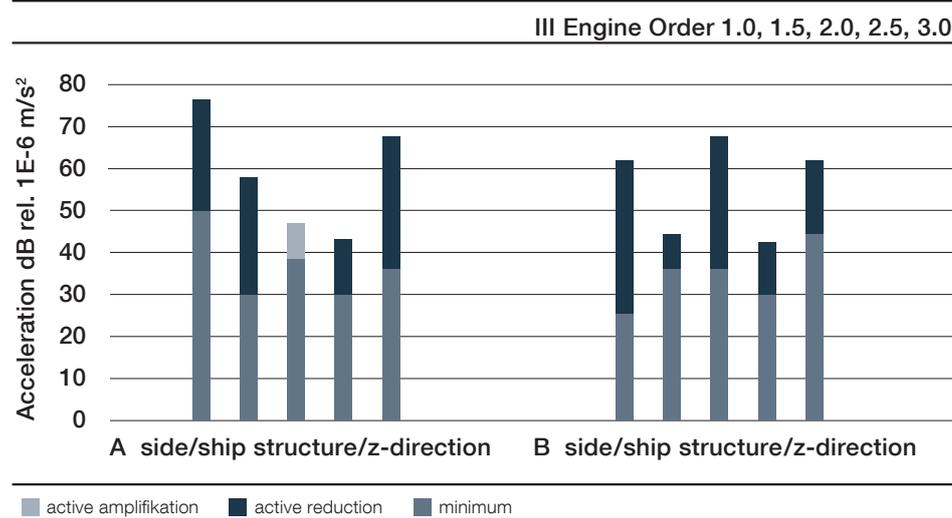
They are not a solution for large medium-speed engines with a weight above 100 tonnes. As a result, only the ABS system provides a means of improving comfort aboard large cruise ships.

- A double-elastic system requires approximately 30-40% extra space. By contrast, the additional room taken up by an active bearing is insignificant. Depending on the application, the ABS systems can be directly coupled to the mount or integrated into the ship's hull.

- In addition to their weight and size, double-elastic systems have another drawback: they require special arrangements to intercept the counter motion caused by the ship's movement on the sea. These are not necessary with a single elastic system.

- Another advantage of the ABS-system is its availability as a retrofit – the system can be adapted to any vessel.

Noise at shipstructure



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