Effect of Spark Timing on Combustion Process of SI Engines using MATLAB

Abstract

The spark timing plays a significant role in the combustion process and in deciding the engine parameters of SI engine. This paper aims at demonstrating the effect of advanced and retarded spark timing on the burn fraction variation versus crank angle, cumulative heat release rate versus the crank angle and the pressure variation as a function of crank angle with the help of MATLAB programs. For this purpose, a basic finite heat release model is used for the combustion process in SI engines. This model can also be extended to evaluate effect of spark timing on engine work and thermal efficiency. In each section of the paper, the codes used for analysis are provided for future research work. Salient results, such as peak pressure crank angles for different spark timings, are derived from analysis.

References

- MATLAB for scientists and engineers - Rudra Pratap, Oxford University Press
- S. H. Chan and J. Zhu, "Modeling of engine in-cylinder thermodynamics under

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**Keywords**

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