

Author:

David Gurney

Pre-Chamber Combustion Evaluation with GT-Suite

GT-POWER's new prechamber models have been used to investigate and analyse measured test data from a prechamber combustion system. Due to the fact that the prechamber is not a closed volume, traditional combustion analysis tools cannot be used to process measured pressure data to evaluate combustion characteristics.

A GT-POWER model has been constructed of an engine with a prechamber combustion system and correlated to test data and moving geometry CFD. This model has then been used for heat release analysis and determination of the conditions in the prechamber prior to combustion. Based on this analysis an empirical metric of combustion stability has been derived.

An SI-Turb combustion model has been constructed and correlated to the same data using SI-Turb in the prechamber and the new EngCylCombJetIgnition combustion model in the main chamber. The paper will present results of the initial correlation of the predictive combustion models.