

***Case Study of Modification of Diesel Governor Electric Solenoid Replacement  
Using a Single-Acting Actuator on Main Lifter at PT XYZ***  
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**ABSTRACT**

*This study purpose to design and analyze a diesel engine speed (RPM) control system on a JLG 860SJ manlift by modifying the replacement of the electric solenoid governor with a single-acting hydraulic actuator. The main problem addressed in this study is the failure of the solenoid governor to respond to throttle input, as well as the limitation of the shutdown solenoid which is prone to overheating. The research method includes system design, fabrication, implementation, and testing, consisting of performance, durability, and response tests. The system is designed by utilizing the existing hydraulic source without major modifications. The single-acting actuator is selected due to its simple construction and suitability for producing linear motion in the governor mechanism. The results show that the actuator is capable of generating a force of approximately 1.04 kN and operates effectively under idle ( $\pm 1000$  rpm) and full throttle ( $\pm 1800$  rpm) conditions. The response time ranges from 0.7 to 1.1 seconds, with stable performance up to 2000 operating hours. However, at 3000 hours, performance degradation occurs due to seal wear. In conclusion, the system is feasible as an alternative to replace the solenoid governor due to its reliability and ease of maintenance, although it does not yet support gradual RPM control.*

**Keywords:** *hydraulic actuator, single acting, manlift.*