

Power Generation Stability and Response in DP Applications – An Overview of Modern Diesel Engine Performance

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Abstract

Diesel engines are the preferred prime movers for power generation on DP vessels, predominantly because of their reliability as prime movers and their ability to respond to changing power needs.

Most modern DP vessels use diesel-electric propulsion with diesel driven generators and motor driven propellers or thrusters. These applications typically use multiple (three to eight) gensets feeding AC power to a common electrical network.

There are various methods and levels of sophistication applied to the way the electric power is shared between parallel generators and divided to different consumers.

This paper looks briefly at the fundamentals of the two commonly used load sharing methods; isochronous and speed droop control, from a power system performance point of view.

Reflections are made regarding integration of diesel engine controls with overlaying Power Management System (PMS) and Vessel Management System (VMS).

The paper continues with an overview on modern diesel engine performance and identifies certain key functionalities and design aspects that are essential to optimum diesel engine performance.

The paper concludes with some reflections on particular load sharing schemes that serves practical for the operators when trying to run the gensets as close to optimum as possible.

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