

program to optimize the parameters of P and I at the best in the next result chapter.

4. Result

There are many methods for designing a speed control system. This paper is an example of control speed at 500-800 RPM. by System Identification. To determine the transfer function and design to a closed-loop system. From the scope in figure 10 and setting optimize PI signal block in Figure 11 when running the program, it was found that the signal PI caused the optimal contract as show in Figure 13. And Table 1.

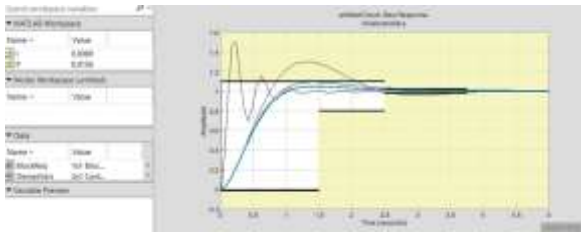


Fig. 13. Response Optimizer.

TABLE I. PARAMETER OF PI-CONTROLLER

Signal	P	I
Initial Value	1	1
Optimize Value	0.0156	0.0089

When knowing the PI values obtained from finding the appropriate values and uploading instead of the initial PI values, from Figure 8 when changing the new PI values, to see if the system is in scope or not? that can check the response in Figure 13. And Table 2.

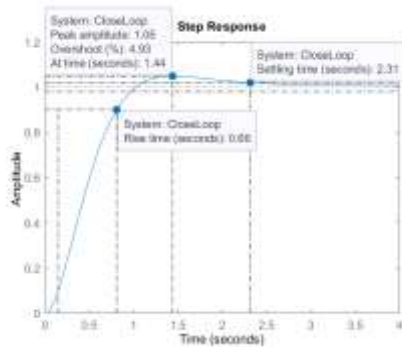


Figure 14. Response Optimizer Signal.

TABLE II. SCOPE OF AFTER DESIGN

SCOPE	AFTER DESIGN
Rise Time 1.5 sec	0.66 sec
Settling time to 2.5 sec	2.31 sec
%Overshoot is less than 10%	4.93%

5. Conclusion

From finding the appropriate signal value of the PI controller that can control the speed at 500-800 RPM. That show the P-value was 0.0156 and I-value was 0.0089 which

resulted in the controller signal being within the specified range. Therefore, this method of optimizing the design of a closed-loop control system is one of the methods for controlling the system accordingly. The simulation result through a stirrer is shown in Figure 15.

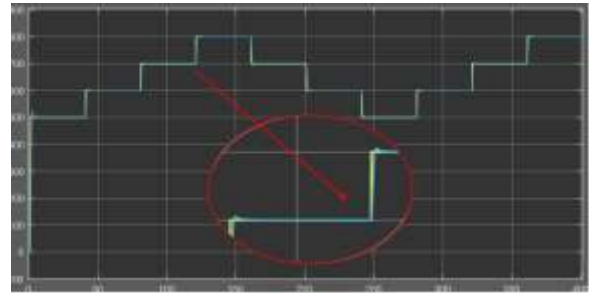


Fig. 15. the simulation result through a stirrer at 500-800 RPM

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