

WOODWARD 3161 GOVERNOR TO UG25+P3 RETROFIT ON WARTSILA 9L20

Goltens completed a retrofit of a mechanical Woodward 3161 Governor with the latest state-of-the-art electro-mechanical Woodward UG25+ P3 Governor on a Wartsila 9L20. The new Governor has the same fit and provides the same functionality but with additional features to improve performance.

BRIEF

The vessel equipped with two variable speed Wartsila 9L20 propulsion engines each driving a propeller and fire pump. Each engine is equipped with a mechanical 3161 governor with pneumatic speed setting, shutdown solenoid and start fuel limiter solenoid. The engine speed is controlled via a combinator with different operating modes for propulsion and fire pump. The combinator electrical output delivers a mA speed reference to a current to pneumatic converter connected to the 3161 governor.

The 3161 governors with pneumatic speed setting are old, unreliable and reaching end of life thus driving higher repair and spares costs. Fuel system response to engine speed or load changes is suboptimal as well as creating black smoke during the transients.

In addition to the 3161, the current to pneumatic converter is also eliminated by using the UG25+P3 electronic governor. The combinator mA speed setting output and shutdown signal input are now directly connected to the UG25+P3 along with redundant power supplies. The start fuel limiter is now managed within the governor software.

Goltens Dubai team completed the retrofit, removing the old governor, installing the UG25+P3 with new linkage to the fuel rack, including cable laying and mounting new junction boxes.

Port side engine was the first to be retrofitted and the system was tested in all operating modes during sea trials. The UG25+P3 was tuned using the service tool, in which settings for start ramps, fuel limiters, jump rates and PID were optimized to improve performance. The starboard side engine was then converted and the same parameters from the Port side engine were simply downloaded to its UG25+P3.

RESULT

The overall performance of the vessel was noticeably improved in all areas as mentioned above. The smoke during startup and transients was significantly reduced with very smooth and stable speed control, responding quickly to any load or speed setting changes. The owner now enjoys reduced maintenance cost, better reliability and with the knowledge of positively contributing to the environment.

RECOMMENDATION

The UG25+P3 will be supported by Woodward for many years to come and is already the less expensive option. It is recommended therefore to consider this retrofit as part of your fleet maintenance schedules.

PROJECT FACTS

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| Description: | Retrofit 3161 Governor with UG25+P3 Governor |
| Engine: | Wartsila 9L20 |
| Location: | Dubai, U.A.E. |



Figure 1: Woodward 3161 installation before upgrade



Figure 2: Technician fitting the Woodward UG25+P3



Figure 3: Woodward UG25+P3 after retrofit