# Study of Simulation and Analysis of the Single-Cylinder SI Engine Ignition System


## 黃廉雁、張一屏

E-mail: 9510693@mail.dyu.edu.tw



**ABSTRACT**

This study is simulation and analysis for four stroke single-cylinder gasoline engine ignition system control and performance dynamic response. Ignition system control and performance parameters were displayed and monitored by using proper software and hardware simulation and implementation. This study simulated the crank angle signal and spark advance signals of a fuel-injection motorcycle. The engine ignition signal pulse width and frequency can be varied under different operating condition. The crank angle signal and spark advance signal of the real fuel-injection motorcycle engine were compared to validate the simulation result. Consider electronic ignition system to develop ignition simulate. The signal generating module can set up different engine ignition parameters such as engine speed and pulse width modulation. The output result from variation of these parameters can be used as ignition controller design reference. The effects of parameters can be seen by the output performance simulated data. This approach saves the research and development time and expanses while increasing the reliability and durability of the system. The integrated methodology for HIL environment developed by this study can accumulate precious experience which will be helpful for the vehicle electronic control system design and manufacture.



Keywords : Simulation and Analysis of Ignition System ; Electronic Ignition System


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